PROJECT MANUAL

FOR

TEXAS PARKS AND WILDLIFE INFRASTRUCTURE DIVISION
MONUMENT HILL STATE HISTORIC SITE
KREISCHER HOUSE & BREWERY RENOVATION,
ROOF REPLACEMENT

TPWD PROJECT # 122888

ISSUE: JANUARY 16, 2019

McCoy Collaborative Preservation Architecture, PLLC
3200 Main Street #3.6
Dallas, Texas 75226
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>00 3126</td>
<td>Existing Hazardous Materials Data</td>
</tr>
</tbody>
</table>

### DIVISION 01 - GENERAL REQUIREMENTS

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 1100</td>
<td>Summary of Work</td>
</tr>
<tr>
<td>01 2519</td>
<td>Substitution Request Form</td>
</tr>
<tr>
<td>01 3216</td>
<td>Construction Progress Schedule</td>
</tr>
<tr>
<td>01 3516</td>
<td>Alteration Project Procedures</td>
</tr>
<tr>
<td>01 3591</td>
<td>Restoration Project Procedures</td>
</tr>
<tr>
<td>01 4000</td>
<td>Quality Requirements</td>
</tr>
<tr>
<td>01 5000</td>
<td>Temporary Facilities and Controls</td>
</tr>
<tr>
<td>01 7123</td>
<td>Field Engineering</td>
</tr>
<tr>
<td>01 7329</td>
<td>Cutting and Patching</td>
</tr>
</tbody>
</table>

### DIVISION 02 - EXISTING CONDITIONS

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>02 4120</td>
<td>Selective Building Demolition</td>
</tr>
</tbody>
</table>

### DIVISION 06 - WOOD, PLASTICS AND COMPOSITES

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 0122</td>
<td>Finish Carpentry Restoration</td>
</tr>
<tr>
<td>06 1100</td>
<td>Framing and Sheathing</td>
</tr>
</tbody>
</table>

### DIVISION 07 - THERMAL AND MOISTURE PROTECTION

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>07 3129</td>
<td>Wood Shingles</td>
</tr>
<tr>
<td>07 6100</td>
<td>Sheet Metal Roofing</td>
</tr>
<tr>
<td>07 6200</td>
<td>Sheet Metal Flashing and Trim</td>
</tr>
<tr>
<td>07 9200</td>
<td>Joint Sealers</td>
</tr>
</tbody>
</table>

### DIVISION 08 - OPENINGS

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>08 0383</td>
<td>Wood Window Restoration</td>
</tr>
</tbody>
</table>

### DIVISION 09 - FINISHES

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>09 9100</td>
<td>Painting</td>
</tr>
</tbody>
</table>

### DIVISION 32 - EXTERIOR IMPROVEMENTS

<table>
<thead>
<tr>
<th>SECTION NUMBER</th>
<th>SECTION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>32 9223</td>
<td>Seeding</td>
</tr>
</tbody>
</table>

### APPENDIX

1. Asbestos and Lead-Containing Paint Survey and Visual Hazardous Materials Assessment
2. Limited Mold Assessment
3. Limited Biological Growth Reports by EMLab P&K & The University of Texas at Austin

END OF TABLE OF CONTENTS
EXISTING HAZARDOUS MATERIALS DATA

1.1 INVESTIGATION

A. A Limited Asbestos and Lead-Containing Paint Survey and Visual Hazardous Materials Assessment was conducted at the site, the results of which can be found in report by Terracon Consultants, Inc., dated March 21, 2017. A Limited Mold Assessment was conducted at the site, the results of which can be found in a report by Terracon Consultants, Inc. dated March 21, 2017. Additionally, limited biological growth species identification was conducted at the site, the results of which can be found in reports by EM Lab P&K dated May 8, 2018 and May 21, 2018; and the University of Texas Culture Collection of Algae dated June 26, 2018.

B. A copy of the reports are bound into the Project Manual.

1.2 INTERPRETATION

A. The reports are provided only for bidder’s information and convenience and is not part of the Contract Documents. Owner and Architect do not warrant the accuracy or extent of the reports or locations of the test locations.

B. Opinions expressed in the report are those of the Hazardous Materials Analysts and represent the Analysts' interpretation of material conditions, tests, and results of analyses that the Analysts have conducted.

C. The reports are based upon the assumption that uniform variation exists in material properties between sample locations. Interpretation of the reports are bidder's responsibility. Owner and Architect will not be responsible for interpretation of reports by bidders.

D. Bidders are urged to examine the reports and the site.

E. Additional tests or other exploratory operations may be made by bidders at no additional cost to Owner, provided such operations are approved by Owner in advance.

F. Refer to Conditions of the Contract for additional information.

END OF DOCUMENT
SECTION 01 1100

PART 1 GENERAL

SUMMARY OF WORK

1.1 SUMMARY

A. Section Includes:
   1. Project description.
   2. Work by Others.
   3. Contractor's use of site and premises.

1.2 PROJECT DESCRIPTION

A. Work of this Project is described as roof replacement of main house and smokehouse, including dormer window work, located at Monument Hill State Park, 414 TX-92 Spur, LaGrange, TX.

B. Work includes site construction and general construction.

C. The Project will be constructed under a single prime contract.

1.3 WORK BY OTHERS

A. Separate Contracts:
   1. The Owner may execute for additional work at the site that is excluded from the work of this Contract.
   2. Work under separate contract may be executed concurrent with Work of this Contract.
   3. Cooperate with the Owner and separate contractors to accommodate this requirement.

1.4 CONTRACTOR'S USE OF SITE AND PREMISES

A. Limit use of site and premises to allow for:
   1. Work by separate contractors.
   2. Work by Owner.
   3. Use of site and adjacent premises by the public.

B. Move any stored products under Contractor's control that interfere with the operations of the Owner or separate contractors.

C. Assume full responsibility for protection and safekeeping of products under this Contract stored on site.

D. Obtain and pay for use of any additional storage or work areas needed for operations.

E. Coordinate use of site and premises with the Owner:
   1. Employee parking: In designated areas.
   2. Access to site and premises: In designated areas.
   3. Storage and staging areas: In designated areas.
   4. Transport materials and equipment to and from construction area along routes approved by Owner.

F. Confine operations to construction area unless otherwise approved by Owner.

G. Do not use or store hazardous or flammable materials on premises without Owner's approval; follow requirements of governing authorities having jurisdiction over the work.

H. Coordinate work with Owner and Owner's archeological consultant when ground surface is disturbed.
   1. Notify Owner minimum 30 days prior to beginning work.
2. Owner's archeological consultant must be on site when work disturbing ground surface is performed unless specifically directed by the Owner.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION
DOCUMENT 01 2519
SUBSTITUTION REQUEST FORM

DATE:

TO:

ATTENTION:

PROJECT:

We submit for your consideration the following product as a substitution for the specified product:

<table>
<thead>
<tr>
<th>Section No.</th>
<th>Paragraph</th>
<th>Specified Product</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Proposed Substitution:

Reason for Substitution:

Product Data:

Attach complete technical data for both the specified product and the proposed substitution. Include information on changes to Contract Documents that the proposed substitution will require for its proper installation.

Samples:

___ Attached   ___ Will be furnished upon request

Does the substitution affect dimensions shown on Drawings?

___ No   ___ Yes (explain) ________________________________________

Effects of proposed substitution on other Work:

________________________________________________________________

________________________________________________________________

Differences between proposed substitution and specified Product:

________________________________________________________________

________________________________________________________________

Kreische & Brewery Renovation
Roof Replacement

01 2519-1

Substitution Request Form
Manufacturer's warranties of the proposed substitution are:

___ Same       ___ Different (explain) ________________________________
_________________________________________________________________

Maintenance service and spare parts are available for proposed substitution from:
_________________________________________________________________
_________________________________________________________________

Previous installations where proposed substitution may be seen:

Project: ___________________________  Project: ___________________________
Owner: ___________________________  Owner: ___________________________
Architect: _________________________  Architect: _________________________
Date Installed: ____________________  Date Installed: ____________________

Cost savings to be realized by Owner, if proposed substitution is approved:
_________________________________________________________________

Change to Contract Time, if proposed substitution is approved:

___ No Change   ___ Add ________ days   ___ Deduct ________ days

Submit constitutes a representation that Contractor has read and agrees to the provisions of Division 1.

Submitted by Contractor:

________________________________________
Signature

________________________________________
Firm

For Use by Architect:

Based on the information supplied by the Contractor, the Architect has reviewed the proposed substitution on the basis of design concept of the Work and conformance with information given in Contract Documents.

___ Approved   ___ Approved as Noted ___ Rejected

Submit Additional Information: ____________________________________________
_________________________________________________________________

By: ____________________________ Date: ____________________________
SECTION 01 3516
ALTERATION PROJECT PROCEDURES

PART 1  GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Patching and extending existing work.
   2. Transitions and adjustments.
   3. Repair of damaged surfaces.

1.2 PROJECT CONDITIONS

A. Hazardous Materials:
   1. A survey of hazardous materials was performed by the Owner; a copy of the report is included in the project manual. Review report prior to commencement of work under this Contract.

PART 2  PRODUCTS

2.1 MATERIALS

A. New Materials:
   1. Provide new materials to match existing adjacent materials for closing of openings, repairs, and reconstructions where suitable salvaged materials do not exist, are insufficient in quantity, or where reuse is not permitted.
   2. Match existing materials in material, type, size, quality, color, finish, and other attributes.

B. Reused Materials:
   1. Clean and prepare salvaged materials for reuse.
   2. Do not use materials with objectionable chips, cracks, splits, dents, scratches, or other defects.
   3. Repair operable items to function properly.

PART 3  EXECUTION

3.1 PREPARATION

A. Test materials to be used in repairs for compatibility with existing materials; do not use incompatible materials.

B. Cut, move, or remove items as necessary for access to alterations and renovation work. Replace and restore upon completion.

C. Remove, cut, and patch work in manner to minimize damage and to provide means for restoring products and finishes to their original or specified new condition.

D. Remove unsuitable materials not marked for salvage.

E. Remove debris and abandoned items from areas of work and from concealed spaces.

3.2 ALTERATIONS

A. Coordinate alterations and renovations to expedite completion.

B. Install products and finish surfaces as specified in individual sections, or where no specification section exists to match existing.
C. Refinish visible surfaces to specified condition, with neat transition to adjacent surfaces.

D. Finish patches to provide uniform color and texture over entire surface, with repairs not discernible from normal viewing distance. If finish cannot be matched, refinish entire surface to nearest intersections.

E. Where removal of partitions or walls results in adjacent spaces becoming one, rework finished surfaces to smooth plane, without breaks, steps, or bulkheads.

F. Where new work abuts or aligns with existing, provide smooth and even transition. Where a change in plane of 1/4 inch or more occurs, submit recommendation to Architect for transition.

G. Where alterations expose mechanical and electrical components that were previously concealed, renovate to be concealed in completed work.

H. In addition to specified replacement of equipment and fixtures, restore mechanical and electrical systems to full operational condition.

I. Patch holes in exposed surfaces left by removal of mechanical and electrical components.

J. If conditions are encountered that differ from those contained in these drawings, the Contractor shall notify the Architect immediately, providing sketches and photographs. The Contractor shall generally assist the Architect by providing prompt and accurate information about the differing existing conditions encountered. The Contractor will not be reimbursed for work done without the consent of the Architect and Owner.

K. Protect the existing materials to remain during the work of this contract. Selective demolition work and removals will be undertaken using the least damaging means and methods possible, with intent to salvage existing materials for reuse, where indicated, or for deliver to the Owner. The Architect has endeavored to provide as much information as possible about the existing conditions effecting the work, including the demolition work that is necessary to accomplish the work. This information is not intended to mean that demolition is limited only to those areas indicated. The Contractor will include demolition work as required to execute the Work.

L. Patch and repair existing materials shown to remain after demolition or removal to match existing or adjacent surfaces to a change in plane. Cutting and patching work necessary to complete the Work shall be provided, as required.

M. Field Verification shall be undertaken by the Contractor and identified on submittals prior to the preparation and submittal of shop drawings, products and samples. Submittals without field verification will be returned as incomplete.

N. Blocking and framing needed to perform the Work shall be provided as required.

O. Shoring, scaffolding and access to the work required during restoration, selective demolition and / or construction is considered the Contractor's means and methods and is the responsibility of the Contractor.

END OF SECTION
SECTION 01 3591

RESTORATION PROJECT PROCEDURES

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Definitions.
   2. Historic significance.
   3. Restoration procedures.
   4. Historic artifacts.
   5. Salvaged materials.
   6. Alterations.
   7. Hazardous material procedures.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Uniform General Conditions including Supplementary General Conditions.

1.2 DEFINITIONS

A. Disassemble: The act or process of taking apart a component element by element and salvaging for reassembly.

B. Match Existing: Provide new materials to match the existing, in place material in all aspects as closely as possible. Existing materials are those which are visible in whole or in part in the building.

C. Match Original: Provide new materials to match the original material in all aspects as closely as possible. Original materials are those which were originally installed in the building at the time of its completion, prior to previous alterations, and which may predate existing materials. Existing materials are assumed original unless noted otherwise.

D. Preservation: The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.

E. Reassemble: The act or process of putting a component back in its original location after disassembly and repair or replacement.

F. Reconstruction: The act or process of reproducing, by means of new construction, the form, features, and detailing of a non-surviving building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.

G. Restoration: The act or process of accurately depicting the form, features, and character as it appeared at a particular time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.

H. Salvage: The act of careful removal, cataloguing, and tagging, documentation of original location, packaging and crating with documentation enclosed for long-term storage and delivery to Owner. Does not include salvage for recycling.

I. Salvage for Reuse: The act of careful removal, cataloguing, and tagging, documentation of original location, packaging and crating for reinstallation at a later point during the Work.

J. Stabilization: Restoration for purposes of this contract.

1.3 SUBMITTALS

Kreische & Brewery Renovation
Roof Replacement 01 3591-1 Restoration Project Procedures
A. Submittals for Review:
   1. Samples: When matching new and historic materials, provide clean sample of historic material for use in matching salvaged or new material. Make sample available to Architect during review.
   2. Provide site and existing building protection measures plan. Make plan available to Architect prior to construction.

1.4 QUALITY ASSURANCE

A. Historic Significance:
   1. The existing Kreische House and Smokehouse are located within Monument Hill and Kreische Brewery State Historic Site. The site is listed in the National Register of Historic Places and is a State Antiquities Landmark.
   2. Due to its unique historical significance, special procedures and precautions must be used in selective demolition and restoration.
   3. TPWD will submit project for review as a state-owned property under the State Antiquities Code as a matter of record.

B. Restoration Procedures:
   1. Preserve original materials, finishes, and profiles.
   2. Blend new and original work to provide smooth transitions and uniform appearance.
   3. Cease work, notify Architect, and await instructions if materials or conditions encountered at the site are not as indicated by the Contract Documents or if structure is in danger of movement or collapse.
   4. Protect existing construction. Due to load limits, do not stage roofing or other materials on existing roof or parapet.

C. Historic Artifacts: If artifacts of a historic nature are encountered during the Work:
   1. Cease work in the affected area immediately.
   2. Protect artifacts from damage.
   4. Salvage or dispose of artifacts as directed by the Owner.

PART 2 - PRODUCTS

2.1 MATERIALS

A. New Materials:
   1. Provide new materials to match original adjacent materials or original materials for closing of openings, repairs, and reconstructions where suitable salvaged materials do not exist, are insufficient in quantity, or where reuse is not permitted.
   2. Retain samples of original materials on site for comparison purposes.
   3. Match original materials in material, type, size, quality, color, finish, and other attributes.

B. Reused Materials:
   1. Clean and prepare salvaged materials for reuse.
   2. Do not use materials with objectionable chips, cracks, splits, dents, scratches, or other defects.
   3. Repair operable items to function properly.

PART 3 - EXECUTION

3.1 PREPARATION

A. Test materials to be used in repairs for compatibility with original materials; do not use incompatible materials.

B. Cut, move, or remove items to provide access for alterations and restoration work. Replace and restore upon completion.
C. Protect original materials and surfaces from damage by construction operations.

3.2 ALTERATIONS

A. Coordinate alterations and renovations to expedite completion.

B. Minimize damage to original materials and surfaces; provide means for restoring products and finishes to their original or specified new condition.

C. Remove unsuitable materials not marked for salvage.

D. Remove debris and abandoned items from areas of work and from concealed spaces.

E. Refinish visible surfaces to specified condition, with neat transition to adjacent surfaces.

F. Install products and finish surfaces as specified in individual sections, or where no specification section exists, to match original.

G. Finish patches to provide uniform color and texture over entire surface, with repairs not discernible from normal viewing distance. If finish cannot be matched, refinish entire surface to nearest intersections.

H. Rework finished surfaces to smooth plane, without breaks, steps, or bulkheads:
   1. Where new work abuts or aligns with existing, provide smooth and even transition.
   2. Where a change in plane of 1/4 inch or more occurs, submit recommendation to Architect for transition.

I. Where alterations expose mechanical and electrical components which were previously concealed, rework to be concealed in completed work.

3.3 HAZARDOUS MATERIAL PROCEDURES

A. A hazardous materials report has been completed for the property and is available as part of this document.

B. If hazardous or suspected hazardous materials are encountered:
   1. Stop work in affected area immediately.
   2. Notify Owner and Architect and await instructions.
   3. Prevent damage to materials.
   4. Prevent human contact.
   5. Owner will arrange for abatement or removal of hazardous materials under a separate contract.

END OF SECTION
SECTION 01 4000
QUALITY REQUIREMENTS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. References.
   2. Quality assurance and control of installation.
   3. Mockups.
   4. Manufacturer's field services and reports.
   5. Design data and calculations.
   6. Test reports and certifications.
   7. Manufacturer's installation instructions.

1.2 REFERENCES

A. For products or workmanship specified by reference to association, trade, or industry standards, comply with requirements of the standard, except when more rigid requirements are specified or are required by applicable codes.

B. Should specified reference standards conflict with Contract Documents, request clarification from Architect before proceeding.

C. Conform to edition of reference standard in effect as of date of Owner/Contractor Agreement.

D. The contractual relationship of the parties to the Contract shall not be altered from the Contract Documents by mention or inference otherwise in any reference document.

1.3 QUALITY ASSURANCE AND CONTROL OF INSTALLATION

A. Monitor quality control over suppliers, manufacturers, Products, services, site conditions, and workmanship, to produce Work of specified quality.

B. Comply fully with manufacturers' instructions, including each step in sequence.

C. Should manufacturers' instructions conflict with Contract Documents, request clarification from Architect before proceeding.

D. Comply with specified standards as a minimum quality for the Work except when more stringent tolerances, codes, or specified requirements indicate higher standards or more precise workmanship.

E. Perform work by persons qualified to produce workmanship of specified quality.

F. Secure Products in place with positive anchorage devices designed and sized to withstand stresses, vibration, physical distortion or disfigurement.

1.4 MOCKUPS

A. Definition:
   1. Mockups are field samples constructed, applied, or assembled at the project site for review by the Owner and Architect that illustrate materials, equipment, or workmanship.
   2. Approved mockups establish the standard of quality by which the Work will be judged.

B. Construct, apply, or assemble specified items, with related attachment and anchorage devices, flashings, seals, and finishes.
C. Perform work in accordance with applicable specifications sections.

D. Erect at project site at location acceptable to Architect. Protect from damage.

E. Removal:
   1. Mockups may remain as part of the Work only when so designated in individual specification sections.
   2. Do not remove mockups until removal is approved by Architect or upon Final Completion.
   3. Where mockup is not permitted to remain as part of the Work, clear area after removal of mockup has been approved by Architect.

1.5 MANUFACTURERS' FIELD SERVICES AND REPORTS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide qualified staff personnel to observe site conditions, conditions of surfaces and installation, quality of workmanship, or startup of equipment, as applicable, and to initiate instructions when necessary.

B. Individuals to report observations and site decisions or instructions given to applicators or installers that are supplemental or contrary to manufacturers' written instructions.

C. Submit report to Architect within 10 days of observation.

1.6 DESIGN DATA AND CALCULATIONS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide design data and calculations.

B. Accuracy of design data and calculations is the responsibility of the Contractor.

C. When so specified, prepare design data and calculations under the direction of a professional engineer licensed in the state in which the Project is located. Affix engineer's seal to submittals.

1.7 TEST REPORTS AND CERTIFICATIONS

A. When specified in individual specification Sections, require material or Product suppliers or manufacturers to provide test reports and manufacturers' certifications.

B. Indicate that material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.

C. Submittals may be recent or previous test results on material or Product, but must be acceptable to Architect.

1.8 MANUFACTURER'S INSTALLATION INSTRUCTIONS

A. When Contract Documents require that Products be installed in accordance with manufacturer's instructions:
   1. Submit manufacturer's most recent printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, as applicable.
      a. Submit in quantities specified for Product Data.
      b. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.
      c. Identify conflicts between manufacturers' instructions and requirements of Contract Documents.
   2. Perform installation of Products to comply with requirements of manufacturer's instructions.
3. If installation cannot be performed in accordance with manufacturer's instructions, notify Architect and await instructions.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

Not used

END OF SECTION
SECTION 01 5000
TEMPORARY FACILITIES AND CONTROLS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Temporary utilities.
   2. Field offices and sheds.
   3. Temporary controls.
   4. Protection of installed Work.
   6. Progress cleaning.
   7. Water, erosion, sediment, dust, and mold and mildew control.
   8. Access roads and parking areas.

1.2 REFERENCES

A. Green Seal, Inc. (GS) 37 - Environmental Standard for Industrial and Institutional Cleaners.

PART 2 PRODUCTS

Not used

PART 3 EXECUTION

3.1 TEMPORARY ELECTRICITY

A. Connect to existing electrical system for electricity required during construction.
   1. Cost of electricity used will be paid for by Owner. Exercise measures to conserve electricity.
   2. Regulate system to prevent interference with Owner's normal usage.
   3. Maintain continuous power operation of Owner's facilities during changeover of electrical services.
   4. Notify Owner when unusually heavy loads will be connected, including welding and other equipment with special power requirements.
   5. Provide and pay for required service of capacity or characteristics other than that currently available.

B. Provide power outlets for construction operations, with branch wiring and distribution boxes located as required. Provide flexible power cords as required.

C. Maintain distribution system and provide routine repairs.

3.2 TEMPORARY LIGHTING

A. Provide temporary lighting for construction and security purposes.

B. Provide branch wiring from power source to distribution boxes with lighting conductors, pigtails, and lamps as required.

C. Maintain lamps and provide routine repairs.

D. Provide portable lights when required to provide minimum lighting levels necessary for specific work.
3.3 TEMPORARY VENTILATION
   A. Provide temporary fan units as required to maintain clean air for construction.

3.4 TEMPORARY TELEPHONE, FACSIMILE, AND COMPUTER SERVICES
   A. Contractor shall be accessible during normal business hours via mobile telephone with voice mail or an answering service.

3.5 TEMPORARY WATER
   A. Provide temporary water required for construction.
   B. Connect to existing water source for water required for construction.
      1. Regulate system to prevent interference with Owner's usage.
      2. Costs of water used will be paid for by Owner. Exercise measures to conserve water.
   C. Protect from freezing.
   D. Maintain distribution system and provide routine repairs.

3.6 TEMPORARY SANITARY FACILITIES
   A. Provide chemical toilets for use during construction.
   B. Existing toilets may not be used during construction.
   C. Maintain facilities in clean and sanitary condition.

3.7 FIELD OFFICES AND SHEDS
   A. Provide temporary field offices and storage sheds required for construction.
   B. Existing building may be not used for field office and storage of materials.
   C. Do not unreasonably encumber site or premises with excess materials or equipment.
   D. Temporary Structures:
      1. Portable or mobile buildings, structurally sound, weathertight, with floors raised above ground.
      2. Thermal transmission resistance: Compatible with occupancy and storage requirements.
      3. Provide connections for utility services when required.
      4. Provide steps and landings at entrances.
   E. Field Office:
      1. Size required for Contractor’s use and to provide space for project meetings.
      2. Adequate electrical power, lighting, heating, and cooling to maintain human comfort.
      3. Provide facilities for storage of Project Record Documents.
      4. Provide thermometer mounted at convenient outside location, not in direct sunlight.

3.8 BARRIERS
   A. Provide barriers to prevent unauthorized entry to construction area, to allow Owner’s use of site and premises, and to protect existing facilities and adjacent properties from construction operations.
   B. Provide barricades required by governing authorities for public right-of-ways and for public access to existing facilities.
   C. Fencing:
      1. Provide temporary fencing for construction operations.
2. Construction: Commercial grade chain link.
3. Height: 6 feet.
4. Locate as shown on Drawings.
5. Provide vehicular and pedestrian gates.

D. Tree and Plant Protection:
1. Protect existing trees and plants at site that are designated to remain.
2. Remove roots and branches that interfere with construction.
3. Provide temporary barriers to height of 6 feet around individual or groups of trees and plants.
4. Do not permit vehicular traffic, parking, storage of materials, dumping of harmful chemicals or liquids, or standing or continuously running water within root zones.
5. Supervise earthwork operations to prevent damage to root zones.
6. Replace trees and plants that are damaged or destroyed due to construction operations.

3.9 PROTECTION OF INSTALLED WORK
A. Protect installed work from construction operations; provide special protection when required in individual specification sections.
B. Minimize traffic, storage, and construction activities on roof surfaces. If traffic, storage, or activity is necessary, obtain recommendations for protection from roofing manufacturer.
C. Prohibit traffic from landscaped areas.

3.10 PROGRESS CLEANING
A. Maintain areas free from waste materials, debris, and rubbish. Maintain site in clean and orderly condition.
B. Provide containers for collection of waste materials, debris, and rubbish; remove and dispose of off site as required by construction activities.
C. Periodically clean interior areas to provide suitable conditions for finish work.

3.11 TEMPORARY CONTROLS
A. Water Control:
   1. Grade site to drain. Prevent puddling water.
   2. Maintain excavations free of water. Provide, operate, and maintain pumping equipment.
   3. Provide water barriers to protect site from soil erosion.

B. Erosion and Sediment Control:
   1. Plan and execute methods to control surface drainage from cuts, fills, borrow areas, and waste disposal areas. Prevent erosion and sedimentation.
   2. Minimize amount of bare soil exposed at any one time.
   3. Provide temporary measures such as silt fences, dikes, berms, settlement basins, and drainage systems to prevent water flow and sedimentation.
   4. Periodically inspect earthwork to detect erosion and sedimentation; promptly employ corrective measures.

C. Dust Control:
   1. Provide dust control materials and methods to minimize dust from construction operations.
   2. Prevent dust from dispersing into atmosphere.

D. Mold and Mildew Control:
   1. Provide continuous measures to prevent formation of mold and mildew in construction.
   2. Do not install materials sensitive to mold and mildew growth until protection can be provided.
   3. Promptly remove and replace materials exhibiting mold and mildew growth.

3.12 ACCESS ROADS AND PARKING AREAS
A. Existing roads designated by Owner may be used for construction purposes. Do not allow heavy vehicles or construction equipment in parking areas.

B. Provide for access by emergency vehicles.

C. Keep fire hydrants and water control valves free from obstruction and accessible for use.

D. Maintain existing construction, and restore to original or specified condition at completion of Work.

3.13 REMOVAL

A. Remove temporary utilities, equipment, facilities, and services when construction needs can be met by use of permanent construction or upon completion of Project.

B. Remove foundations and underground installations; grade site as indicated.

C. Clean and repair damage caused by installation or use of temporary work.

D. Restore existing and permanent facilities used during construction to original or to specified condition.

END OF SECTION
SECTION 01 7123
FIELD ENGINEERING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Survey and field engineering.
   2. Submittals.
   3. Records.

B. Provide and pay for field engineering services required for Project:
   1. Survey work required in execution of Work.
   2. Other professional engineering services specified or required to execute Contractor's construction methods.

1.2 QUALIFICATIONS

A. Surveyor: Qualified land surveyor, licensed in State in which project is located.

1.3 SUBMITTALS

A. Submit documentation to verify accuracy of field engineering work upon Architect's request.

B. Submit certification that elevations and locations of improvements are in conformance with Contract Documents.

1.4 SURVEY REFERENCE POINTS

A. Existing horizontal and vertical control points for project are those designated on Drawings.

B. Locate, verify, and protect control points prior to beginning Work; preserve permanent reference points during construction.

1.5 PROJECT SURVEY REQUIREMENTS

A. Establish minimum of two permanent bench marks on site, referenced to survey control points. Record locations on Project Record Documents.

B. Establish lines and levels, locate and lay out, by instrumentation:
   1. Site improvements:
      a. Stakes for grading, fill, and topsoil placement.
      b. Utility slopes and invert elevations.
   2. Locations and elevations of improvements.
   3. Other controlling dimensions.
   4. Controlling lines and levels required for mechanical and electrical trades.

C. Verify property corners, easements, building setbacks, and horizontal control dimensions with information contained in Contract Documents.

D. Promptly notify Architect of any errors or discrepancies noted; await instructions prior to proceeding with Work.

1.6 RECORDS

A. Maintain accurate log of control and survey work.
PART 2  PRODUCTS

Not used

PART 3  EXECUTION

Not used

END OF SECTION
SECTION 01 7329

CUTTING AND PATCHING

PART 1  GENERAL

1.1  SUMMARY
A.  Section Includes:
   1.  Requirements and limitations for cutting and patching of work.

1.2  SUBMITTALS
A.  Submit written request in advance of executing cutting or alteration that affects:
   1.  Work of Owner or separate contractor.
   2.  Structural integrity of project.
   3.  Integrity or effectiveness of weather exposed or moisture resistant elements or systems.
   4.  Efficiency, operational life, maintenance, or safety of operational elements.
   5.  Visual qualities of sight exposed elements.

B.  Include in Request:
   1.  Identification of project.
   2.  Description of work affected.
   3.  Necessity for cutting or patching.
   4.  Effect of cutting or patching on work of Owner or separate contractor, or on structural, weatherproof, or visual integrity of project.
   5.  Description of proposed work:
      a.  Scope of cutting and patching.
      b.  Subcontractor and trades to execute work.
      c.  Products proposed to be used.
      d.  Extent of refinishing.
   6.  Alternate to cutting and patching.
   7.  Cost proposal, if applicable.
   8.  Written permission of any separate contractor whose work will be affected.

PART 2  PRODUCTS

Not used

PART 3  EXECUTION

3.1  PREPARATION
A.  Examine existing conditions of work, including elements subject to movement or damage during cutting and patching.

B.  After uncovering work, examine conditions affecting installation of new products or performance of work.

C.  Provide protection for other portions of project.

D.  Provide protection from elements.

3.2  CUTTING AND PATCHING
A.  Execute cutting to include excavating, fitting, and patching of Work required to:
   1.  Make several parts fit properly.
   2.  Uncover work to provide for installation of ill timed work.
   3.  Remove and replace defective work.
   4.  Remove and replace work not conforming to requirements of Contract Documents.
5. Provide routine penetrations of nonstructural surfaces for installation of piping and electrical conduit.

B. Execute fitting and adjustment of products to provide finished installation to comply with specified tolerances, and finishes.

C. Execute cutting and demolition by methods that will prevent damage to other work, and will provide proper surfaces to receive installation of repairs and new work.

D. Execute excavating and backfilling by methods that will prevent damage to other Work, and will prevent settlement.

E. Employ original installer or fabricator to perform cutting and patching for:
   1. Weather exposed or moisture resistant elements.
   2. Sight exposed finished surfaces.

F. Restore work that has been cut or removed; install new products to provide completed Work in accordance with requirements of Contract Documents.

G. Refinish entire surfaces as necessary to provide an even finish:
   1. Continuous surfaces: To nearest intersections.
   2. Assembly: Refinish entirely.

END OF SECTION
SECTION 02 4120
SELECTIVE BUILDING DEMOLITION

PART 1   GENERAL

1.1  SUMMARY

A.  Section Includes:
   1. Removal of designated building construction, equipment, and fixtures.
   2. Identification of utilities.

B.  Related Sections:
   1. Division 01 - Administrative, procedural, and temporary work requirements.

1.2  SUBMITTALS

A.  Submittals for Review:
   1. Shop Drawings: Indicate areas for demolition, removal sequence and location of salvageable items, and location and construction of temporary work.

1.3  REGULATORY REQUIREMENTS

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

B.  Obtain required permits from authorities.

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

D.  Conform to applicable codes when hazardous or contaminated materials are discovered.

1.4  PROJECT CONDITIONS

A.  Minimize interference with streets, walks, public right-of-ways, and adjacent facilities.

B.  If hazardous materials are discovered, notify Architect and await instructions.

C.  If any of the following conditions are encountered, cease work immediately, notify Architect, and await instructions:
   1. Structure is in danger of movement or collapse.
   2. Materials or conditions encountered differ from those designated in the Contract Documents.

PART 2   PRODUCTS

Not used

PART 3   EXECUTION

3.1  PREPARATION

A.  Erect barricades, warning devices, and controls.

B.  Barriers:
   1. Provide barriers to prevent unauthorized entry to construction areas and to protect existing facilities from construction operations.
   2. Fencing:
      a. Provide temporary fencing for construction operations.
      b. Construction: Commercial grade chain link.
      c. Height: 6 feet.
d. Coordinate location with proposed location on Drawings and Construction Manager.
e. Provide vehicular gates.
f. Due to potential presence of archeological objects below ground, use fencing on skids or above-grade supports; do not penetrate ground for foundations or supports

3. Tree and Plant Protection:
a. Protect trees and plants on site that are designated to remain,

C. Provide protective coverings, shoring, bracing, and supports for construction designated to remain.

D. Temporarily or permanently disconnect utilities as required.

3.2 DEMOLITION

A. Remove existing construction to extent indicated and as necessary to join new work to existing. Do not remove more than is necessary to allow for new construction.

B. Do not damage work designated to remain.

C. Minimize noise and spread of dirt and dust.

D. Assign work to trades skilled in procedures involved.

E. Plug ends of disconnected utilities with threaded or welded caps.

F. Protect and support active utilities designated to remain. Post warning signs showing location and type of utility and type of hazard.

G. Store items designated to remain property of Owner where directed by Owner.

H. Remove and dispose of waste materials off site.

END OF SECTION
SECTION 06 0122
FINISH CARPENTRY RESTORATION

PART 1- GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Patching.
   2. Replacement.
   3. Disassembly and reassembly.
   4. Epoxy repair.
   5. Dutchman repair.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. Architectural Woodwork Institute (AWI) - Architectural Woodwork Quality Standards.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Include product attributes and application instructions for epoxy repair compound.
   2. Samples: 12 inch long samples of each replacement material profile.

B. Quality Control Submittals:
   1. Qualifications: Restorer qualifications, including previous projects.

1.4 QUALITY ASSURANCE

A. Restorer Qualifications:
   1. Minimum 5 years experience in work of this Section.
   2. Successful completion of at least 3 projects of similar scope and complexity within past 5 years.

B. Identify lumber and panel products by official grade mark.

C. Mockup:
   1. Show: Each wood restoration process and finishing, with and without final finishes.
   2. Include associated attachments, joints and junctions, terminating items.
   3. Locate where directed.
   4. Approved mockups may remain as part of the Work.

1.5 DELIVERY, STORAGE AND HANDLING

A. Store materials minimum 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation.

B. Do not store seasoned materials in damp location.
PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers - Consolidant and Patching Compound:
   1. Abatron, Inc.
   2. Advanced Repair Technology, Inc.

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Wood:
   1. Provide materials to match original; cypress, unless noted otherwise.
   2. For Dutchman repairs use salvaged original wood where suitable for reuse.
   3. If salvaged original materials are unsuitable for use or are not available in sufficient quantities, provide new materials or materials salvaged from an off-site source to match original wood in species, cut, appearance, and other characteristics.
   4. Do not reuse rotten, split, termite damaged, or otherwise defective pieces.

1.2 ACCESSORIES

A. Patching Compound: Epoxy based, multiple component.

B. Fasteners: Type and size as required by conditions of use; ASTM Type 316 stainless steel.

C. Underlayment: Meets or exceeds ASTM D226 Type II or ASTM D4869 Type IV.

1.3 FABRICATION

A. Quality: AWI Custom Quality Grade.

B. Fabricate wood components with material, profiles and dimensions to match original.
   1. Siding: 1 x 12 rough sawn vertical pine boards with 1 x 4 vertical pine battens to match existing siding.
   2. Trim: 1x pine boards to match existing trim.

PART 2 - EXECUTION

2.1 PREPARATION

A. Prior to installation, condition wood to average humidity that will prevail after installation.

B. Back prime exterior wood to be painted prior to installation.

C. Date Stamping:
   1. Wood and lumber replacement material (with the exception of wood shingles) shall be permanently date stamped with the calendar year of installation.
   2. Date stamping shall be accomplished by hand marking with indelible ink or by a hand-held, rigid metal stamping device struck by a hammer.
   3. Stamping shall be inconspicuously placed on the unexposed (back) side of each piece of wood.
   4. Re-installed wood in original location shall not be date stamped.
   5. Record the legend of identification marks and the locations of these marks on Record Drawings.

2.2 PATCHING EXISTING WOOD

A. Remove loose and deteriorated wood down to a point at which sound material is reached.
B. Apply consolidant in accordance with manufacturer’s instructions.
   1. Completely saturate damaged wood with consolidant; allow to cure 8 hours minimum.
   2. Apply to end grain where exposed. Where end grain is not exposed, drill 1/8 inch holes
      staggered and at angles to side grain to expose as much end grain as possible.
   3. Prevent leakage with wax or clay plugs. Clean leakage before it cures.
   4. Apply second coat if first coat does not completely saturate and harden wood.

C. After consolidant has cured, fill voids with patching compound. Mix and apply in accordance with
   manufacturer’s instructions.

D. Embed wood in center of large patches to reduce amount of filler.

E. After filler has cured, sand, chisel, or plane off to smooth surface, flush with adjacent surfaces.

2.3 REPLACEMENT OF EXISTING WOOD ELEMENTS AND DUTCHMAN

A. Remove existing damaged and deteriorated wood in manner to minimize damage to adjacent
   surfaces.

B. Fit new components to original profiles and lines.

C. Feather new materials into existing.

D. Secure at maximum 12 inches on center. Use concealed or exposed nailing to match original.

E. Miter corners and end joints.

F. Scribe to adjacent construction with maximum 1/8 inch gaps.

G. Sand cut ends and edges smooth.

2.4 INSTALLATION OF UNDERLAYERMEN

A. Starting at low edge, apply one 36 inch wide strip of underlayment horizontally over substrate.

B. Lap ends 6 inches minimum.

C. Fasten top of each strip under overlapping strip to hold strip in position until shingles are installed.

D. Apply 36 inch wide strip centered lengthwise over ridge. Nail at 12 inches on center on each side.

2.5 DISASSEMBLY AND REASSEMBLY

A. Notify architect prior to disassembly of siding at dormer windows and board and batten siding at west
   elevation. Provide a minimum of 72 hours notice prior to disassembly.

B. Salvage repairable wood elements. Catalog, label, and document original location, remove, protect,
   and store for reuse.

C. Reassemble removed elements and reinstall in original location.

END OF SECTION
SECTION 06 1100
FRAMING AND SHEATHING

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes:
1.  Framing.
2.  Blocking.
3.  Fire retardant treatment of wood.

B.  Related Sections:
1.  Division 01: Administrative, procedural, and temporary work requirements.

1.2  REFERENCES

A.  American Wood Protection Association (AWPA) U1 - Use Category System - User Specification for Treated Wood.

B.  ASTM International (ASTM):


D.  Southern Pine Inspection Bureau (SPIB) - Standard Grading Rules for Southern Pine Lumber.

E.  Western Red Cedar Lumber Association (WRCLA) - Grading Rules.

F.  Western Wood Products Association (WWPA) G-5 - Western Lumber Grading Rules.

1.3  SUBMITTALS

A.  Quality Control Submittals:
1.  Installer Qualifications: Include names of projects, street address, year completed, description of work, client’s name, and name, address, and telephone number of contact person.

1.4  QUALITY ASSURANCE

A.  Lumber Grading Agency: Certified to NIST PS 20.

B.  Identify lumber and sheet products by official grade mark.

C.  Fire Retardant Treated Products: Bear label of recognized independent testing laboratory indicating flame spread rating of 25 or less, tested to ASTM E84.

1.5  DELIVERY, STORAGE AND HANDLING

A.  Store materials minimum 6 inches above ground on framework or blocking and cover with protective waterproof covering providing for adequate air circulation.

B.  Do not store seasoned or treated materials in damp location.
C. Protect edges and corners of sheet materials from damage.

PART 2  PRODUCTS

2.1 MATERIALS

A. Dimension Lumber:
   1. Grading rules: WWPA.
   2. Species: Western red cedar.
   3. Grade: No.2.
   5. Edge: 25 percent of wood with wane edge.
   6. Maximum moisture content: 19 percent.

2.2 ACCESSORIES

A. Anchor Bolts: ASTM F1554.

B. Fasteners:
   1. Type and size: As required by conditions of use.
   2. Exterior locations and treated products: [Hot-dip galvanized steel, ASTM A153/A153M, Grade 90
      coating class.
   3. Other interior locations: Plain steel.

2.3 FABRICATION

A. Preservative Treatment.
   1. Treat lumber and sheet products in accordance with AWPA U1:
      a. Interior locations protected from moisture sources: Category UC1 - Interior/Dry.
      b. Interior locations subject to sources of moisture: Category UC2 - Interior/Damp.
      c. Exterior locations above ground: Category UC3A - Above Ground/Protected.

PART 3  EXECUTION

3.1 INSTALLATION

A. Set members level, plumb, and rigid.

B. Make provisions for erection loads, and for temporary bracing to maintain structure safe, plumb, and
   in true alignment until completion of erection and installation of permanent bracing.

C. Place beams, joists, and rafters with crown edge up.

D. Provide blocking, nailers, grounds, furring, and other similar items required to receive and support
   work.

3.2 TOLERANCES

A. Framing Members: 1/4 inch from true position, maximum.

END OF SECTION
SECTION 07 3129
WOOD SHINGLES

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Wood shingle roofing.
   2. Underlayment.
   3. Ventilated underlayment.
   4. Metal flashings and accessories.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 07 6200 - Sheet Metal Flashing and Trim.

1.2 REFERENCES

A. ASTM International (ASTM):
   1. D226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and
      Waterproofing.
   2. D412 - Standard Test Method for Vulcanized Rubber and Thermoplastic Rubbers and
      Thermoplastic Elastomers - Tension.
      Used as Steep Roofing Underlayment for Ice Dam Protection.
   5. D4869 - Standard Specification for Asphalt-Saturated Organic Felt Underlayment Used in
      Steep Slope Roofing.
   6. D6757 - Standard Specification for Underlayment Felt Containing Inorganic Fibers Used in
      Steep-Slope Roofing.

B. Cedar Shingle and Shake Bureau (CSSB)
   1. Grading Rules for Red Cedar Shingles and Shakes

C. National Roofing Contractors Association (NRCA) - Steep Roofing Manual.

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Technical data and installation instructions published by manufacturer of
      shingles and underlayment and fire retardant.
   2. Warranty: Sample warranty form.

B. Quality Control Submittals:

1.4 QUALITY ASSURANCE

A. Installer Qualifications: Minimum 5 years documented experience in work of this Section and who has
   completed at least three (3) projects of similar material and design.

B. Shingles: Class A Fire Hazard Classification, tested to ASTM E108.


D. Mock-ups:
1. Size: Sewing Room or Smokehouse roof to illustrate roof materials and installation.
   2. Approved mock-up may remain as part of the work.

1.5 PROJECT CONDITIONS

   A. Do not install underlayment at ambient or surface temperatures less than 40 degrees F or on wet or frozen substrate.
   B. Do not install shingles on wet or frozen substrate.

1.6 MAINTENANCE

   A. Extra Materials: 50 square feet of extra shingles.

1.7 WARRANTIES

   A. Furnish manufacturer's 30 year warranty providing coverage against wood shingle material defect.
   B. Furnish installer's 5 year warranty that work specified in this section will be free from defects of materials and workmanship:
      1. Make repairs to roofing system required due to defects in materials or workmanship resulting in water leakage into or through roofing system.
      2. Include cost of labor and materials necessary to make required repairs.
      3. Cover all roofing system components including waterproofing membrane, metal flashings and prefleshed accessories.
      4. Not limited to specific dollar amount.
      5. Transferable to subsequent building owners during warranty period.

PART 2 PRODUCTS

2.1 MATERIALS

   A. Wood Shingles:
      2. Length: 18 inches.

2.2 ACCESSORIES

   A. Underlayment: Meets or exceeds ASTM D226 Type II or ASTM D4869 Type IV.
   B. Ventilated Underlayment: Cedar Breather by Benjamin Obdyke Incorporated, or approved substitute.
   C. Fasteners: Stainless steel nails (Type 316 Stainless Steel required for fire-retardant treated shingles), minimum 19/64 inch head diameter x 0.104 inch diameter ring shank, length to penetrate minimum 3/4 inch into decking; allow 1/4 inch for ventilated underlayment.
   D. Plastic Cement: ASTM D4586, Type I, non running, heavy body material composed of asphalt and other mineral ingredients.
   E. Metal Flashings: Specified in Section 07 6200.

2.3 FABRICATION

   A. Fire Retardant Treatment: Treat shingles with fire retardant pressure impregnated at the factory. Mark each unit of fire retardant treated wood with producer's label and a label showing grade and rating. Mark on surface which will not be exposed after installation.
PART 3 EXECUTION

3.1 PREPARATION
A. Replace damaged and deteriorated wood decking under provisions of Section 06 1100.
B. Spacer and nailing strips over roof decking.

3.2 INSTALLATION OF UNDERLAYMENT
A. Starting at low edge, apply one 36 inch wide strip of underlayment horizontally over substrate.
B. Lap ends 6 inches minimum.
C. Fasten top of each strip under overlapping strip to hold strip in position until shingles are installed.
D. Apply 36 inch wide strip centered lengthwise over ridge. Nail at 12 inches on center on each side.

3.3 INSTALLATION OF VENTILATED UNDERLAYMENT
A. Install ventilated underlayment per manufacturer’s instructions.
B. Tack down underlayment with 1 nail per every 3 square feet.
C. Install underlayment with dimples down to present the flat side as the nailing surface.
D. Butt each course of underlayment against previous course. Do not overlap layers of underlayment.
E. Work from fascia to ridge while installing shingles to avoid walking directly on underlayment.

3.4 INSTALLATION OF FLASHINGS
A. Rake Edges:
   1. Install metal drip edge at rake edges with top flange on top of underlayment.
   2. Weather lap ends 2 inches minimum and seal with plastic cement.
   3. Nail top flange to decking at 8 inches on center maximum.
   4. Apply plastic cement to cover nail heads and at edge of flashings for entire length of metal.
B. Drip Edges:
   1. Apply drip edge at eave with top flange directly on deck; extend underlayment to outer face of drip edge.
   2. Lap ends 2 inches minimum and seal with plastic cement.
   3. Nail in place at 8 inches on center maximum.
   4. Apply plastic cement to cover nail heads and at edge of flashings for entire length of metal.
C. Other Flashings:
   1. Weather lap ends 2 inches minimum and seal with plastic cement.
   2. Nail in place at 8 inches on center maximum.
   3. Apply plastic cement to cover nail heads and at edge of flashings for entire length of metal.

3.5 INSTALLATION OF SHINGLES
A. Place shingles in accordance with CSSB requirements to produce straight coursing pattern, with a range of 5 3/4 to 6 3/4 inch exposure.
B. Cut shingles to fit at perimeter and around penetrations. Do not use damaged shingles.
C. Provide double course of shingles at eaves and as noted on Drawings.

D. Extend shingles 1-1/2 inch beyond gable end fascia boards, except extend 1-1/2 inch at drip edge.

E. Nail each shingle with two nails, placed maximum 3/4 inch from edges and maximum 1-1/2 inch above exposure line. Drive nails tight, but do not crush, distort, or split shingles.

3.6 INSTALLATION OF RIDGE ROLL

A. Cover ridges with metal ridge roll of same material as flashings.

END OF SECTION
PART 1  GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Aluminum roofing.
   2. Underlayment.
   3. Flashings, trim, and accessories.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
   1. 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated
      Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
   2. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High
      Performance Organic Coatings on Architectural Extrusions and Panels.
   3. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior
      Performing Organic Coatings on Architectural Extrusions and Panels.

B. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other
   Structures.

C. ASTM International (ASTM):
      Temperature Using a Portable Solar Reflectometer.
   3. D226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and
      Waterproofing.
      Systems by Uniform Static Air Pressure Difference.
   5. E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-
      Sloped Opaque Surfaces.

D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):

E. National Association of Architectural Metal Manufacturers (NAAMM)
   1. Metal Finishes Manual for Architectural and Metal Products

F. Underwriters Laboratory (UL):

1.3 SYSTEM DESCRIPTION

A. Design Requirements; design roof system to withstand:
   1. Live and dead loads in accordance with Building Code.
   2. Minimum wind pressures in accordance with Building Code, with maximum allowable deflection
      of L/240, tested in accordance with ASTM E1592.

Kreische & Brewery Renovation 07 6100-1 Sheet Metal Roofing
Roof Replacement
3. Movement caused by an ambient temperature range of 120 degrees F and a surface temperature range of 160 degrees F.

4. Wind Uplift Classification: The panel system shall be listed as a Class 90 windstorm rated system, as determined by UL 580.

5. Fire Resistance Classification: The panel system shall be listed as a Class A Roof Covering, as determined by UL 790.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Include dimensioned layout showing locations of seams, accessories, gage of metal, finishes, fastening methods, provisions for expansion and contraction, and details of joints.
   2. Samples: Minimum 6 x 6 inch panel section showing each profile proposed for use.
   3. Samples: 3 x 3 inch prefinished metal samples showing available colors.

1.5 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: Minimum 3 years documented experience in work of this Section.

1.6 PROJECT CONDITIONS

A. Do not form sheet metal at ambient temperatures less than 50 degrees F.

B. Do not apply underlayment at ambient or surface temperatures less than 40 degrees F or on wet or frozen substrate.

C. Do not install roofing on wet or frozen substrate.

1.7 WARRANTIES

A. Furnish installer's 5 year warranty providing coverage against water leakage through roofing system.

PART 2 PRODUCTS

2.1 MATERIALS

A. Factory Painted Aluminum Sheet: ASTM B209, not less than 0.032 inch thick, 3003 with H14 or H24 heat treatment, as per ASTM B209/209M.
   1. Recycle Content: Provide steel sheet with average recycled content such that postconsumer recycled content plus one-half of preconsumer recycled content is at least 45 percent.
   2. Smooth surface texture.
   3. Exposed finish: 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers' approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat. Color to be selected by architect.
   4. Concealed finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.2 ACCESSORIES

A. Underlayment: ASTM D4869, asphalt impregnated, Type IV, non perforated.

B. Slip Sheet: Rosin sized building paper.

C. Fasteners: ASTM type 316 stainless steel fasteners.
D. Panel Sealants: Provide sealant type recommended by manufacturer that are compatible with panel materials, are nonstaining, and do not damage panel finish.
   1. Sealant Tape: Pressure-sensitive, 100 percent solids, gray polyisobutylene compound sealant tape with release-paper backing. Provide permanently elastic, nonsag, nontoxic, nonstaining tape 1/2 inch wide and 1/8 inch thick.
   2. Joint Sealant: ASTM C 920; elastomeric polyurethane or silicone sealant; of type, grade, class, and use classifications required to seal joints in metal panels and remain weathertight; and as recommended in writing by metal panel manufacturer.

2.3 FABRICATION

A. General: Fabricate and finish metal panels and accessories at the factory, by manufacturer's standard procedures and processes, as necessary to fulfill indicated performance requirements demonstrated by laboratory testing. Comply with indicated profiles and with dimensional and structural requirements.

B. On-Site Fabrication: Subject to compliance with requirements of this Section, metal panels may be fabricated on-site using factory set, non-adjustable portable roll-forming equipment if panels are of same profile and warranted by manufacturer to be equal to factory-formed panels. Fabricate according to equipment manufacturer's written instructions and to comply with details shown.

C. Provide panel profile, including major ribs and intermediate stiffening ribs, if any, for full length of panel.

D. Sheet Metal Flashing and Trim: Formed from same material and gauge as roof panels, pre-painted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal roof panels. Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
   1. Form exposed sheet metal accessories that are without excessive oil canning, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
   2. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
   3. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer.
      a. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

2.4 FINISHES

A. Protect mechanical and painted finishes on exposed surfaces from damage by applying a strippable, temporary protective covering before shipping.

B. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in same piece are unacceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

C. Steel Panels and Accessories:
   1. Two-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat applied by panel manufacturer on a continuous coil coating line, with a top side dry film thickness of 0.75 ± 0.05 mil over 0.2 ± 0.05 mil primer coat, to provide a total dry film thickness of 0.95 ± 0.10 mil (0.024 mm). Prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions.
PART 3 EXECUTION

3.1 INSTALLATION OF UNDERLAYMENT

A. Starting at low edge, apply one 18 inch wide strip of underlayment horizontally over substrate. Apply following strips full 36 inch width; weatherlap preceding strip by 19 inches so that not less than two plies cover substrate at any point.

B. Lap ends 6 inches minimum.

C. Fasten top of each strip under overlapping strip to hold strip in position until roofing panels are installed.

D. Lap underlayment minimum 12 inches over hips and ridges from both sides. Apply 36 inch wide strip centered lengthwise over ridge. Nail at 12 inches on center on each side.

E. Extend minimum 4 inches up abutting vertical surfaces.

3.2 INSTALLATION OF ROOFING

A. Conform to SMACNA Manual.

B. Apply roofing panels beginning at low edge of roof.

C. Extend edge strip up under panels 4 inches minimum and secure at maximum 4 inches on center, located 1 inch down from upper edge of strips. Hook lower end of first panels over edge strip.

D. At end joints between panels, hook fold on lower end of upper panel into fold on upper end of underlying panel.

E. Stagger end joints of adjacent panels.

F. Form standing seams to 1 inch height; fold panel edges down to form double hem.

G. Fit flashings with square corners and surfaces true, aligned, and accurate to required profiles.

END CF SECTION
SECTION 07 6200
SHEET METAL FLASHING AND TRIM

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Metal flashings and trim.
   2. Flashings at shingle and metal roofing.
   3. T Joint cover at stone.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 07 9200 - Joint Sealers.
   3. Section 07-6100 - Sheet Metal Roofing.

1.2 REFERENCES

A. American Architectural Manufacturers Association (AAMA):
   1. 621 - Voluntary Specifications for High Performance Organic Coatings on Coil Coated
      Architectural Hot Dipped Galvanized (HDG) and Zinc-Aluminum Coated Steel Substrates.
   2. 2604 - Voluntary Specification, Performance Requirements and Test Procedures for High
      Performance Organic Coatings on Architectural Extrusions and Panels.
   3. 2605 - Voluntary Specification, Performance Requirements and Test Procedures for Superior
      Performing Organic Coatings on Architectural Extrusions and Panels.

B. American Society of Civil Engineers (ASCE) 7 - Minimum Design Loads for Buildings and Other
   Structures.

C. ASTM International (ASTM):
      Temperature Using a Portable Solar Reflectometer.
   3. D226 - Standard Specification for Asphalt Saturated Organic Felt Used in Roofing and
      Waterproofing.
      Systems by Uniform Static Air Pressure Difference.
   5. E1980 - Standard Practice for Calculating Solar Reflectance Index of Horizontal and Low-
      Sloped Opaque Surfaces.

D. Sheet Metal and Air Conditioning Contractors National Association (SMACNA):

E. National Association of Architectural Metal Manufacturers (NAAMM)
   1. Metal Finishes Manual for Architectural and Metal Products

1.3 SUBMITTALS

A. Submittals for Review:
   1. Shop Drawings: Show locations, types and thicknesses of metal, profiles, dimensions, finishes,
      fastening methods, provisions for expansion and contraction, and joint details.
   2. Samples:
      a. 3 x 3 inch prefinished metal samples showing available colors.

1.4 QUALITY ASSURANCE

A. Fabricator and Installer Qualifications: Minimum 2 years experience in work of this Section.
PART 2  PRODUCTS

2.1 MATERIALS

A. Factory Painted Aluminum Sheet: ASTM B209, not less than 0.032 inch thick, 3003 with H14 or H24 heat treatment, as per ASTM B209/209M.
   1. Smooth surface texture.
   2. Exposed finish: 2-Coat Fluoropolymer: AAMA 621. Fluoropolymer finish containing not less than 70 percent PVDF resin by weight in color coat. Manufacturers' approved applicator to prepare, pretreat, and apply coating to exposed metal surfaces to comply with coating and resin manufacturers' written instructions. Coating system shall provide nominal 1.0 mil (0.025 mm) dry film thickness, consisting of primer and color coat. Color to be selected by architect.
   3. Concealed finish: Apply pretreatment and manufacturer's standard white or light-colored polyester backer finish, consisting of prime coat and wash coat with a minimum total dry film thickness of 0.5 mil (0.013 mm).

2.2 ACCESSORIES

A. Solder: ASTM B52.

B. Fasteners: ASTM type 316 stainless steel fasteners.

C. Joint Sealers: Specified in Section 07 6100.

2.3 FABRICATION

A. Form flashing components from same material and gauge as roof panels, pre-painted with coil coating. Provide flashing and trim as required to seal against weather and to provide finished appearance. Finish flashing and trim with same finish system as adjacent metal roof panels. Fabricate flashing and trim to comply with manufacturer's recommendations and recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item indicated.
   1. Form flashing components from full single width sheet in continuous sections of minimum 10'-0" length. Provide mitered corners, joined using closed end pop rivets and butyl-based, solvent released one-part sealant.
   2. Form exposed sheet metal accessories that are without excessive oil caining, buckling, and tool marks and that are true to line and levels indicated, with exposed edges folded back to form hems.
   3. Sealed Joints: Form non-expansion, but movable, joints in metal to accommodate sealant and to comply with SMACNA standards.
   4. Conceal fasteners and expansion provisions where possible. Exposed fasteners are not allowed on faces of accessories exposed to view. Fabricate cleats and attachment devices from same material as accessory being anchored or from compatible, noncorrosive metal recommended in writing by metal panel manufacturer. Size: As recommended by SMACNA's "Architectural Sheet Metal Manual" or metal panel manufacturer for application, but not less than thickness of metal being secured.

PART 3  EXECUTION

3.1 INSTALLATION

A. Install flashing and sheet metal as indicated and in accordance with SMACNA Manual.

B. Install starter and edge strips, and cleats before starting installation.

C. Install surface mounted reglets true to lines and levels. Seal top of reglets with sealant.

D. Back paint cut metal surfaces with manufacturer's touch-up paint to a minimum dry film thickness of 15 mil.
E. Secure flashings in place using concealed fasteners. Use exposed fasteners only where permitted.

F. Apply plastic cement compound between metal flashings and felt flashings.

G. Fit flashings tight in place. Make corners square, surfaces true and straight in planes, and lines accurate to profiles.

H. Solder metal joints for full metal surface contact. After soldering, wash metal clean with neutralizing solution and rinse with water.

3.2 CLEANING

A. Clean sheet metal; remove slag, flux, stains, spots, and minor abrasions without damaging surface.

END OF SECTION
SECTION 07 9200
JOINT SEALERS

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Joint backup materials.
   2. Joint sealers.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2 REFERENCES

A. ASTM International (ASTM):

1.3 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Indicate sealers, primers, backup materials, bond breakers, and accessories proposed for use.
   2. Samples:
      a. 1/2 x 1/2 x 3 inch long joint sealer samples showing available colors.
   3. Warranty: Sample warranty form.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 2 years experience in work of this Section.

1.5 PROJECT CONDITIONS

A. Do not apply sealers at temperatures below 40 degrees F unless approved by sealer manufacturer.

1.6 WARRANTIES

A. Furnish manufacturer’s 10 year warranty providing coverage for exterior sealers and accessories that fail to provide air and water tight seal, exhibit loss of adhesion or cohesion, or do not cure.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Acceptable Manufacturers:
   1. BASF Building Systems. (www.buildingsystems.basf.com)
   2. Dow Corning Corp. (www.dowcorning.com)
   3. GE Silicones. (www.siliconeforbuilding.com)
   4. Pecora Corp. (www.pecora.com)
   5. Sika Corp. (www.sikausa.com)
   6. Tremco, Inc. (www.tremcosanals.com)

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

Kreische & Brewery Renovation
Roof Replacement
A. Joint Sealer Type 1:
   1. ASTM C920, Grade P, multiple component polyurethane type, self-leveling and slope grades.
   3. Color: To be selected from manufacturer's full color range.

B. Joint Sealer Type 2:
   1. ASTM C920, Grade NS, single component polyurethane type, non sag.
   3. Color: To be selected from manufacturer's full color range.

2.3 ACCESSORIES

A. Primers, Bondbreakers, and Solvents: As recommended by sealer manufacturer.

B. Joint Backing:
   1. ASTM C1330, closed cell polyethylene foam, preformed round joint filler, non absorbing, non staining, resilient, compatible with sealer and primer, recommended by sealer manufacturer for each sealer type.
   2. Size: Minimum 1.25 times joint width.

2.4 MIXES

A. Mix multiple component sealers in accordance with manufacturer's instructions.
   1. Mix with mechanical mixer; prevent air entrainment and overheating.
   2. Continue mixing until color is uniform.

PART 3 EXECUTION

3.1 PREPARATION

A. Remove loose and foreign matter that could impair adhesion. If surface has been subject to chemical contamination, contact sealer manufacturer for recommendation.

B. Clean and prime joints in accordance with manufacturer's instructions.

C. Protect adjacent surfaces with masking tape or protective coverings.

D. Sealer Dimensions:
   1. Minimum joint size: 1/4 x 1/4 inch.
   2. Joints 1/4 to 1/2 inch wide: Depth equal to width.
   3. Joints over 1/2 inch wide: Depth equal to one half of width.

3.2 APPLICATION

A. Apply products in accordance with manufacturer's instructions.

B. Install sealers and accessories in accordance with ASTM C1193.

C. Install acoustical sealers and accessories in accordance with ASTM C919.

D. Install joint backing to maintain required sealer dimensions. Compress backing approximately 25 percent without puncturing skin. Do not twist or stretch.

E. Use bondbreaker tape where joint backing is not installed.

F. Fill joints full without air pockets, embedded materials, ridges, and sags.

G. Tool sealer to smooth profile.
H. Apply sealer within manufacturer’s recommended temperature range.

3.3 CLEANING
A. Remove masking tape and protective coverings after sealer has cured.
B. Clean adjacent surfaces.

3.4 SCHEDULE

<table>
<thead>
<tr>
<th>JOINT LOCATION OR TYPE</th>
<th>SEALER TYPE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exterior Joints:</td>
<td></td>
</tr>
<tr>
<td>Joints in horizontal surfaces subject to pedestrian traffic</td>
<td>1</td>
</tr>
<tr>
<td>Joints in above-grade surfaces</td>
<td>2</td>
</tr>
</tbody>
</table>

END OF SECTION
SECTION 08 0383
WOOD WINDOW RESTORATION

PART 1  GENERAL

1.1  SUMMARY

A.  Section Includes:
   1.  Restoration of existing wood windows.

B.  Related Sections:
   1.  Division 01: Administrative, procedural, and temporary work requirements.
   2.  09 9100 - Painting.

1.2  SUBMITTALS

A.  Submittals for Review:
   1.  Shop Drawings: Include dimensions, profiles, relationship to adjacent construction, hardware, weatherstripping and attachments.
   2.  Illustrate weatherstripping in relationship to each frame and sash profile.

1.3  QUALITY ASSURANCE

A.  Installer Qualifications: Minimum 5 years experience in work of this Section.

B.  Mockup:
   1.  Size: One full sized window unit.
   2.  Locate where directed.
   3.  Approved mockup may remain as part of the Work.

PART 2  PRODUCTS

2.1  MATERIALS

A.  Wood and Epoxy Repair Compound: Specified in Section 06 0122.

B.  Glass and Glazing Accessories: Manufacturer’s standard clear glass unit.

C.  Hardware: Sash pulleys, sash lifts, and sash locks; material, profile and finish to match original.

D.  Weatherstripping: Zinc, profile to match original.

PART 3  EXECUTION

3.1  PREPARATION

A.  Remove paint under provisions of Section 09 9100.

3.2  RESTORATION

A.  Restore wood as specified in Section 06 0122.

B.  Sand or plane windows to provide tight fit without binding or sticking.

3.3  REPLACEMENT OF GLASS

A.  Replace damaged and missing glass.
B. Replace deteriorated glazing putty.

3.4 INSTALLATION OF WEATHERSTRIPPING
A. Apply in full length strips without splices.
B. Secure with double faced adhesive tape and fasteners spaced maximum 6 inches on center.

3.5 REFINISHING WOOD
A. Refinish wood as specified in Section 09 9100.
B. Remove sash from frames to permit access to edges. Finish edges same as faces.

END OF SECTION
SECTION 09 9100

PAINTING

PART 1 GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Paint removal, surface preparation and field application of paints.

B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.
   2. Section 06 0122 – Finish Carpentry Restoration.

1.2 REFERENCES

A. ASTM International (ASTM):


C. Society for Protective Coatings (SSPC) - Painting Manual.

1.3 DEFINITIONS

A. Low Pressure: Less than 60 PSI.

1.4 SUBMITTALS

A. Submittals for Review:
   1. Product Data: Manufacturer’s data on materials proposed for use including:
      a. Product designation and grade.
      b. Product analysis and performance characteristics.
      c. Standards compliance.
      d. Material content.
      e. Mixing and application procedures.
   2. Samples:
      a. 3 x 6 inch samples of each coating system on representative substrate.
      b. Step back successive coats so that all coats remain exposed.
      c. Indicate type of material used for each coat.
   3. Paint Schedule: Indicate types and locations of each surface, paint materials, and number of coats to be applied.

B. Quality Control Submittals:
   1. Applicator Qualifications: Include names of projects, street address, year completed, description of work, clients’ name, and name, address, and telephone number of contact person.

1.5 QUALITY ASSURANCE

A. Applicator Qualifications: Minimum 2 years documented experience in work of this Section.

B. Mockups:
   1. Refer to Section 06 0122.
   2. Size: Minimum 50 square feet, illustrating paint removal process.
   3. Illustrate surface preparation and painting materials and methods.
   4. Test varying concentrations of cleaning solution to determine optimum concentration.
5. Test adjacent non-masonry surfaces for detrimental reaction with cleaning solution.
6. Document materials used, dwell times, environmental conditions, and procedures used.
7. Locate where directed.
8. Submit documentation of materials and procedures used in approved mockup.


D. Testing Laboratory Services: A paint analysis has been performed on paint samples taken from the site. The results of this analysis are attached to these specifications as an appendix.

1.6 DELIVERY, STORAGE AND HANDLING

A. Container Labels: Include manufacturer's name, type of paint, brand name, lot number, brand code, coverage rates, surface preparation, drying time, cleanup requirements, color designation, and instructions for mixing and reducing.

B. Paint Materials: Store at ambient temperature from 45 to 90 degrees F in ventilated area, or as required by manufacturer's instructions.

1.7 PROJECT CONDITIONS

A. Do not apply materials when surface and ambient temperatures or relative humidity are outside ranges required by paint manufacturer.

B. Maintain ambient and substrate temperatures above manufacturer's minimum requirements for 24 hours before, during, and after paint application.

C. Do not apply materials when relative humidity is above 85 percent or when dew point is less than 5 degrees F different than ambient or surface temperature.

D. Provide lighting level of 30 footcandles at substrate surface.

1.8 MAINTENANCE

A. Extra Materials: 1 gallon of each color and sheen.

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Paints:
   1. Documents are based on products by Sherwin Williams. :
   2. Equivalent products by following manufacturers are acceptable:
      a. Benjamin Moore and Co.: 
      b. Devoe Paint Co. :
      c. Fuller O'Brien Paints.:
      d. I.C.I. Paints.:
      e. Kelly-Moore Paints.:
      f. PPG Architectural Finishes, Inc.:
      g. Pratt and Lambert Paints.:

B. Substitutions: Under provisions of Division 01.

2.2 MATERIALS

A. Paints: as scheduled at end of Section, or approved substitute.

2.3 ACCESSORIES

A. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners and other materials required to achieve specified finishes; commercial quality.
B. Patching Materials: Latex filler.
C. Fastener Head Cover Materials: Latex filler.

2.4 MIXES
A. Deliver paints pre-mixed and pre-tinted.
B. Uniformly mix to thoroughly disperse pigments.
C. Do not thin in excess of manufacturer's recommendations.
D. Re-mix paint during application; ensure complete dispersion of settled pigment and uniformity of color and gloss.

PART 3 EXECUTION

3.1 EXAMINATION
A. Test shop applied primer for compatibility with subsequent coatings.
B. Measure moisture content of surfaces using electronic moisture meter. Do not apply coatings unless moisture content of surfaces are below following maximums:
   1. Wood: 15 percent, measured to ASTM D4442.

3.2 PREPARATION
A. General:
   1. Protect adjacent and underlying surfaces.
   2. Remove or mask electrical plates, hardware, light fixture trim, escutcheons, and fittings prior to preparing surfaces or finishing.
   3. Correct defects and clean surfaces capable of affecting work of this section.
   4. Seal marks that may bleed through surface finishes with shellac.
   5. Power washing not permitted.

B. Impervious Surfaces: Remove mildew by scrubbing with solution of trisodium phosphate and bleach. Rinse with clean water and allow to dry.

C. Uncoated Ferrous Metals: SSPC Method SP2 - Hand Tool Cleaning or Method SP3 - Power Tool Cleaning.

D. Shop Primed Ferrous Metals:
   1. SSPC Method SP2 - Hand Tool Cleaning or Method SP3 - Power Tool Cleaning.
   2. Feather edges to make patches inconspicuous.
   3. Prime bare steel surfaces.

E. Wood:
   1. Remove dust, grit, and foreign matter
   2. Seal knots, pitch streaks, and sappy sections.

F. Glazing Compound: Allow compound to cure prior to applying primer; follow primer manufacturer's instructions.

G. Existing Surfaces:
   1. Remove loose, flaking, powdery, and peeling paints.
   2. Lightly sand glossy painted sections.
   3. Fill holes, cracks, depressions and other imperfections with patching compound; sand flush with surface.
4. Remove oil, grease, and wax by scraping; solvent wash and thoroughly rinse.
5. Remove rust by wire brushing to expose base metal.

3.3 APPLICATION

A. Apply primer on replacement wood elements or first coat closely following surface preparation to prevent recontamination.
B. Do not apply finishes to surfaces that are not dry.
C. Apply coatings to minimum dry film thickness recommended by manufacturer.
D. Apply each coat of paint slightly darker than preceding coat unless specified otherwise.
E. Apply coatings to uniform appearance without laps, sags, curtains, holidays, and brush marks.
F. Allow applied coats to dry before next coat is applied.
G. When required on deep and bright colors apply an additional finish coat to ensure color consistency.
H. Continue paint finishes behind wall-mounted accessories.
I. Match final coat to approved color samples.
J. Where clear finishes are specified, tint fillers to match wood. Work fillers into grain before set. Wipe excess from surface.
K. Prime concealed surfaces of exterior wood and interior wood in contact with masonry or cementitious materials with one coat primer paint.
L. Mechanical and Electrical Components:
   1. Paint factory primed equipment.
   2. Remove unfinished and primed louvers, grilles, covers, and access panels; paint separately.
   3. Paint exposed and insulated pipes, conduit, boxes, ducts, hangers, brackets, collars, and supports unless factory finished.
   4. Do not paint name tags or identifying markings.
M. Do not Paint:
   1. Surfaces indicated on Drawings or specified to be unpainted or unfinished.
   2. Surfaces with factory applied finish coat or integral finish.
   3. Architectural metals, including brass, bronze, stainless steel, and chrome plating.

3.4 ADJUSTING

A. Touch up or refinish disfigured surfaces.

3.5 CLEANING

A. Remove paint from adjacent surfaces.

3.6 PAINT SCHEDULE

A. Types of paint listed herein are set forth as standard of quality and type of coating required for each type of surface.
   1. Paint exposed surfaces of types listed in Paint Schedule.
   2. Paint other exposed surfaces not specifically listed with not less than two coats of appropriate type of coating.
B. Prime coat consists of touch up on shop primed and existing surfaces with intact coatings.
### Exterior Surfaces:
- **Ferrous and Galvanized Metals**
  - **Manufacturer**: Sherwin Williams
  - **Primer**: One Coat All Surface Enamel
  - **Top Coats**: Two Coats Duration Exterior Latex Satin Coating
- **Wood, Opaque Finish**
  - **Manufacturer**: Sherwin Williams
  - **Primer**: One Coat A100 Latex Wood Primer
  - **Top Coats**: Two coats Duration Exterior Latex Flat Coating

### 3.7 Paint Color Schedule

<table>
<thead>
<tr>
<th>Color Designation</th>
<th>Location</th>
<th>Manufacturer and Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>P-1</td>
<td>Siding, Trim</td>
<td>TBD</td>
</tr>
<tr>
<td>P-2</td>
<td>Windows</td>
<td>TBD</td>
</tr>
<tr>
<td>P-3</td>
<td>Gutters and Downspouts</td>
<td>TBD</td>
</tr>
</tbody>
</table>

**End of Section**
SECTION 32 9223
SEEDING

PART 1  GENERAL

1.1  SUMMARY
A. Section Includes:
   1. Seed installation.
   3. Fertilizing.
B. Related Sections:
   1. Division 01: Administrative, procedural, and temporary work requirements.

1.2  SUBMITTALS
A. Quality Control Submittals:
   1. Submit certification for grass species and seed source.

1.3  QUALITY ASSURANCE
A. Provide seed mixture in containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging.
B. Seed Producer: Company specializing in native seed production and harvesting with minimum 3 years documented experience, and certified by the State of Texas.

1.4  DELIVERY, STORAGE AND HANDLING
A. Deliver grass seed mixture in sealed containers. Seed in damaged packaging is not acceptable.
B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

PART 2  PRODUCTS

2.1  MATERIALS
A. Seed: Basis of Design: HabiTurf containing 62% Buffalograss, 30% Blue Grama, and 8% Curly Mesquite. [https://www.wildflower.org/project/habiturf]

2.2  ACCESSORIES
A. Fertilizer: Low nitrogen low phosphorus compost; type recommended for grass.
B. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

PART 3  EXECUTION

3.1  PREPARATION
A. Prepare subsoil; eliminate uneven areas and low spots.
B. Remove foreign materials and undesirable plants and their roots. Do not bury foreign material beneath areas to be seeded.
C. Remove contaminated topsoil.

1.2 APPLICATION

A. Fertilizing:
1. Apply fertilizer in accordance with manufacturer’s instructions.
2. Apply after tilling of topsoil.
3. Do not apply fertilizer at same time or with same machine as will be used to apply seed.
4. Mix thoroughly into upper 3 inches of topsoil.
5. Finish soil surface to fine granular texture, free of large stones.

B. Seeding:
1. Apply seed with seed broadcaster at a rate recommended by supplier.
2. Apply evenly in two intersecting directions.
3. Rake seed into soil and compact with garden roller. Maintain clear of shrubs and trees.
4. Apply water with a fine spray immediately after each area has been seeded. Saturate to 4 inch depth.
5. Irrigate and weed as in accordance with manufacturer’s instructions.

1.3 PROTECTION

A. Identify seeded areas with stakes and string around area periphery.

1.4 MAINTENANCE

A. Maintain in accordance with manufacturer’s instructions.

B. Mow grass at regular intervals to maintain at a height of 3 to 4 inches. Do not cut more than one third of grass blade at any one mowing.

C. Neatly trim edges and hand clip where necessary.

D. Immediately remove half of clippings after mowing and trimming.

E. Water to prevent grass and soil from drying out.

END CF SECTION
Exhibit 1

Asbestos and Lead-Containing Paint Survey
and Visual Hazardous Materials Assessment

Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas

March 21, 2017
Task Order 24
TPWD Project No. 122888
Terracon Project No. 96167875

Prepared for:
Texas Parks and Wildlife Department
Austin, Texas

Prepared by:
Terracon Consultants, Inc.
Austin, Texas
March 21, 2017

Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Attn: Ms. Kim Shelton, CTPM, CTCM
T: (512) 389-4695
E: kim.shelton@tpwd.texas.gov

Re: Asbestos and Lead-Containing Paint Survey
and Visual Hazardous Materials Assessment
Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas 78945
Task Order 24
TPWD Project No. 122688
Terracon Project No. 96167875

Dear Ms. Shelton:

The purpose of this report is to present the findings of an asbestos and lead-containing paint survey and visual hazardous materials assessment performed at the Kreische Historic House on the Monument Hill / Kreische Brewery State Historic Site in La Grange, Texas. Terracon Consultants, Inc. (Terracon) conducted the services on January 12, 2017, in general accordance with Terracon Proposal No. P96167875, dated October 27, 2016. We understand that these services were requested due to planned renovation of the Kreische Historic House on the site.

Asbestos-containing interior and exterior plaster materials were identified. Please refer to the attached report for details.

Lead-based paint was identified in the paint/coatings applied to select interior ceilings (wood and pressed tin) and interior doors/windows/frames (wood). The majority of paint/coatings sampled were found to be lead-containing or were found to contain lead in concentrations below the detection level of the analysis run. Please refer to the attached report for details.
The following table summarizes the visual hazardous building materials assessment findings:

### Hazardous Building Materials

<table>
<thead>
<tr>
<th>Building Name</th>
<th>PCB-containing ballasts</th>
<th>Hg-containing lights</th>
<th>Hg-Switches</th>
<th>CFC units</th>
<th>Batteries</th>
<th>Radioactive Sources*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kreische Historic House</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Hg = Mercury  
PCB = polychlorinated biphenyl  
CFC = chlorofluorocarbon  
*smoke alarm component

No fluorescent lighting units were observed in the building.

No HVAC equipment or refrigerators were observed to be associated with the building.

No alarm system or emergency light components which could contain rechargeable batteries were observed.

No smoke detectors (which typically have small radioactive sources) were observed in the building. Please refer to the attached report for details.

Terracon Consultants, Inc. (Terracon) appreciates the opportunity to provide this service to Texas Parks and Wildlife Department. If you have any questions regarding this report, please contact the undersigned at (512) 442-1122.

Sincerely,
Terracon Consultants, Inc.

**Project Manager:**

[Signature]

Mitch Stogner  
Individual Asbestos Consultant / Lead Inspector  
TDHS License No. 105648 / 2060879

**Reviewed By:**

[Signature]

Richard Ian Howes  
Individual Asbestos Consultant / Lead Abatement Project Designer  
TDHS License No. 105406 / 2090034

**Inspector:**

[Signature]

Roman Fanelli  
Asbestos Inspector  
TDHS License No. 603437
# TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0</td>
<td>INTRODUCTION</td>
<td>1</td>
</tr>
<tr>
<td>1.1</td>
<td>Project Objective</td>
<td>2</td>
</tr>
<tr>
<td>2.0</td>
<td>BUILDING DESCRIPTION</td>
<td>3</td>
</tr>
<tr>
<td>3.0</td>
<td>FIELD ACTIVITIES</td>
<td>3</td>
</tr>
<tr>
<td>3.1</td>
<td>Visual Assessment</td>
<td>3</td>
</tr>
<tr>
<td>3.2</td>
<td>Physical Assessment</td>
<td>3</td>
</tr>
<tr>
<td>3.3</td>
<td>Sample Collection</td>
<td>4</td>
</tr>
<tr>
<td>3.4</td>
<td>Sample Analysis</td>
<td>4</td>
</tr>
<tr>
<td>4.0</td>
<td>REGULATORY OVERVIEW</td>
<td>5</td>
</tr>
<tr>
<td>5.0</td>
<td>HAZARDOUS BUILDING MATERIALS</td>
<td>6</td>
</tr>
<tr>
<td>5.1</td>
<td>PCBs</td>
<td>6</td>
</tr>
<tr>
<td>5.2</td>
<td>Mercury</td>
<td>7</td>
</tr>
<tr>
<td>5.3</td>
<td>CFC</td>
<td>7</td>
</tr>
<tr>
<td>5.4</td>
<td>Batteries</td>
<td>7</td>
</tr>
<tr>
<td>5.5</td>
<td>Radioactive Sources</td>
<td>7</td>
</tr>
<tr>
<td>6.0</td>
<td>FINDINGS AND RECOMMENDATIONS</td>
<td>8</td>
</tr>
<tr>
<td>7.0</td>
<td>GENERAL COMMENTS</td>
<td>12</td>
</tr>
</tbody>
</table>

**APPENDIX A**  ASBESTOS SURVEY SAMPLE SUMMARY

**APPENDIX B**  CONFIRMED ASBESTOS-CONTAINING MATERIALS

**APPENDIX C**  ASBESTOS LABORATORY ANALYTICAL REPORTS

**APPENDIX D**  LEAD-CONTAINING PAINT SURVEY SAMPLE SUMMARY

**APPENDIX E**  LEAD LABORATORY ANALYTICAL REPORTS

**APPENDIX F**  LICENSES AND CERTIFICATIONS

**APPENDIX G**  SAMPLE LOCATION MAPS

**APPENDIX H**  ASBESTOS-CONTAINING MATERIALS (ACM) LOCATION MAPS

**APPENDIX I**  LEAD-BASED PAINT (LBP) LOCATION MAPS
ASBESTOS AND LEAD-CONTAINING PAINT SURVEY
AND VISUAL HAZARDOUS MATERIALS ASSESSMENT

Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas 78945

Task Order 24
TPWD Project No. 122888
Terracon Project No. 96167875
March 21, 2017

1.0 INTRODUCTION

The purpose of the asbestos survey, lead-containing paint inspection, and visual hazardous materials assessment, which was conducted at the Kreische Historic House on the Monument Hill / Kreische Brewery State Historic Site in La Grange, Texas, was to:

- locate, sample (if accessible), quantify and assess suspect building materials for the presence of asbestos, lead-containing paint; and,
- locate and quantify equipment (i.e., fluorescent light ballasts, tube lamps, thermostat switches, refrigerators, air conditioners, emergency lighting, exit signs, alarm systems, and fire/smoke alarms) potentially containing hazardous materials such as polychlorinated biphenyls (PCBs), elemental mercury (Hg), chlorofluorocarbons (CFCs), batteries, and/or potential radioactive sources.

The survey was conducted on January 12, 2017, by Mr. Mitch Stogner, a State of Texas licensed Asbestos Consultant and State of Texas certified Lead Inspector, and Mr. Roman Fanelli, a State of Texas licensed Asbestos Inspector, in general accordance with our proposal dated October 27, 2016.

Interior and exterior building components (including the roof) were surveyed and homogeneous areas of suspect asbestos-containing materials (ACM) and/or lead-containing paint (LCP) were visually identified and documented. Although reasonable effort was made to survey accessible suspect materials, additional suspect but un-sampled materials could be located in walls, in voids or in other concealed areas.

Suspect ACM samples were collected in accordance with Texas Asbestos Health Protection Rules (TAHPR) and in general accordance with EPA guidance document number EPA 560 5/84-024 and was intended to identify and assess suspect materials prior to renovation/demolition activities. Bulk samples of suspect asbestos-containing materials were delivered to a National
Voluntary Laboratory Accreditation Program (NVLAP) accredited and State of Texas licensed laboratory for analysis by Polarized Light Microscopy (PLM).

The lead-containing paint survey was conducted in general accordance with Texas Environmental Lead Reduction Rules (TELRR) and was intended to identify and assess suspect materials prior to renovation/demolition activities. Bulk samples of suspect lead-containing paint materials collected during the survey were analyzed by an American Industrial Hygiene Association (AIHA) accredited laboratory utilizing Atomic Absorption Spectrometry (AAS Flame) methodology.

In conjunction with the asbestos and lead-containing paint survey, a visual assessment for Hg-containing, PCB-containing, CFC-containing equipment, batteries in emergency lighting and alarm equipment, and smoke alarms with radioactive sources was also conducted at the site. Where observed, these items were documented and quantified.

1.1 Project Objective

The Texas Department of State Health Services (TDSHS) regulates asbestos-related activities in the State of Texas. The TDSHS Texas Asbestos Health Protection Rules (TAHPR) require that a licensed Asbestos Inspector conduct an asbestos survey which conforms to generally accepted industry standards such as the protocol specified in 40 CFR Part 763.85, commonly referred to as the Asbestos Hazard Emergency Response Act (AHERA) that applies to schools. Other factors are taken into consideration when determining the best method to determine the location, extent and condition of Asbestos-Containing Materials (ACMs) in a non-school building.

EPA regulation 40 CFR 61, Subpart M, National Emission Standards for Hazardous Air Pollutants (NESHAP), prohibits the release of asbestos fibers to the atmosphere during renovation or demolition activities. The asbestos NESHAP, which is enforced by the TDSHS, requires that prior to the commencement of demolition or renovation, that the facility or part of the facility affected be thoroughly inspected for the presence of both Friable (Regulated Asbestos-Containing Building Materials), and Non-Friable (Category I & II Asbestos-Containing Materials). The Occupational Health and Safety Administration (OSHA) has promulgated a worker protection standard for the disturbance of asbestos during renovation and demolition projects.

The Department of Housing and Urban Development (HUD) guidelines consider a lead content equal to or greater than 5,000 parts per million (PPM) to be the level at which paint is considered to be "lead-based" and at which point a potential hazard exists. The Occupational Safety and Health Administration (OSHA) considers paint containing any level of lead above the analytical method detection limit a potential hazard which should be communicated to any employees or contractors who may disturb the materials in the course of their assigned work.

The Resource Conservation and Recovery Act (RCRA) provides the EPA with the authority to regulate the waste status of demolition or renovation debris, including Hg, CFC, radioactive,
and PCB-containing materials. Specific regulatory requirements must be addressed prior to transporting, treating, storing, or disposing of hazardous wastes.

2.0 BUILDING DESCRIPTION

The historic building is a three-story, wood frame/stone/masonry block structure atop a pier and beam foundation. The roof is a sloped wood shingle system. Interior walls throughout the majority of the building consisted primarily of plaster with a painted and textured finish. The floors and ceilings in the majority of the building were finished primarily with exposed wood. No heating, ventilation, and air conditioning (HVAC) equipment was observed.

3.0 FIELD ACTIVITIES

The survey was conducted and bulk material samples were obtained by Mr. Mitch Stogner, a State of Texas licensed Asbestos Consultant (TDSHS License Number 10-5648) and State of Texas certified Lead Inspector (TDSHS License Number 20-60879), and Mr. Roman Fanelli, a State of Texas licensed Asbestos Inspector (TDSHS License Number 60-3437). All personnel utilized on the project are employed by Terracon. Copies of the licenses/certificates are attached in Appendix F. The survey was conducted in general accordance with the sample collection protocols established in the TAHPR and/or EPA regulation 40 CFR 763, the Asbestos Hazard Emergency Response Act (AHERA). The lead testing was conducted in general accordance with Texas Environmental Lead Reduction Rules (TELRR). A summary of survey activities is provided below.

3.1 Visual Assessment

Our survey activities began with a visual assessment of interior and exterior areas of the building to establish homogeneous areas of suspect ACM and/or lead-containing paint. A homogeneous area consists of building materials that appear similar throughout in terms of color, texture and date of application. The interior assessments were limited to accessible areas.

The exterior assessment included exterior walls, roofing materials and doors/windows. It should be noted that additional suspect but un-sampled materials could be located in walls, voids or other concealed areas. Building materials identified as concrete, glass, wood, masonry, metal or rubber are not considered suspect ACM and, therefore, were not sampled.

3.2 Physical Assessment

A physical assessment of each homogeneous area of suspect ACM was conducted to assess the friability and condition of the materials. A friable material is defined by the EPA as a material which
can be crumbled, pulverized or reduced to powder by hand pressure when dry. Friability was assessed by physically touching suspect materials.

3.3 Sample Collection

Based on results of the visual observation, bulk samples of suspect ACM were collected in general accordance with AHERA and TAHPR sampling protocols. Random samples of suspect materials were collected in each homogeneous area. The sample team member collected bulk samples using wet methods as applicable to reduce the potential for fiber release. Samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

Thirty (30) bulk samples were collected from ten (10) homogeneous areas of suspect ACM. A summary of suspect ACM samples collected during the survey is included as Appendix A.

Based on results of the visual observation, bulk samples of suspect lead-containing paint (LCP) were collected in general accordance with TELRR and HUD Guidelines. Random samples of suspect materials were collected from each observed paint combination. The sample team member collected bulk samples, the samples were placed in sealable containers and labeled with unique sample numbers using an indelible marker.

Sixteen (16) bulk samples were collected from sixteen (16) different paint combinations of suspect LCP. A summary of suspect lead-containing paint samples collected during the survey is included as Appendix D.

3.4 Sample Analysis

Bulk samples were submitted under chain of custody to Moody Labs of Farmers Branch, Texas for analysis by PLM with dispersion staining techniques per EPA’s Method for the Determination of Asbestos in Bulk Building Materials (600/R-93-116). The percentage of asbestos, where applicable, was determined by microscopical visual estimation. Moody Labs is accredited under the National Voluntary Laboratory Accreditation Program (NVLAP Accreditation No. 102056-0) and licensed by the TDSHS (License No. 300084). Reports of laboratory analysis of all suspect asbestos samples collected and sample chain-of-custody documentation are included in Appendix C.

Bulk samples of the suspect lead-containing paint materials collected were analyzed by Environmental Hazards Services, L.L.C., an American Industrial Hygiene Association (AIHA) accredited laboratory utilizing Atomic Absorption Spectrometry (AAS Flame) methodology. Reports of laboratory analysis of the suspect lead-containing paint samples collected and sample chain-of-custody documentation are included in Appendix E.
4.0 REGULATORY OVERVIEW

The State of Texas has established the TAHPR which requires any asbestos-related activity to be performed by an individual licensed by the State of Texas, through the TDOSH. An asbestos related activity consists of the disturbance (whether intentional or unintentional), removal, encapsulation, or enclosure of asbestos, including preparations or final clearance, the performance of asbestos surveys, the development of management plans and response actions, asbestos project design, the collection or analysis of asbestos samples, monitoring for airborne asbestos, bidding for a contract for any of these activities, or any other activity required to be licensed under TAHPR.

Abatement must be performed by a State of Texas licensed asbestos abatement contractor in accordance with a project design prepared by a State of Texas licensed asbestos consultant. In addition, third party air monitoring must be conducted during the abatement activities.

The asbestos NESHAP (40 CFR Part 61 Subpart M) regulates asbestos fiber emission and asbestos waste disposal practices. It also requires the identification and classification of existing building materials prior to demolition or renovation activity. Under NESHAP, asbestos containing building materials are classified as either friable, Category I non-friable or Category II non-friable ACM. Friable materials are those that, when dry, may be crumbled, pulverized or reduced to powder by hand pressure. Category I non-friable ACM includes packing, gaskets, resilient floor coverings and asphalt roofing products containing more than 1% asbestos. Category II non-friable ACM are any materials other than Category I materials that contain more than 1% asbestos.

Friable ACM, Category I and II non-friable ACM which is in poor condition and has become friable or which will be subject to drilling, sanding, grinding, cutting, or abrading and which could be crushed or pulverized during anticipated renovation or demolition activities are considered regulated ACM (RACM). RACM must be removed prior to renovation or demolition activities.

The TAHPR and NESHAP require that written notification be submitted before beginning renovation projects which include the disturbance of any asbestos-containing material (ACM) in a building or facility, or before the demolition of a building or facility, even when no asbestos is present. This written notification must be provided to the TDOSH at least 10 working days prior to the commencement of asbestos abatement or demolition activities. Removal of RACM must be conducted by a State of Texas licensed asbestos contractor. In addition, third party air monitoring must be performed during the abatement.

The OSHA Asbestos standard for the construction industry (29 CFR 1926.1101) regulates workplace exposure to asbestos. The OSHA standard requires employee exposure to airborne asbestos fibers be maintained below 0.1 asbestos fibers per cubic centimeter of air (0.1 f/cc).
The OSHA standard classifies construction and maintenance activities which could disturb ACM and specifies work practices and precautions which employers must follow when engaging in each class of regulated work. States that administer their own federally approved state OSHA programs may require other precautions.

The Department of Housing and Urban Development (HUD) guidelines consider a lead content equal to or greater than 5,000 parts per million (PPM) to be the level at which paint is considered to be "lead-based" and at which point a potential hazard exists. The Occupational Safety and Health Administration (OSHA) considers paint containing any level of lead above the analytical method detection limit a potential hazard which should be communicated to any employees or contractors who may disturb the materials in the course of their assigned work.

As the facility is a public facility rather than Child Occupied or Target Housing, HUD and TDSHS lead regulations do not apply to removal operations within the facility. It is, however, recommended that they be consulted as a general guideline for occupant protection.

### 5.0 VISUAL HAZARDOUS BUILDING MATERIALS ASSESSMENT

Materials such as mercury, CFCs, radioactive sources, batteries, and PCBs can be found in building components. These materials are considered environmental hazards and require special precautions if they will be removed in association with the demolition to prevent their entry into the environment. On occasion, manufacturers will label the equipment regarding the presence or absence of a hazardous material. To assess for these hazards, some building components were partially disassembled to locate a manufacturer’s label.

#### 5.1 PCBs

PCBs range from clear, oily liquids to white or yellowish waxy solids, depending on the degree of chlorination. They are stable, thermoplastic and non-flammable materials that found chief use in insulation for electric cables and wires in the production of electric condensers and additives for extreme pressure lubricants. Light ballasts can contain about one ounce of the toxic substance. The transportation, disposal and spill clean-up of PCB-containing ballasts is regulated by the Toxic Substances Control Act (TSCA), which is found in 40 Code of Federal Regulations (CFR) Part 261.

During the assessment of the site, no fluorescent light fixtures were observed. Typically, ballasts manufactured prior to 1979 are presumed to contain PCBs unless clearly marked as containing “No PCBs”. Ballasts that do not contain a "No PCBs" label are presumed to be PCB-containing.
5.2 Mercury

Metallic mercury is a silver-white liquid at room temperature. Elemental and inorganic mercury compounds are used in manufacturing scientific instruments, electric equipment, mercury vapor lamps and high intensity discharge (HID) lights. Mercury is considered a hazardous material due to its ability to bioaccumulate within the environment. Recycling mercury-containing components reduces the load of mercury entering the environment.

No HVAC equipment or thermostatic control units were observed in the building. No mercury-containing components were observed on the site at the time of the visual assessment.

5.3 CFC

A chlorofluorocarbon (CFC) is an organic compound that consists of carbon, hydrogen, chlorine, and fluorine. Many CFCs have been widely used as refrigerants, propellants, and solvents. Chlorofluorocarbons are believed to cause depletion of the atmospheric ozone layer.

No HVAC equipment or refrigerator unit, which may potentially contain CFCs were observed in the building.

5.4 Batteries

Batteries containing nickel-cadmium and lead-acid can be found in emergency lighting, exit signs, and alarm systems. The nickel-cadmium and lead-acid in these batteries are considered to be toxic.

Interior building areas were observed to contain no emergency lighting units or alarm systems that could potentially contain batteries.

5.5 Radioactive Sources

There are several types of smoke detectors and fire alarms. Ionization chamber and photoelectric smoke detectors are the two most common types available commercially. Ionization chamber smoke detectors contain a small amount of radioactive material encapsulated in a metal chamber. Typically, the radioactive material is a composite of americium-241.

No smoke detectors were observed in building. If any smoke alarm equipment is identified, prior to demolition or renovations which would disturb the smoke alarm units, these units should be removed intact, packaged, and sent to the manufacturer of the unit or an approved recycling facility.
6.0 FINDINGS AND RECOMMENDATIONS

Two (2) of the homogeneous materials sampled and analyzed were found to contain asbestos:

- **Exterior Plaster** – The white exterior plaster materials with a smooth texture utilized on the south exterior elevation and south end of the east exterior elevation were found to contain 2% Chrysotile asbestos. The asbestos-containing exterior plaster materials identified were noted to be in good condition and were assessed as being non-friable. It is estimated that there exists approximately 1,100 square feet of these materials in the above listed areas (see drawings in Appendix H for approximate locations).

- **Interior Plaster** – The white interior plaster materials with a brushed-on texture utilized on the interior walls in the 1st Floor (throughout Rooms 106 and 107), 2nd Floor (throughout Rooms 202 and 203), and Attic (north and south walls in Central and West Rooms) were found to contain 3% Chrysotile asbestos. The asbestos-containing interior plaster materials identified were noted to be in fair condition and were assessed as being non-friable. It is estimated that there exists approximately 2,500 square feet of these materials in the above listed areas (see drawings in Appendix H for approximate locations).

It should be noted that suspect materials, other than those identified during the January 12, 2017, survey may exist within the building. Should suspect materials other than those which were identified during this survey be uncovered prior to or during the demolition process, those materials should be assumed asbestos-containing until sampling and analysis can confirm or deny their asbestos content.

A summary of the classification, condition and approximate quantity of confirmed ACM are presented in Appendix B. Laboratory analytical reports are included in Appendix C.

If the Client does not intend to renovate or demolish the building, the asbestos-containing materials associated with the building should be managed in place. This in-place management should include such operations as repairing any damaged materials, protecting the remaining asbestos-containing materials from further damage, and developing a plan to periodically monitor the condition of the asbestos-containing materials. Notification of the presence of the materials should also be made to residents, employees and outside contractors so that they do not inadvertently disturb the remaining asbestos-containing materials.

As it is understood renovation operations which will disturb the asbestos-containing materials are planned, it is recommended that the asbestos-containing materials be removed prior to conducting any renovation. The TDSHS TAHPR require that any removal of asbestos-containing materials associated with the structure be conducted by trained and licensed asbestos abatement
personnel.

According to the TDSHS TAHPR, an abatement project involving the removal of friable asbestos-containing materials and/or the removal of more than 160 square feet or 260 linear feet of non-friable asbestos-containing materials would need to be designed by a licensed Individual Asbestos Consultant. Air monitoring by a licensed third-party Air Monitor would be required during the actual removal work regardless of the size of the project. Terracon would be pleased to provide a proposal to provide these services.

It is important to note the TAHPR and NESHAP require that written notification be submitted before beginning renovation projects which include the disturbance of any asbestos-containing material (ACM) in a building or facility, or before the demolition of a building or facility, even when no asbestos is present. This written notification must be provided to the TDSHS at least 10 working days prior to the commencement of asbestos abatement or demolition activities. These activities must be performed in accordance with the current TDSHS, EPA, and OSHA guidelines.

Three (3) of the paint materials sampled and analyzed were found to contain lead in a concentration greater than 5,000 PPM and are considered Lead-based Paint by HUD:

- KH-L09 – The white paint material applied to the metal (pressed tin) ceilings in Room 101 on the 1st Floor and Room 201 on the 2nd Floor was found to contain 7,400 ppm lead. This material was observed to be in poor condition.

- KH-L10 – The white on beige paint material applied to the wood ceilings in Rooms 106 and 107 on the 1st Floor and in Room 203 on the 2nd Floor was found to contain 26,000 ppm lead. This material was observed to be in fair condition.

- KH-L16 – The white on light green paint material applied to the interior wood doors, windows, and door/window frames in the 1st Floor, 2nd Floor, and Attic was found to contain 65,000 ppm lead. This material was observed to be in fair condition.

Nine (9) of the paint materials sampled and analyzed as part of this survey were found to contain lead in a concentration exceeding the detection limit, but less than 5,000 PPM which would render the material “Lead-Containing” (considered a potential hazard by OSHA).

- KH-L01 – The light brown paint material applied to the wood floors in Rooms 202 and 203 on the 2nd Floor was found to contain 1,600 ppm lead. This material was observed to be in good condition.
• KH-L02 – The light green paint material applied to the exterior southeast wood stairway between the 1st and 2nd Floors was found to contain 210 ppm lead. This material was observed to be in good condition.

• KH-L06 – The white paint material applied to the exterior wood handrails, columns, beams and stairwells of the south porch on the 1st and 2nd Floors was found to contain 580 ppm lead. This material was observed to be in fair condition.

• KH-L07 – The red paint material applied to the exterior metal flashing, trim, peaks, and chimneys on the main roof and on the southwest sloped roof was found to contain 1,300 ppm lead. This material was observed to be in fair condition.

• KH-L08 – The off-white on tan paint material applied to the exterior plaster on the south, west, and east elevations was found to contain 350 ppm lead. This material was observed to be in fair condition.

• KH-L11 – The peach paint material applied to the exterior concrete window trim at the west and south windows and south door of Room 201, southwest window of Room 106, and south windows of the Attic was found to contain 700 ppm lead. This material was observed to be in fair condition.

• KH-L12 – The white paint material applied to the exterior plaster on the south, west, and east elevations of Room 101 and all elevations of Room 205 was found to contain 62 ppm lead. This material was observed to be in fair condition.

• KH-L14 – The white on light green paint material applied to the interior wood doors, windows, and door/window frames in Room 205 was found to contain 450 ppm lead. This material was observed to be in fair condition.

• KH-L15 – The white on beige paint material applied to the majority of the interior plaster walls throughout the 1st and 2nd Floors and on portions of the north and south walls of the West and Central Rooms in the Attic was found to contain 54 ppm lead. This material was observed to be in fair to poor condition.

Four (4) of the paint materials sampled and analyzed as part of this survey were found to contain lead in concentrations below the detection limit and would be considered by OSHA to present no workforce hazard:

• KH-L03 – The white paint material applied to the exterior wood ramp and handrail at the west side of the 2nd Floor was found to contain <46 ppm lead. This material was observed to be in fair condition.
• KH-L04 – The green paint material applied to the exterior wood window shutters on the north and west exterior elevations of the 2nd Floor was found to contain <43 ppm lead. This material was observed to be in good condition.

• KH-L05 – The white paint material applied to the exterior metal roof gutters and downspouts on the south and west exterior elevations was found to contain <39 ppm lead. This material was observed to be in fair condition.

• KH-L13 – The white paint material applied to the exterior wood doors, windows, and door/window frames was found to contain <47 ppm lead. This material was observed to be in fair to poor condition.

In areas where the Client does not intend to renovate or demolish the facility, the lead-based/containing paint materials, which will remain in the facility, should be managed in place. It is recommended that this in-place management should include such operations as repairing any damaged materials which are not removed as part of any renovation/demolition operations, protecting the remaining lead-based/containing paint materials from further damage, and developing a plan to periodically monitor the condition of the lead-based/containing paint materials. Notification of the presence of the materials should also be made to employees and outside contractors so that they do not inadvertently disturb the remaining lead-containing paint materials.

In areas where renovations are to be conducted which could disturb the lead-based/containing materials, it is recommended that contracting personnel who may disturb the lead-based/containing paint materials within the facility be made aware of the lead content in the materials so that they may exercise proper OSHA procedures for personnel protection or possibly employ protective procedures when working with the coatings.

It is recommended that any wood building components which have lead-based paint coatings and are to be removed as part of any planned renovation project be removed by a lead remediation contractor and prior to disposal be treated with a lead demolition encapsulant in order to reduce the potential of a lead hazardous waste stream resulting from the project.

It is recommended that any painted metal building components which are to be removed from the facility as part of a renovation or demolition activity be segregated from the waste stream and be transferred to a suitable metal recycling facility.

As the facility is a public facility rather than Target Housing, HUD and TDHS lead regulations do not apply to removal operations within the facility. It is, however, recommended that they be consulted as a general guideline for occupant protection and that OSHA notification be made to
all employees or contractors working on any repair, renovation or demolition projects within the facility.

Compliance with applicable OSHA lead regulations is the responsibility of the contractor performing the work and it is recommended that they be required to communicate potential lead hazards to their workforce and utilize lead-safe work practices such as outlined in the EPA Renovation, Repair, and Painting Final Rule (40 CFR 745) or applicable portions of the Structural Steel Painting Council (SSPC) Guidelines. It is further recommended that activities such as flame/torch dismantling, dry sanding and/or dry grinding of any components with lead-containing paint materials applied should be prohibited as part of any repair, renovation or demolition activity.

7.0 GENERAL COMMENTS

This survey was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, conclusions and recommendations expressed in this report are based on conditions observed during our survey of the building. The information contained in this report is relevant to the date on which this survey was performed, and should not be relied upon to represent conditions at a later date.

This report has been prepared on behalf of and exclusively for use by Texas Parks and Wildlife Department for specific application to their project as discussed.

This report is not a bidding document. Contractors or consultants reviewing this report must draw their own conclusions regarding further investigation or remediation deemed necessary. Terracon does not warrant the work of regulatory agencies, laboratories or other third parties supplying information which may have been used in the preparation of this report. No warranty, express or implied is made.
APPENDIX A

ASBESTOS SURVEY SAMPLE SUMMARY
## APPENDIX A
### ASBESTOS SURVEY SAMPLE SUMMARY

**Kreische Historic House**  
**Monument Hill / Kreische Brewery SHS**  
**414 State Loop 92**  
**La Grange, Texas**  
**Terracon Project No. 96167875**

<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>MATERIAL DESCRIPTION</th>
<th>HOMOGENEOUS AREA</th>
<th>SAMPLE LOCATION</th>
<th>LAB RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-01</td>
<td>Exterior Plaster – White with smooth texture</td>
<td>Utilized on the south exterior elevation and south end of the east exterior elevation (see drawings in Appendix H)</td>
<td>2nd Floor, south exterior wall, outside Room 202, west portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-02</td>
<td>Exterior Plaster – White with smooth texture</td>
<td>Utilized on the south exterior elevation and south end of the east exterior elevation (see drawings in Appendix H)</td>
<td>2nd Floor, east exterior wall, outside Room 203, south portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-03</td>
<td>Exterior Plaster – White with smooth texture</td>
<td>Utilized on the south exterior elevation and south end of the east exterior elevation (see drawings in Appendix H)</td>
<td>1st Floor, south exterior wall, outside Room 107, east portion</td>
<td>2% Chrysotile</td>
</tr>
<tr>
<td>KH-04</td>
<td>Interior Plaster – White with brushed-on texture</td>
<td>Utilized on the interior walls in Rooms 106 and 107 on the 1st Floor; Rooms 202 and 203 on the 2nd Floor; and West and Central Rooms in the Attic – (see drawings in Appendix H)</td>
<td>1st Floor, Room 107, north wall, west portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-05</td>
<td>Interior Plaster – White with brushed-on texture</td>
<td>Utilized on the interior walls in Rooms 106 and 107 on the 1st Floor; Rooms 202 and 203 on the 2nd Floor; and West and Central Rooms in the Attic – (see drawings in Appendix H)</td>
<td>2nd Floor, Room 202, north wall, east-central portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-06</td>
<td>Interior Plaster – White with brushed-on texture</td>
<td>Utilized on the interior walls in Rooms 106 and 107 on the 1st Floor; Rooms 202 and 203 on the 2nd Floor; and West and Central Rooms in the Attic – (see drawings in Appendix H)</td>
<td>Attic, West Room, south wall, west portion</td>
<td>3% Chrysotile</td>
</tr>
<tr>
<td>SAMPLE NUMBER</td>
<td>MATERIAL DESCRIPTION</td>
<td>HOMOGENEOUS AREA</td>
<td>SAMPLE LOCATION</td>
<td>LAB RESULTS</td>
</tr>
<tr>
<td>---------------</td>
<td>--------------------------------------------------</td>
<td>----------------------------------------------------------------------------------</td>
<td>-----------------------------------------------------</td>
<td>-------------------</td>
</tr>
<tr>
<td>KH-07</td>
<td>Interior Plaster – White/Cream</td>
<td>Utilized on the interior walls in Rooms 101, 102, and 103 on the 1st Floor and Room 201 on the 2nd Floor</td>
<td>2nd Floor, Room 201, south wall, east portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-08</td>
<td>Interior Plaster – White/Cream</td>
<td>Utilized on the interior walls in Rooms 101, 102, and 103 on the 1st Floor and Room 201 on the 2nd Floor</td>
<td>1st Floor, Room 101, west wall, central portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-09</td>
<td>Interior Plaster – White/Cream</td>
<td>Utilized on the interior walls in Rooms 101, 102, and 103 on the 1st Floor and Room 201 on the 2nd Floor</td>
<td>1st Floor, Room 103, north wall, central portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-10</td>
<td>Exterior Plaster – White with brushed-on texture</td>
<td>Utilized on the exterior walls of Room 101 (south and east) on the 1st Floor and on the exterior walls of Room 201 (west and south) on the 2nd Floor</td>
<td>2nd Floor, west exterior wall, outside Room 201, north portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-11</td>
<td>Exterior Plaster – White with brushed-on texture</td>
<td>Utilized on the exterior walls of Room 101 (south and east) on the 1st Floor and on the exterior walls of Room 201 (west and south) on the 2nd Floor</td>
<td>1st Floor, south exterior wall, outside Room 101, west portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-12</td>
<td>Exterior Plaster – White with brushed-on texture</td>
<td>Utilized on the exterior walls of Room 101 (south and east) on the 1st Floor and on the exterior walls of Room 201 (west and south) on the 2nd Floor</td>
<td>1st Floor, east exterior wall, outside Room 101, north portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-13</td>
<td>Interior Plaster – White with brushed-on texture</td>
<td>Utilized on the interior walls of Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, Room 205, north wall, west portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-14</td>
<td>Interior Plaster – White with brushed-on texture</td>
<td>Utilized on the interior walls of Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, Room 205, north wall, west portion</td>
<td>No Asbestos Detected</td>
</tr>
</tbody>
</table>
## APPENDIX A

**ASBESTOS SURVEY SAMPLE SUMMARY**

Kreische Historic House  
Monument Hill / Kreische Brewery SHS  
414 State Loop 92  
La Grange, Texas  
Terracon Project No. 96167875

<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>MATERIAL DESCRIPTION</th>
<th>HOMOGENEOUS AREA</th>
<th>SAMPLE LOCATION</th>
<th>LAB RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-15</td>
<td>Interior Plaster – White with</td>
<td>Utilized on the interior walls of Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, Room 205, north wall, west portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>brushed-on texture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-16</td>
<td>Exterior Plaster – White with</td>
<td>Utilized on the exterior walls of Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, south exterior wall of Room 205, east portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>brushed-on texture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-17</td>
<td>Exterior Plaster – White with</td>
<td>Utilized on the exterior walls of Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, north exterior wall of Room 205, east portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>brushed-on texture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-18</td>
<td>Exterior Plaster – White with</td>
<td>Utilized on the exterior walls of Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, west exterior wall of Room 205, north portion</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>brushed-on texture</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-19</td>
<td>Exterior Window Glazing Compound -</td>
<td>Utilized on the exterior sides of the windows to Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, north window of Room 205, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>Tan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-20</td>
<td>Exterior Window Glazing Compound -</td>
<td>Utilized on the exterior sides of the windows to Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, west window of Room 205, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>Tan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-21</td>
<td>Exterior Window Glazing Compound -</td>
<td>Utilized on the exterior sides of the windows to Room 205 on the 2nd Floor (cistern)</td>
<td>2nd Floor, west window of Room 205, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>Tan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-22</td>
<td>Exterior Window Glazing Compound -</td>
<td>Utilized on the exterior sides of the majority of windows associated with the main house</td>
<td>2nd Floor, southeast window of Room 201, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>Gray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-23</td>
<td>Exterior Window Glazing Compound -</td>
<td>Utilized on the exterior sides of the majority of windows associated with the main house</td>
<td>1st Floor, northeast window of Room 107, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>Gray</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-24</td>
<td>Exterior Window Glazing Compound -</td>
<td>Utilized on the exterior sides of the majority of windows associated with the main house</td>
<td>2nd Floor, northwest window of Room 202, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td></td>
<td>Gray</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
### APPENDIX A
ASBESTOS SURVEY SAMPLE SUMMARY
Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas
Terracon Project No. 96167875

<table>
<thead>
<tr>
<th>SAMPLE NUMBER</th>
<th>MATERIAL DESCRIPTION</th>
<th>HOMOGENEOUS AREA</th>
<th>SAMPLE LOCATION</th>
<th>LAB RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-25</td>
<td>Exterior Window Glazing Compound - White</td>
<td>Utilized on the exterior sides of the two small windows outside Rooms 103 and 106 on the 1st Floor (north elevation)</td>
<td>1st Floor, north window of Room 107, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-26</td>
<td>Exterior Window Glazing Compound - White</td>
<td>Utilized on the exterior sides of the two small windows outside Rooms 103 and 106 on the 1st Floor (north elevation)</td>
<td>1st Floor, north window of Room 107, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-27</td>
<td>Exterior Window Glazing Compound - White</td>
<td>Utilized on the exterior sides of the two small windows outside Rooms 103 and 106 on the 1st Floor (north elevation)</td>
<td>1st Floor, north window of Room 107, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-28</td>
<td>Exterior Window and Door Frame Caulk - White</td>
<td>Utilized around the exterior sides of the majority of window and door frames</td>
<td>2nd Floor, north window to Room 201, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-29</td>
<td>Exterior Window and Door Frame Caulk - White</td>
<td>Utilized around the exterior sides of the majority of window and door frames</td>
<td>1st Floor, northeast window to Room 107, exterior</td>
<td>No Asbestos Detected</td>
</tr>
<tr>
<td>KH-30</td>
<td>Exterior Window and Door Frame Caulk - White</td>
<td>Utilized around the exterior sides of the majority of window and door frames</td>
<td>1st Floor, southeast window to Room 106, exterior</td>
<td>No Asbestos Detected</td>
</tr>
</tbody>
</table>
APPENDIX B

CONFIRMED ASBESTOS-CONTAINING MATERIALS
# APPENDIX B
CONFIRMED ASBESTOS-CONTAINING MATERIALS
Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas
Terracon Project No. 96167875

<table>
<thead>
<tr>
<th>SAMPLE NO.</th>
<th>MATERIAL DESCRIPTION</th>
<th>HOMOGENEOUS AREA</th>
<th>PERCENT / TYPE ASBESTOS</th>
<th>NESHAP CLASSIFICATION</th>
<th>MATERIAL CONDITION</th>
<th>ESTIMATED QUANTITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-03</td>
<td>Exterior Plaster – White with smooth texture</td>
<td>Utilized on the south exterior elevation and south end of the east exterior elevation (see drawings in Appendix H)</td>
<td>2% Chrysotile</td>
<td>RACM</td>
<td>Good</td>
<td>1,100 Sq. Ft.</td>
</tr>
<tr>
<td>KH-06</td>
<td>Interior Plaster – White with brushed-on texture</td>
<td>Utilized on the interior walls in Rooms 106 and 107 on the 1st Floor; Rooms 202 and 203 on the 2nd Floor; and West and Central Rooms in the Attic – (see drawings in Appendix H)</td>
<td>3% Chrysotile</td>
<td>RACM</td>
<td>Fair</td>
<td>2,500 Sq. Ft.</td>
</tr>
</tbody>
</table>

Sq. Ft. = square feet  
Lin. Ft. = linear feet

Category I: Includes asbestos-containing packings, gaskets, asphaltic roofing products, resilient flooring and associated mastics.

Category II: Includes any non-friable asbestos-containing materials not categorized as Category I.

Regulated Asbestos-Containing Material (RACM): Friable asbestos-containing materials and/or Category I and II non-friable asbestos-containing materials which have a high probability of or have become friable by forces expected to be exerted in the course of a renovation or demolition process.
APPENDIX C

ASBESTOS LABORATORY ANALYTICAL REPORTS
PLM Summary Report

2051 Valley View Lane
Farmers Branch, TX 75234 Phone: (972) 241-8460

Lab Job No.: 17B-00615
Report Date: 01/18/2017
Sample Date: 01/12/2017

Identification: Asbestos, Bulk Sample Analysis
Test Method: Polarized Light Microscopy / Dispersion Staining (PLM/DS)
EPA Method 600 / R-93 / 116

On 1/16/2017, thirty (30) bulk material samples were submitted by Mitch Stogner of Terracon - Austin for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Client Sample Description / Location</th>
<th>Asbestos Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-01</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-02</td>
<td>Not Provided</td>
<td>None Detected - Base Plaster None Detected - Top Plaster</td>
</tr>
<tr>
<td>KH-03</td>
<td>Not Provided</td>
<td>None Detected - Plaster 2% Chrysotile - Texture</td>
</tr>
<tr>
<td>KH-04</td>
<td>Not Provided</td>
<td>None Detected - Plaster None Detected - Paint / Texture</td>
</tr>
<tr>
<td>KH-05</td>
<td>Not Provided</td>
<td>None Detected - Base Plaster None Detected - Top Plaster</td>
</tr>
<tr>
<td>KH-06</td>
<td>Not Provided</td>
<td>3% Chrysotile - Black Mastic</td>
</tr>
<tr>
<td>KH-07</td>
<td>Not Provided</td>
<td>None Detected - Base Plaster None Detected - Top Plaster</td>
</tr>
<tr>
<td>KH-08</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-09</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-10</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-11</td>
<td>Not Provided</td>
<td>None Detected - Texture</td>
</tr>
<tr>
<td>KH-12</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-13</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-14</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-15</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-16</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-17</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-18</td>
<td>Not Provided</td>
<td>None Detected - Plaster</td>
</tr>
<tr>
<td>KH-19</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
</tbody>
</table>
On 1/16/2017, thirty (30) bulk material samples were submitted by Mitch Stogner of Terracon - Austin for asbestos analysis by PLM/DS. The PLM Detail Report is attached; additional information may be found therein. The results are summarized below:

<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Client Sample Description / Location</th>
<th>Asbestos Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-20</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
<tr>
<td>KH-21</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
<tr>
<td>KH-22</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
<tr>
<td>KH-23</td>
<td>Not Provided</td>
<td>None Detected - Window Glazing</td>
</tr>
<tr>
<td>KH-24</td>
<td>Not Provided</td>
<td>None Detected - Window Glazing</td>
</tr>
<tr>
<td>KH-25</td>
<td>Not Provided</td>
<td>None Detected - Window Glazing</td>
</tr>
<tr>
<td>KH-26</td>
<td>Not Provided</td>
<td>None Detected - Window Glazing</td>
</tr>
<tr>
<td>KH-27</td>
<td>Not Provided</td>
<td>None Detected - Window Glazing</td>
</tr>
<tr>
<td>KH-28</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
<tr>
<td>KH-29</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
<tr>
<td>KH-30</td>
<td>Not Provided</td>
<td>None Detected - Caulking</td>
</tr>
</tbody>
</table>

These samples were analyzed by layers. Quantification, unless otherwise noted, is performed by calibrated visual estimate. The test report shall not be reproduced, except in full, without written approval of the laboratory. The results relate only to the items tested. These test results do not imply endorsement by NVLAP or any agency of the U.S. Government. Accredited by the National Voluntary Laboratory Accreditation Program for Bulk Asbestos Fiber Analysis under Lab Code 102056-0.

Analyst(s): Shaun Wilkerson
Lab Manager: Heather Lopez
Lab Director: Bruce Crabb
Approved Signatory: [Signature]
Approved Signatory: [Signature]

Thank you for choosing Moody Labs
<table>
<thead>
<tr>
<th>Sample Number</th>
<th>Layer</th>
<th>% Of Sample</th>
<th>Components</th>
<th>% of Layer</th>
<th>Analysis Date</th>
<th>Analyst</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-01</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-02</td>
<td>Base Plaster (Tan)</td>
<td>95%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Top Plaster (White)</td>
<td>5%</td>
<td>Calcite / Binders</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-03</td>
<td>Plaster (Tan)</td>
<td>95%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Texture (White)</td>
<td>5%</td>
<td>Chrysotile</td>
<td>2%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Talc / Binders</td>
<td>98%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-04</td>
<td>Plaster (White)</td>
<td>99%</td>
<td>Calcite / Binders</td>
<td>25%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td>Paint / Texture (White)</td>
<td>1%</td>
<td>Calcite / Binders</td>
<td>75%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-05</td>
<td>Base Plaster (Tan)</td>
<td>95%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Top Plaster (White)</td>
<td>5%</td>
<td>Calcite / Binders</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-06</td>
<td>Black Mastic (Black)</td>
<td>100%</td>
<td>Chrysotile</td>
<td>3%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Tar Binders</td>
<td>97%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-07</td>
<td>Base Plaster (Tan)</td>
<td>95%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Top Plaster (White)</td>
<td>5%</td>
<td>Calcite / Binders</td>
<td>100%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-08</td>
<td>Plaster (White)</td>
<td>100%</td>
<td>Calcite / Binders</td>
<td>100%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td>KH-09</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-10</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-11</td>
<td>Texture (White)</td>
<td>100%</td>
<td>Calcite / Talc / Binders</td>
<td>100%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td>KH-12</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Number</td>
<td>Layer</td>
<td>% Of Sample</td>
<td>Components</td>
<td>% of Layer</td>
<td>Analysis Date</td>
<td>Analyst</td>
</tr>
<tr>
<td>---------------</td>
<td>----------------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>KH-13</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-14</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-15</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-16</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-17</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-18</td>
<td>Plaster (Tan)</td>
<td>100%</td>
<td>Aggregate</td>
<td>65%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite / Binders</td>
<td>35%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-19</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Calcite</td>
<td>50%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-20</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Talc Fibers</td>
<td>5%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>30%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-21</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Talc Fibers</td>
<td>5%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-22</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Talc Fibers</td>
<td>5%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite</td>
<td>45%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-23</td>
<td>Window Glazing (Grey)</td>
<td>100%</td>
<td>Calcite</td>
<td>60%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-24</td>
<td>Window Glazing (Grey)</td>
<td>100%</td>
<td>Calcite</td>
<td>60%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sample Number</td>
<td>Layer</td>
<td>% Of Sample</td>
<td>Components</td>
<td>% of Layer</td>
<td>Analysis Date</td>
<td>Analyst</td>
</tr>
<tr>
<td>---------------</td>
<td>---------------------</td>
<td>-------------</td>
<td>---------------------</td>
<td>------------</td>
<td>---------------</td>
<td>---------</td>
</tr>
<tr>
<td>KH-25</td>
<td>Window Glazing (Grey)</td>
<td>100%</td>
<td>Talc Fibers</td>
<td>5%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Calcite</td>
<td>55%</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-26</td>
<td>Window Glazing (Grey)</td>
<td>100%</td>
<td>Calcite</td>
<td>60%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-27</td>
<td>Window Glazing (White)</td>
<td>100%</td>
<td>Calcite</td>
<td>60%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>40%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-28</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Calcite</td>
<td>50%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-29</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Calcite</td>
<td>50%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-30</td>
<td>Caulking (White)</td>
<td>100%</td>
<td>Calcite</td>
<td>50%</td>
<td>01/18</td>
<td>SW</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>Binders / Fillers</td>
<td>50%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
**Chain of Custody**

*Please call in advance for immediate, after-hour, & weekend pricing & availability.*

**ASBESTOS PLM**
- Bulk: Immediate ☐ 1 day ☐ 2 day ☒ 3 day ☐ 5 day
- Analyze All ☒ Positive Stop

**PCM Air (7400)**
- Immediate ☐ 1 day ☐ 2 day ☒ 3 day ☐ 5 day

**TOTAL DUST (0500/0600)**
- 1 day ☐ 2 day

**ASBESTOS TEM**
- Air AHERA Method: 6 hr ☐ 12 hr ☐ 24 hr
- Air 7402 (Modified): Immediate ☐ 1 day ☐ 2 day ☒ 3 day
- Bulk: Immediate ☒ 1 day ☐ 2 day ☐ 3 day ☐ 5 day
- Water/Wipe/Micro Vac: Immediate ☐ 1 day ☒ 2 day ☐ 3 day
- Analyze Blanks: Yes ☐ No

**MOLD**
- Direct Exam: Immediate ☐ 1 day ☐ 2 day
- Standard Air: Immediate ☐ 1 day ☐ 2 day
- Expanded Air: Immediate ☐ 1 day ☐ 2 day
- Culture**: Immediate ☒ 10-14 days
- Analyze Blanks: Yes ☐ No

**BACTERIA**
- Colony Counts (CC): Immediate ☐ 3 day ☒ 5 day
- CC + Gram Stain: Immediate ☐ 3 day ☒ 5 day
- Coliform & E. coli (P/A): Immediate ☐ 2-3 day
- Legionella: Immediate ☒ 14 days

**Turnaround of Culture Samples subject to Culture Growth**

**OTHER:**

Billing Company / City: **Terracon Consultants, Inc. / Austin**
Submitted's Company: **Terracon Consultants, Inc.**
Submitted's Name: **Mitch Stogner**
Project: **Kreische House**
Contact Information: Name: **Mitch Stogner**
E-mail Results to: **mwstogner@terracon.com (and kdramirez@terracon.com)**
Invoice Address: **5307 Industrial Oaks Blvd., Ste. 160 – Austin, TX 78735**

Date of Samples: **30**
Sample Date: **01/12/17**
Project #: **96167875**
Phone #: (512) 442-1122
Mobile #: (512) 653-4138
Fax #: (512) 642-1181

**Notes:**
*Please review paperwork and samples before submitting to lab. Unsealed / Improperly packaged / damaged / expired samples or excessive administrative requests may incur additional fees*

<table>
<thead>
<tr>
<th>Sample #</th>
<th>Sample Description</th>
<th>Vol. / Area (If applicable)</th>
<th>Location / Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-01</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Through</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>KH-30</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Released By: [Signature]
Date / Time: **01/13/17**

Released By: [Signature]
Date / Time: **01/13/17**

Received By: [Signature]
Date / Time: **01/13/17**

Moody Labs • 2051 Valley View Lp. • Farmers Branch, TX 75234 • Phone (972) 241-8460 • Fax (972) 241-8461
www.moodylabs.com

Q-001349-2015
APPENDIX D

LEAD-CONTAINING PAINT SURVEY SAMPLE SUMMARY
## APPENDIX D
### LEAD-CONTAINING PAINT SAMPLE SUMMARY

**Kreische Historic House**  
Monument Hill / Kreische Brewery SHS  
414 State Loop 92  
La Grange, Texas  
Terracon Project No. 96167875

<table>
<thead>
<tr>
<th>SAMPLE NO.</th>
<th>COMBINATION/ SUBSTRATE</th>
<th>FUNCTIONAL AREA</th>
<th>SAMPLE LOCATION</th>
<th>LEAD CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-L01</td>
<td>Light Brown on Wood</td>
<td>Utilized on the interior wood floors in Rooms 202 and 203 on the 2nd Floor</td>
<td>2nd Floor, Room 203, northwest portion</td>
<td>1,600 ppm</td>
</tr>
<tr>
<td>KH-L02</td>
<td>Light Green on Wood</td>
<td>Utilized on the exterior southeast stairway (steps) between the 1st and 2nd Floors</td>
<td>2nd Floor, Porch, southeast stairway, 4th step down</td>
<td>210 ppm</td>
</tr>
<tr>
<td>KH-L03</td>
<td>White on Wood</td>
<td>Utilized on the exterior ramp and handrail at the west elevation</td>
<td>West Exterior Elevation, ramp, northwest portion</td>
<td>&lt;46 ppm</td>
</tr>
<tr>
<td>KH-L04</td>
<td>Green on Wood</td>
<td>Utilized on the exterior window shutters on the north and west elevations</td>
<td>North Exterior Elevation, shutter at window to Room 203</td>
<td>&lt;43 ppm</td>
</tr>
<tr>
<td>KH-L05</td>
<td>White on Metal</td>
<td>Utilized on the exterior roof gutters and downspouts</td>
<td>South Exterior Elevation, east portion of roof gutter</td>
<td>&lt;39 ppm</td>
</tr>
<tr>
<td>KH-L06</td>
<td>White on Wood</td>
<td>Utilized on the exterior handrails, columns, beams, and stairwells of the south porch areas on the 1st and 2nd Floors</td>
<td>1st Floor, South Porch, east portion of handrail</td>
<td>580 ppm</td>
</tr>
<tr>
<td>KH-L07</td>
<td>Red on Metal</td>
<td>Utilized on the exterior flashing, trim, peaks, and chimneys on the main roof and on the southwest sloped roof</td>
<td>Southwest Sloped Roof, north-central portion</td>
<td>1,300 ppm</td>
</tr>
<tr>
<td>KH-L08</td>
<td>Off-White on Tan on Plaster</td>
<td>Utilized on the exterior plaster on the south, west, and east elevations</td>
<td>South Exterior Elevation, 1st Floor, east portion</td>
<td>6,400 ppm</td>
</tr>
<tr>
<td>KH-L09</td>
<td>White on Metal</td>
<td>Utilized on the interior pressed tin ceilings in Room 101 on the 1st Floor and Room 201 on the 2nd Floor</td>
<td>2nd Floor, Room 201, ceiling, south-central portion</td>
<td>7,400 ppm</td>
</tr>
</tbody>
</table>
## APPENDIX D
### LEAD-CONTAINING PAINT SAMPLE SUMMARY
#### Kreische Historic House
**Monument Hill / Kreische Brewery SHS**
414 State Loop 92
La Grange, Texas
Terracon Project No. 96167875

<table>
<thead>
<tr>
<th>SAMPLE NO.</th>
<th>COMBINATION/ SUBSTRATE</th>
<th>FUNCTIONAL AREA</th>
<th>SAMPLE LOCATION</th>
<th>LEAD CONTENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>KH-L10</td>
<td>White on Beige on Wood</td>
<td>Utilized on the interior ceilings in Rooms 106 and 107 on the 1st Floor and Room 203 on the 2nd Floor</td>
<td>2nd Floor, Room 203, ceiling, southeast portion</td>
<td>26,000 ppm</td>
</tr>
<tr>
<td>KH-L11</td>
<td>Peach on Concrete</td>
<td>Utilized on the exterior concrete window trim at the west and south windows and south door of Room 201, southwest window of Room 106, and south windows of the Attic</td>
<td>West Exterior Elevation, at south window to Room 201</td>
<td>700 ppm</td>
</tr>
<tr>
<td>KH-L12</td>
<td>White on Plaster</td>
<td>Utilized on the exterior plaster on the south, west, and east elevations of Room 101 and all elevations of Room 205</td>
<td>East Exterior Elevation, at Room 101, south portion</td>
<td>62 ppm</td>
</tr>
<tr>
<td>KH-L13</td>
<td>White on Wood</td>
<td>Utilized on the exterior wood doors, windows, and door/window frames</td>
<td>North Exterior Elevation, at northeast window to Room 202</td>
<td>&lt;47 ppm</td>
</tr>
<tr>
<td>KH-L14</td>
<td>White on Light Green on Wood</td>
<td>Utilized on the interior wood door, windows, and door/window frames in Room 205</td>
<td>2nd Floor, Room 205, northeast portion, on door</td>
<td>450 ppm</td>
</tr>
<tr>
<td>KH-L15</td>
<td>White on Beige on Plaster</td>
<td>Utilized on the interior walls throughout the 1st and 2nd Floors and on portions of the north and south walls in the West and Central Rooms of the Attic</td>
<td>2nd Floor, Room 203, east wall, north portion</td>
<td>54 ppm</td>
</tr>
<tr>
<td>KH-L16</td>
<td>White on Light Green on Wood</td>
<td>Utilized on the interior wood doors, windows, and door/window frames in the 1st Floor, 2nd Floor, and Attic</td>
<td>1st Floor, Room 107, west-central portion, at door frame</td>
<td>65,000 ppm</td>
</tr>
</tbody>
</table>
Environmental Hazards Services, L.L.C.
7469 Whitepine Rd
Richmond, VA 23237
Telephone: 800.347.4010

Lead Paint Chip Analysis Report

Report Number: 17-01-01679
Received Date: 01/16/2017
Analyzed Date: 01/19/2017
Reported Date: 01/19/2017

Client: Terracon - Austin
5307 Industrial Oaks Blvd.
Suite 160
Austin, TX 78735

Project/Test Address: Kreische House; 414 State Loop 92; La Grange, TX
Collection Date: 01/12/2017

Client Number: 45-3685
Fax Number: 512-442-1181

### Laboratory Results

<table>
<thead>
<tr>
<th>Lab Sample Number</th>
<th>Client Sample Number</th>
<th>Collection Location</th>
<th>Pb (ug/g) ppm</th>
<th>% Pb by Wt.</th>
<th>Narrative ID</th>
</tr>
</thead>
<tbody>
<tr>
<td>17-01-01679-001</td>
<td>KH-L01</td>
<td></td>
<td>1600</td>
<td>0.16</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-002</td>
<td>KH-L02</td>
<td></td>
<td>210</td>
<td>0.021</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-003</td>
<td>KH-L03</td>
<td></td>
<td>&lt;46</td>
<td>&lt;0.0046</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-004</td>
<td>KH-L04</td>
<td></td>
<td>&lt;43</td>
<td>&lt;0.0043</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-005</td>
<td>KH-L05</td>
<td></td>
<td>&lt;39</td>
<td>&lt;0.0039</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-006</td>
<td>KH-L06</td>
<td></td>
<td>580</td>
<td>0.058</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-007</td>
<td>KH-L07</td>
<td></td>
<td>1300</td>
<td>0.13</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-008</td>
<td>KH-L08</td>
<td></td>
<td>350</td>
<td>0.035</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-009</td>
<td>KH-L09</td>
<td></td>
<td>7400</td>
<td>0.74</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-010</td>
<td>KH-L10</td>
<td></td>
<td>26000</td>
<td>2.6</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-011</td>
<td>KH-L11</td>
<td></td>
<td>700</td>
<td>0.070</td>
<td></td>
</tr>
<tr>
<td>Lab Sample Number</td>
<td>Client Sample Number</td>
<td>Collection Location</td>
<td>Pb (µg/g) ppm</td>
<td>% Pb by Wt.</td>
<td>Narrative ID</td>
</tr>
<tr>
<td>-------------------</td>
<td>----------------------</td>
<td>---------------------</td>
<td>--------------</td>
<td>-------------</td>
<td>-------------</td>
</tr>
<tr>
<td>17-01-01679-012</td>
<td>KH-L12</td>
<td></td>
<td>62</td>
<td>0.0062</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-013</td>
<td>KH-L13</td>
<td></td>
<td>&lt;47</td>
<td>&lt;0.0047</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-014</td>
<td>KH-L14</td>
<td></td>
<td>450</td>
<td>0.045</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-015</td>
<td>KH-L15</td>
<td></td>
<td>54</td>
<td>0.0054</td>
<td></td>
</tr>
<tr>
<td>17-01-01679-016</td>
<td>KH-L16</td>
<td></td>
<td>65000</td>
<td>6.5</td>
<td></td>
</tr>
</tbody>
</table>

Preparation Method: ASTM E-1979-12  
Analysis Method: EPA SW846 7000B  
Accreditation #: TX T104704248-07TX

Reviewed By Authorized Signatory:  
Allyyah McIntyre  
QC Clerk

The HUD lead guidelines for lead paint chips are 0.50% by Weight, 5000 ppm, or 1.0 mg/cm². The Reporting Limit (RL) for samples prepared by ASTM E-1979-12 is 10.0 µg Total Pb. The RL for samples prepared by EPA SW846 3050B is 25.0 µg Total Pb. Paint chip area and results are calculated based on area measurements determined by the client. All internal quality control requirements associated with this batch were met, unless otherwise noted.

The condition of the samples analyzed was acceptable upon receipt per laboratory protocol unless otherwise noted on this report. Results represent the analysis of samples submitted by the client. Sample location, description, area, etc., was provided by the client. Results reported above in mg/cm³ are calculated based on area supplied by client. This report shall not be reproduced except in full, without the written consent of the Environmental Hazards Service, L.L.C. California Certification #2319 NY ELAP #11714.

**LEGEND**  
Pb = lead  
µg = microgram  
ppm = parts per million  
ug/g = micrograms per gram  
Wt. = weight
# Lead Chain-of-Custody

**Company Name:** Terracon Consultants, Inc.  
**Address:** 5307 Industrial Oaks Blvd., Ste. 160  
**City/State/Zip:** Austin, TX 78735

**Project Name / Testing Address:** Kreische House / 414 State Loop 92, La Grange, TX  
**City/State (Required):** Austin, TX

**Collected by:** Mitch Stogner  
**Certification Number:** 2060879  
**Purchase Order Number:** 96167875

---

**Turn Around Time (TAT):**

- [x] 3-Day
- [ ] 2-Day
- [ ] Same Day (Must Call Ahead)
- [ ] Weekend (Must Call Ahead)

If no TAT is specified, sample(s) will be processed and charged as 3-Day TAT.

---

### Sample Details

<table>
<thead>
<tr>
<th>No.</th>
<th>Sample Type</th>
<th>Date Collected</th>
<th>Client Sample ID</th>
<th>Collection Location (LR, KT, LTPBR, KTRBR, etc.)</th>
<th>Surface Type</th>
<th>Paint Chip</th>
<th>Air</th>
<th>Comments</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L01</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L02</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L03</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L04</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L05</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L06</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L07</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L08</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L09</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L10</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Paint Chip:** X

**Air:** X

---

**Released by:** Mitch Stogner  
**Date/Time:** 01/13/17

**Received by:** DSB  
**Date/Time:** 01/17
# Lead Chain-of-Custody

**Company Name:** Terracon Consultants, Inc.  
**Address:** 5307 Industrial Oaks Blvd., Ste. 160  
**City/State/Zip:** Austin, TX 78735

**Phone:** (512) 442-1122  
**Fax:** (512) 442-1181  
**E-mail:** mitch.stogner@terracon.com  
**Acct. Number:**

**Project Name / Testing Address:** Kreische House / 414 State Loop 92, La Grange, TX  
**City/State (Required):** Austin, TX  
**Collected by:** Mitch Stogner  
**Certification Number:** 2060879  
**Purchase Order Number:** 96167875

* Do wipe samples submitted meet ASTM E1792 requirements?  
- [ ] Yes  
- [ ] No

<table>
<thead>
<tr>
<th>Sample Type</th>
<th>Single Dust Wipe</th>
<th>Soil</th>
<th>Paint Chip</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR</td>
<td>DW</td>
<td>S</td>
<td>PC</td>
<td>A</td>
</tr>
<tr>
<td>LR</td>
<td>LT</td>
<td>BA</td>
<td>DR</td>
<td>RT</td>
</tr>
<tr>
<td>DN</td>
<td>DT</td>
<td>BR</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>CS</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Abbreviations</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR = Family Room</td>
</tr>
<tr>
<td>LW = Living Room</td>
</tr>
<tr>
<td>DN = Den</td>
</tr>
<tr>
<td>DR = Dining Room</td>
</tr>
<tr>
<td>1 = 1st Fl</td>
</tr>
<tr>
<td>2 = 2nd Fl</td>
</tr>
<tr>
<td>0 = Basement</td>
</tr>
<tr>
<td>KT = Kitchen</td>
</tr>
<tr>
<td>BA = Bath</td>
</tr>
<tr>
<td>BR = Bedroom</td>
</tr>
<tr>
<td>DL = Left</td>
</tr>
<tr>
<td>RT = Right</td>
</tr>
<tr>
<td>DT = Down</td>
</tr>
<tr>
<td>DT = Down</td>
</tr>
<tr>
<td>LW = Left</td>
</tr>
<tr>
<td>RT = Right</td>
</tr>
<tr>
<td>DL = Down</td>
</tr>
<tr>
<td>KT = Kitchen</td>
</tr>
<tr>
<td>BA = Bath</td>
</tr>
<tr>
<td>BR = Bedroom</td>
</tr>
<tr>
<td>1 = 1st Fl</td>
</tr>
<tr>
<td>2 = 2nd Fl</td>
</tr>
<tr>
<td>0 = Basement</td>
</tr>
<tr>
<td>4 = Floor</td>
</tr>
<tr>
<td>CP = Carpet</td>
</tr>
<tr>
<td>SL = Window Sill</td>
</tr>
<tr>
<td>WW = Window Well</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Turn Around Time (TAT)</th>
</tr>
</thead>
</table>
| [ ] 1-Day  
| [x] 3-Day |
| Same Day (Must Call Ahead)  
| Weekend (Must Call Ahead)  
If no TAT is specified, sample(s) will be processed and charged as 3-Day TAT.

### Paint Chip

<table>
<thead>
<tr>
<th>No.</th>
<th>Sample Type</th>
<th>Date Collected</th>
<th>Client Sample ID</th>
<th>Collection Location (LR, KT, LTFRBR, RTRBR, etc.)</th>
<th>Surface Type</th>
<th>Area</th>
<th>Paint Chip</th>
<th>Air</th>
</tr>
</thead>
<tbody>
<tr>
<td>11</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L11</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L12</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L13</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>14</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L14</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>15</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L15</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>16</td>
<td>PC</td>
<td>01/12/17</td>
<td>KH-L16</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Released by:*** Mitch Stogner  
**Received by:** Mitch Stogner

**Date/Time:** 01/13/17  
**Date/Time:** 01/13/17  
**1:54 AM**
APPENDIX F

LICENSES AND CERTIFICATIONS
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

TERRACON CONSULTANTS INC

is certified to perform as a

Asbestos Consultant Agency

in the State of Texas within the purview of Texas Occupations Code, chapter 1954, so long as this license is not suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

JOHN HELLERSTEDT, M.D.
COMMISSIONER OF HEALTH

License Number: 100157
Control Number: 96944

Expiration Date: 11/30/2018
(void after expiration date)

VOID IF ALTERED NON-TRANSFERABLE
THE STATE OF TEXAS DEPARTMENT OF HEALTH SERVICES

TERRACON CONSULTANTS INC

Be it known that

is certified to perform as a
Lead Firm

in the State of Texas and is hereby governed by the rights, privileges and responsibilities

set forth in Texas Occupations Code, Chapter 1955 and Title 25, Texas Administrative Code, Chapter 295

relating to Texas Environmental Lead Reduction, as long as this license is not suspended or revoked.

John Hellerstedt, M.D.
Commissioner of Health

Expiration Date: 3/20/2018

Void After Expiration Date

License Number: 2110106
Control Number: 6799

VOID IF ALTERED
NON-TRANSFERABLE
Texas Department of State Health Services

Asbestos Individual Consultant

RICHARD I HOWES
License No. 105406
Control No. 97017
Expiration Date: 3/21/2018
License Number: 2060384

Expiration Date: 1/31/2018

Commissioner of Health
John Hellerstedt, M.D.

This license is issued pursuant to the Texas Health and Safety Code, Chapter 251, and Texas Occupations Code, Chapter 195, as amended, to Richard I. Howes, to perform as a Lead Inspector.

Richard I. Howes

Be it known that
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

The State of Texas
Texas Department of State Health Services

Asbestos Individual Consultant

MITCHELL W STOGNER
License No. 105648
Control No. 96925
Expiration Date: 12/26/2017
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

Be it known that

MITCHELL W STOGNER

is certified to perform as a

Lead Inspector

in the State of Texas and is hereby governed by the rights, privileges and responsibilities
set forth in Texas Occupations Code, Chapter 1955 and Title 25, Texas Administrative Code, Chapter 295
relating to Texas Environmental Lead Reduction, as long as this license is not suspended or revoked.

John Hellerstedt, M.D.
Commissioner of Health

License Number: 2060879
Expiration Date: 1/18/2018

Void After Expiration Date

Control Number 6335
NON-TRANSFERABLE
Texas Department of State Health Services

Asbestos Inspector

ROMAN N FANELLI
License No. 603437
Control No. 98037
Expiration Date: 7/22/2017
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

STEVE MOODY MICRO SERVICES LLC

Asbestos Laboratory
PCM, PLM, TEM

is certified to perform as a

in the State of Texas within the purview of Texas Occupations Code, chapter 1954, so long as this license is not
suspended or revoked and is renewed according to the rules adopted by the Texas Board of Health.

Expiration Date: 5/31/2018

JOHNHELSTEDT, M.D.
COMMISSIONER OF HEALTH

License Number: 300084

Control Number: 90126

VOID IF ALTERED
NON-TRANSFERABLE
Certificate of Accreditation to ISO/IEC 17025:2005

NVLAP LAB CODE: 102056-0

Steve Moody Micro Services, LLC
Farmers Branch, TX

Asbestos Fiber Analysis

This laboratory is accredited in accordance with the recognized International Standard ISO/IEC 17025:2005. This accreditation demonstrates technical competence for a defined scope and the operation of a laboratory quality management system (refer to joint ISO-LAC-IAF Communiqué dated January 2009).

Effective Dates
2016-07-01 through 2017-06-30

Stacy S. Swain
SCOPE OF ACCREDITATION TO ISO/IEC 17025:2005

Steve Moody Micro Services, LLC
2051 Valley View Lane
Farmers Branch, TX 75234-8956
Mr. Bruce Crabb
Phone: 972-241-8460  Fax: 972-241-8461
Email: bruce.crabb@moodylabs.com
http://www.moodylabs.com

ASBESTOS FIBER ANALYSIS

Bulk Asbestos Analysis

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18/A01</td>
<td>EPA 600/M4-82-028: Interim Method for the Determination of Asbestos in Bulk Insulation Samples</td>
</tr>
<tr>
<td>18/A03</td>
<td>EPA 600/R-93/116: Method for the Determination of Asbestos in Bulk Building Materials</td>
</tr>
</tbody>
</table>

Airborne Asbestos Analysis

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>18/A02</td>
<td>U.S. EPA's &quot;Interim Transmission Electron Microscopy Analytical Methods-Mandatory and Nonmandatory-and Mandatory Section to Determine Completion of Response Actions&quot; as found in 40 CFR, Part 763, Subpart E, Appendix A.</td>
</tr>
</tbody>
</table>

NVLAP LAB CODE 102056-0

For the National Voluntary Laboratory Accreditation Program
February 29, 2016

Julie Dickerson
Environmental Hazards Services, LLC
7469 White Pine Road
Richmond, VA 23237

Dear Ms. Dickerson:

Congratulations! The AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC’s Analytical Accreditation Board (AAB) has approved Environmental Hazards Services, LLC as an accredited Industrial Hygiene, Environmental Lead and Environmental Microbiology laboratory.

Accreditation documentation includes the IHLAP, ELLAP and EMLAP accreditation certificate, scope of accreditation document and a copy of the current AIHA-LAP, LLC license agreement (if your completed agreement is not on file at AIHA-LAP, LLC). The accreditation symbol has been designed for use by all AIHA-LAP, LLC accredited laboratories. If your laboratory chooses to use the symbol in its advertising the laboratory’s accreditation, you must complete and return the AIHA-LAP, LLC license agreement to a Laboratory Accreditation Specialist. Once submitted, an electronic copy of the accreditation symbol will be sent to you. Please inform us if your laboratory does not wish to use the symbol in advertising.

Laboratory accreditation shall be maintained by continued compliance with IHLAP, ELLAP and EMLAP requirements (see Policy Modules 2B, 2C, 2D, and 6), which includes proficient participation in AIHA-LAP, LLC approved proficiency testing, demonstration of competency, or round robin program as indicated on the AIHA-LAP “Approved PT and Round Robin” webpage, its associated Scope/PT table, and as required in Policy Module 6, for all Fields of Testing (FoTs) for which the laboratory is accredited. An accredited laboratory that wishes to expand into a new FoT must submit an updated accreditation application to AIHA-LAP, LLC for review by the AAB.

Any changes in ownership, laboratory location, personnel, FoTs/Methods, or significant procedural changes shall be reported to AIHA-LAP, LLC in writing within twenty (20) business days of the change.

The accreditation certificate is the property of AIHA-LAP, LLC and must be returned to us should your laboratory withdraw or be removed from the IHLAP, ELLAP and EMLAP.

Again, congratulations. If you have any questions, please contact Lauren Schnack, Laboratory Accreditation Specialist, at (703) 846-0716.

Sincerely,

Cheryl O. Morton
Managing Director
AIHA Laboratory Accreditation Programs, LLC
AIHA Laboratory Accreditation Programs, LLC

acknowledges that

Environmental Hazards Services, LLC
7469 White Pine Road, Richmond, VA 23237
Laboratory ID: 100420

along with all premises from which key activities are performed, as listed above, has fulfilled the requirements of the AIHA Laboratory Accreditation Programs (AIHA-LAP), LLC accreditation to the ISO/IEC 17025:2005 international standard, General Requirements for the Competence of Testing and Calibration Laboratories in the following:

LABORATORY ACCREDITATION PROGRAMS

✓ INDUSTRIAL HYGIENE
✓ ENVIRONMENTAL LEAD
✓ ENVIRONMENTAL MICROBIOLOGY
☐ FOOD
☐ UNIQUE SCOPES

Accreditation Expires: May 01, 2018
Accreditation Expires: May 01, 2018
Accreditation Expires: May 01, 2018
Accreditation Expires:
Accreditation Expires:

Specific Field(s) of Testing (FoT)/Method(s) within each Accreditation Program for which the above named laboratory maintains accreditation is outlined on the attached Scope of Accreditation. Continued accreditation is contingent upon successful on-going compliance with ISO/IEC 17025:2005 and AIHA-LAP, LLC requirements. This certificate is not valid without the attached Scope of Accreditation. Please review the AIHA-LAP, LLC website (www.aihaaccreditedlabs.org) for the most current Scope.

Gerald Schultz, CIH
Chairperson, Analytical Accreditation Board

Revision 14: 03/26/2014

Cheryl O. Morton
Managing Director, AIHA Laboratory Accreditation Programs, LLC

Date Issued: 02/29/2016
AIHA Laboratory Accreditation Programs, LLC

**SCOPE OF ACCREDITATION**

**Environmental Hazards Services, LLC**
7469 White Pine Road, Richmond, VA 23237

Laboratory ID: **100420**
Issue Date: **02/29/2016**

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory’s current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

**Industrial Hygiene Laboratory Accreditation Program (IHLAP)**

Initial Accreditation Date: **03/01/1990**

<table>
<thead>
<tr>
<th>IHLAP Scope Category</th>
<th>Field of Testing (FoT) (FoTs cover all relevant IH matrices)</th>
<th>Technology sub-type/Detector</th>
<th>Published Reference Method/Title of In-house Method</th>
<th>Method Description or Analyte (for internal methods only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromatography Core</td>
<td>Gas Chromatography</td>
<td>GC/ECD</td>
<td>NIOSH 5503</td>
<td></td>
</tr>
<tr>
<td>Spectrometry Core</td>
<td>Atomic Absorption</td>
<td>CVAA</td>
<td>NIOSH 6009</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Inductively-Coupled Plasma</td>
<td>ICP/AES</td>
<td>OSHA ID-145</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>ASTM E1979-12</td>
<td></td>
</tr>
<tr>
<td>Asbestos/Fiber Microscopy Core</td>
<td>Phase Contrast Microscopy (PCM)</td>
<td></td>
<td>EPA SW-846 6010C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIOSH 7300 Modified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>OSHA ID-125G Modified</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous Core</td>
<td>Gravimetric</td>
<td></td>
<td>NIOSH 0500</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIOSH 0600</td>
<td></td>
</tr>
</tbody>
</table>

A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA-LAP, LLC website at: [http://www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org)
AIHA Laboratory Accreditation Programs, LLC
SCOPE OF ACCREDITATION

Environmental Hazards Services, LLC
7469 White Pine Road, Richmond, VA 23237
Laboratory ID: 100420
Issue Date: 02/29/2016

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory’s current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

**Industrial Hygiene Laboratory Accreditation Program (IHLAP)**
Initial Accreditation Date: 03/01/1990

<table>
<thead>
<tr>
<th>IHLAP Scope Category</th>
<th>Field of Testing (FoT) (FoTs cover all relevant IH matrices)</th>
<th>Technology sub-type/Detector</th>
<th>Published Reference Method/Title of In-house Method</th>
<th>Method Description or Analyte (for internal methods only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chromatography Core</td>
<td>Gas Chromatography</td>
<td>GC/ECD</td>
<td>NIOSH 5503</td>
<td></td>
</tr>
<tr>
<td>Spectrometry Core</td>
<td>Atomic Absorption</td>
<td>CVAA</td>
<td>NIOSH 6009</td>
<td>OSHA ID-145</td>
</tr>
<tr>
<td></td>
<td>Inductively-Coupled Plasma</td>
<td>ICP/AIDS</td>
<td>ASTM E1979-12</td>
<td>EPA SW-846 6010C</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>NIOSH 7300 Modified</td>
<td>OSHA ID-125G Modified</td>
</tr>
<tr>
<td>Asbestos/Fiber Microscopy Core</td>
<td>Phase Contrast Microscopy (PCM)</td>
<td></td>
<td>NIOSH 7400</td>
<td></td>
</tr>
<tr>
<td>Miscellaneous Core</td>
<td>Gravimetric</td>
<td></td>
<td>NIOSH 0500</td>
<td>NIOSH 0600</td>
</tr>
</tbody>
</table>

A complete listing of currently accredited Industrial Hygiene laboratories is available on the AIHA-LAP, LLC website at: [http://www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org)
AIHA Laboratory Accreditation Programs, LLC
SCOPE OF ACCREDITATION

Environmental Hazards Services, LLC
7469 White Pine Road, Richmond, VA 23237
Laboratory ID: 100420
Issue Date: 02/29/2016

The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory's current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

The EPA recognizes the AIHA-LAP, LLC ELLAP program as meeting the requirements of the National Lead Laboratory Accreditation Program (NLLAP) established under Title X of the Residential Lead-Based Paint Hazard Reduction Act of 1992 and includes paint, soil and dust wipe analysis. Air analysis is not included as part of the NLLAP.

Environmental Lead Laboratory Accreditation Program (ELLAP)
Initial Accreditation Date: 03/01/1999

<table>
<thead>
<tr>
<th>Field of Testing (FoT)</th>
<th>Technology sub-type/ Detector</th>
<th>Method</th>
<th>Method Description (for internal methods only)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Paint</td>
<td></td>
<td>ASTM E-1645 Modified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASTM E1979-12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 3050B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 6010C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 7000B</td>
<td></td>
</tr>
<tr>
<td>Soil</td>
<td></td>
<td>ASTM E-1645 Modified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>ASTM E1979-12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 3050B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 6010C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 7000B</td>
<td></td>
</tr>
<tr>
<td>Settled Dust by Wipe</td>
<td></td>
<td>ASTM E1979-12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 3050B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 6010C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 7000B</td>
<td></td>
</tr>
<tr>
<td>Airborne Dust</td>
<td></td>
<td>ASTM E1979-12</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 7000B</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-864 6010C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH 7082</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>NIOSH 7300 Modified</td>
<td></td>
</tr>
<tr>
<td>Composited Wipes</td>
<td></td>
<td>ASTM E1979-12 Modified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 6010C</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>EPA SW-846 7000B</td>
<td></td>
</tr>
</tbody>
</table>

Effective: 05/04/2015
100420_Scope_ELLAP_2016_02_29
Page 1 of 2
A complete listing of currently accredited Environmental Lead laboratories is available on the AIHA-LAP, LLC website at: http://www.aihacreditedlabs.org.
The laboratory is approved for those specific field(s) of testing/methods listed in the table below. Clients are urged to verify the laboratory’s current accreditation status for the particular field(s) of testing/Methods, since these can change due to proficiency status, suspension and/or withdrawal of accreditation.

**Environmental Microbiology Laboratory Accreditation Program (EMLAP)**

**Initial Accreditation Date:** 03/01/2005

<table>
<thead>
<tr>
<th>EMLAP Category</th>
<th>Field of Testing (FoT)</th>
<th>Method</th>
<th>Method Description (for internal methods only)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fungal</strong></td>
<td>Air - Direct Examination</td>
<td>Microbiology SOP</td>
<td>In-house: Analysis of Spore Trap Samples</td>
</tr>
<tr>
<td></td>
<td>Bulk - Direct Examination</td>
<td>Microbiology SOP</td>
<td>In-house: Analysis of IAQ Bulk Samples</td>
</tr>
<tr>
<td></td>
<td>Surface - Direct Examination</td>
<td>Microbiology SOP</td>
<td>In-house: Analysis of IAQ Surface Samples</td>
</tr>
</tbody>
</table>

A complete listing of currently accredited Environmental Microbiology laboratories is available on the AIHA-LAP, LLC website at: [http://www.aihaaccreditedlabs.org](http://www.aihaaccreditedlabs.org)
APPENDIX G

SAMPLE LOCATION MAPS
APPENDIX H

ASBESTOS-CONTAINING MATERIALS (ACM) LOCATION MAPS
APPENDIX I

LEAD-BASED PAINT (LBP) LOCATION MAPS
NOTE:
All other paint materials sampled and analyzed were found to be "Lead-Containing" (<detection limit and <5,000 ppm) or were found to contain lead in concentrations below the detection limit.

LBP LEGEND
- White Paint on Metal - Pressed Tin (Ceilings)
- White on Beige Paint on Wood (Ceilings)
- White on Light Green Paint on Wood (Doors/Frames & Windows/Frames)
Limited Mold Assessment
Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas

March 21, 2017
Task Order 24
TPWD Project No. 122888
Terracon Project No. 96167875

Prepared for:
Texas Parks and Wildlife Department
Austin, Texas

Prepared by:
Terracon Consultants, Inc.
Austin, Texas
March 21, 2017

Texas Parks and Wildlife Department
4200 Smith School Road
Austin, Texas 78744

Attn: Ms. Kim Shelton, CTPM, CTCM
T: (512) 389-4695
E: kim.shelton@tpwd.texas.gov

Re: Limited Mold Assessment Report
Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas 78945
Task Order 24
TPWD Project No. 122888
Terracon Project No. 96167875

Dear Ms. Shelton:

The purpose of this report is to present the results of the Limited Mold Assessment performed on January 12, 2017, at the above referenced location. This assessment was conducted in general accordance with Terracon Proposal No. P96167875, dated October 27, 2016.

Terracon appreciates the opportunity to provide this service to Texas Parks and Wildlife Department. If you have any questions regarding this report, please contact the undersigned at (512) 442-1122.

Sincerely,

Terracon Consultants, Inc.

Mitch Stogner
Mold Assessment Consultant
TDSHS License No. MAC-1177

Richard Ian Howes
Mold Assessment Consultant
TDSHS License No. MAC-0112
LIMITED MOLD ASSESSMENT REPORT
Kreische Historic House
Monument Hill / Kreische Brewery SHS
414 State Loop 92
La Grange, Texas 78945
Task Order 24
TPWD Project No. 122888
Terracon Project No. 96167875
March 21, 2017

1.0 PROJECT DESCRIPTION

Terracon Consultants, Inc. (Terracon) conducted a Limited Mold Assessment of the Kreische Historic House on the Monument Hill / Kreische Brewery State Historic Site in La Grange, Texas. Terracon representative, Mr. Mitch Stogner, a Texas Department of State Health Services (TDSHS) Mold Assessment Consultant (License # MAC1177) performed the assessment on January 12, 2017. The evaluation was performed in general accordance with our proposal dated October 27, 2016.

The scope of this project included a visual assessment of building materials and general hygiene conditions, moisture measurement of building materials, and temperature and relative humidity measurements. The general objective of the Limited Mold Assessment was to provide a proactive visual assessment of building hygiene/maintenance and current indoor conditions.

2.0 METHODS

The visual evaluation was conducted in general accordance with guidelines published by the TDSHS (Texas Mold Assessment and Remediation Rules, May 20, 2007), the American Conference of Governmental Industrial Hygienist (Bioaerosols: Assessment and Control, 1999) and Standard Guide for Assessment of Fungal Growth in Buildings (ASTM D7338-10). The indoor environment was evaluated for visual evidence of moisture intrusion, visible fungal growth or other hygiene concerns that could impact indoor air quality. Destructive sampling or disassembly of mechanical components was not within the scope of work for the project.

Moisture content of building materials was evaluated with a Delmhorst BD-2100 moisture meter. The moisture meter was calibrated prior to use in the evaluation. Normal moisture content of building materials was standardized at 10% relative by evaluating similar materials in the building that were not affected by atypical moisture conditions.

Temperature and relative humidity were monitored using a factory calibrated Q-Trak Indoor Air Quality monitor, manufactured by TSI, at representative indoor and outdoor locations.
3.0 RESULTS

3.1 Visual Inspection

The historic building is a three-story, wood frame/stone/masonry block structure atop a pier and beam foundation. The roof is a sloped wood shingle system. Interior walls throughout the majority of the building consisted primarily of plaster with a painted and textured finish. The floors and ceilings in the majority of the building were finished primarily with exposed wood. No heating, ventilation, and air conditioning (HVAC) equipment was observed.

Representative indoor locations within the building were evaluated with respect to visual evidence of hygiene concerns that could impact indoor air quality. No complaints relative to indoor air quality were reported. Texas Parks and Wildlife personnel indicated that occasional leaks have occurred in the building near the roof drain line at the northwest portion of the Attic (above Room 201). An internal roof drain line was observed at the northwest portion of the Attic and appears to drain out an opening on the upper portion of the north exterior elevation onto the lawn/ground area below.

Musty odors were detected in Room 103 by the Terracon representative. Water staining/damage, with evidence of minor visible fungal growth, was observed on portions of the plaster walls at the north window in Room 103. A dehumidifier unit and a small fan were also observed at the northwest portion of Room 103. The moisture intrusions and/or excessive moisture conditions appeared to be related to runoff and drainage during rain events as the north window in Room 103 is at ground level and no plumbing or sprinkler lines were observed in the structure.

Sporadic areas of water stains and dark stains/rust marks were observed on portions of the exposed wood ceilings/upper walls throughout the majority of the Attic. The areas of dark staining on the exposed wood appeared to be associated with rusting/corrosion of older nails used to attach the wood shingles on the roof above the Attic.

The general appearance of the interior of the building was fair considering the age of construction. The interior areas appeared relatively clean with moderate accumulations of dust and debris. It appears the interior environment has been maintained in an overall hygienic manner.

3.2 Temperature and Relative Humidity

Indoor air temperature and relative humidity are physical conditions important to the perception of comfort. The American Society of Heating, Refrigerating, and Air Conditioning Engineers (ASHRAE) published recommendations regarding thermal comfort. ASHRAE Standard 55-2010, Thermal Environmental Conditions for Human Occupancy, identifies six primary factors that affect comfort: metabolic rate (affected by the activity being performed), clothing insulation, air temperature, radiant temperature, air speed, and humidity.
Although the relationships are complex, a temperature range between 73 and 79 degrees Fahrenheit (°F) with relative humidity between roughly 20 and 60 percent (%) are recommended for persons performing “office” work and wearing light summer clothing. Higher temperatures require lower humidity for comfort. For persons in winter clothing, temperatures can range between 68 and 75 °F, with relative humidity between 30 and 60 %.

Temperature and relative humidity were measured at the locations described in Table 1.0. The outdoor temperature measured on January 12, 2017, was 77.2 °F and the indoor temperature ranged from 72.9 °F to 78.1 °F. The outdoor relative humidity measured 65.5 %, and the indoor relative humidity ranged from 60.4 % to 65.7 %. The measured temperature observed within the building at the time of the assessment was generally within the referenced ASHRAE standard for thermal comfort in the indoor environment; however, the relative humidity was observed to be above the maximum comfort level threshold of 60 percent. As the building is not conditioned, it is expected that indoor temperature and relative humidity measurements will generally be similar to outside measurements when doors and/or windows are opened.

A summary of temperature and relative humidity readings are presented in Table 1.0.

<table>
<thead>
<tr>
<th>LOCATION</th>
<th>Temperature</th>
<th>Humidity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attic, Central Room</td>
<td>77.5 °F</td>
<td>62.7 %</td>
</tr>
<tr>
<td>2nd Floor, Room 201</td>
<td>78.1 °F</td>
<td>60.4 %</td>
</tr>
<tr>
<td>2nd Floor, Room 203</td>
<td>77.4 °F</td>
<td>61.8 %</td>
</tr>
<tr>
<td>1st Floor, Room 106</td>
<td>76.2 °F</td>
<td>62.6 %</td>
</tr>
<tr>
<td>1st Floor, Room 103</td>
<td>72.9 °F</td>
<td>65.7 %</td>
</tr>
<tr>
<td>Outside</td>
<td>77.2 °F</td>
<td>65.5 %</td>
</tr>
</tbody>
</table>

4.0 CONCLUSIONS AND RECOMMENDATIONS

Terracon has developed the following conclusions and recommendations based on our site observations, field measurements and industry publications.

1. It is understood that the wood shingle roof system will likely be removed and replaced. If the roof system will not be replaced, it is recommended that the roof be inspected by an appropriately qualified individual or a roofing contractor and that any roof leaks or other roof issues discovered be repaired.

2. Sporadic areas of water stains and dark stains/rust marks were observed on portions of the exposed wood ceilings/upper walls throughout the majority of the Attic. The areas of dark staining on the exposed wood appeared to be associated with rusting/corrosion of older nails used to attach the wood shingles on the roof above the Attic.
3. Water staining/damage, with evidence of minor visible fungal growth, was observed on portions of the plaster walls at the north window in Room 103. The moisture intrusions and/or excessive moisture conditions appeared to be related to runoff and drainage during rain events as the north window in Room 103 is at ground level and no plumbing or sprinkler lines were observed in the structure. The plaster materials exhibiting water staining/damage in Room 103 should be repaired and repainted or replaced as soon as practical. No asbestos was detected in the suspect homogeneous interior plaster materials utilized in Room 103.

4. Evidence of other window leaks were not observed in the structure at the time of the assessment and no leaks were reported. If window leaks are discovered in the building, the source of the water leaks should be investigated and promptly repaired.

5. The interior plaster materials utilized on the interior walls of the 1st Floor (throughout Rooms 106 and 107), 2nd Floor (throughout Rooms 202 and 203), and Attic (north and south walls in Central and West Rooms) were found to contain 3% Chrysotile asbestos. The exterior plaster materials utilized on the north exterior elevation and south end of the east exterior elevation were found to contain 2% Chrysotile asbestos. Any plaster removal activities in areas identified with asbestos-containing plaster materials must be performed by a State of Texas licensed Abatement Contractor in accordance with TDSHS regulations. Written notification to the TDSHS must be provided at least 10 working days prior to the commencement of abatement activities. In addition, third party air monitoring must be performed during the abatement.

6. The measured temperature observed within the building at the time of the assessment was generally within the referenced ASHRAE standard for thermal comfort in the indoor environment; however, the relative humidity was observed to be above the maximum comfort level threshold of 60 percent. As the building is not conditioned, it is expected that indoor temperature and relative humidity measurements will generally be similar to outside measurements when doors and/or windows are opened. It is recommended that the humidity within the building be monitored over an extended period of time, and if it is found to be consistently high, that portable dehumidification units be used periodically to reduce the humidity levels within the structure.

5.0 STANDARD OF CARE

This limited mold assessment was conducted at the subject building on January 12, 2017, based on information provided to Terracon regarding building conditions. Terracon did not attempt to identify every potential exposure or hazard present in the subject building.

This investigation was conducted in a manner consistent with the level of care and skill ordinarily exercised by members of the profession currently practicing under similar conditions in the same locale. The results, findings, and conclusions, and recommendations expressed in this report are based on conditions observed during our January 12, 2017, assessment. Many factors such as weather conditions, building occupancy, ventilation patterns, and seasonal variations in fungal concentrations or local sources of outdoor pollutants can affect the conditions observed. The
information contained in this report should not be relied upon to represent conditions that existed
previously or at a later date. Terracon does not warrant the services of regulatory agencies,
laboratories, or other third parties supplying information that may have been used in the preparation
of this report.

6.0 RELIANCE

The report has been prepared on behalf of and exclusively for use by Texas Parks and Wildlife
Department for specific application to their project as discussed. No other individual or entity may
rely on this report without written permission of Terracon and Texas Parks and Wildlife Department.
Reliance on this report by Texas Parks and Wildlife Department and all authorized parties will be
subject to the key understandings and limitations stated in the proposal, this report, and Terracon’s
Agreement for Services. The limitation of liability defined in Terracon’s Agreement for Services is
the aggregate limit of Terracon’s liability to Texas Parks and Wildlife Department and all relying
parties.
APPENDIX A

PHOTOGRAPHS
Photo #1  Typical view of west exterior elevation.

Photo #2  Typical view of north and west exterior elevations.

Roof Drain Line Location
(see photo #32 for interior view of drain line in Attic)

North Window to Room 103 (see photos #13-15 for interior views)
Photo #3  Typical view of north and east exterior elevations.

Photo #4  Typical view of south and east exterior elevations.
Photo #5  Typical view of 2nd Floor - Porch (facing east).

Photo #6  Typical view of 2nd Floor - Porch (facing east).
Photo #7   Typical view of stairs leading to Attic (east end of 2nd Floor Porch).

Photo #8   Typical view of 1st Floor - Porch and stairs leading to 2nd Floor (facing east).
Photo #9  Typical view of 2nd Floor - Room 205 / Cistern (facing west).

Photo #10  Typical view inside 2nd Floor - Room 205 / Cistern (facing south).
Photo #11  Typical view inside 2nd Floor - Room 205 / Cistern (facing north).

Photo #12  Typical view inside 2nd Floor - Room 205 / Cistern (floor).
Photo #13  Typical view of 1st Floor – Room 103 (facing north).

Photo #14  View of water stained/damaged plaster with minor fungal growth in Room 103 (near window).
Photo #15  View of water stained/damaged plaster with minor fungal growth in Room 103 (near window).

Photo #16  Typical view of 1st Floor – Room 102 (facing west).
Photo #17 Typical view of 1st Floor – Room 101 (facing east).

Photo #18 Typical view of 1st Floor – Room 101 (facing west).
Photo #19  Typical view of 1st Floor – Room 106 (facing east).

Photo #20  Typical view of 1st Floor – Room 106 (facing west).
Photo #21  Typical view of 1st Floor – Room 107 (facing north).

Photo #22  Typical view of 2nd Floor – Room 203 (facing north).
Limited Mold Assessment
Kreische Historic House
Monument Hill / Kreische Brewery SHS
Terracon Project Number 96167875
Date Photos Taken: January 12, 2017

Photo #23  Typical view of 2nd Floor – Room 202 (facing west).

Photo #24  Typical view of 2nd Floor – Room 201 (facing north).
Photo #25  Typical view of Attic – East Room (facing northeast).

Photo #26  Typical view of Attic – East Room (facing southeast).
Photo #27  Typical view of Attic – Central Room (facing east).

Photo #28  Typical view of Attic – West Room (facing south).
Photo #29  Typical view of Attic – West Room (facing north).

Photo #30  View of water stains and dark stains/rust marks on wood in the Attic.
Photo #31  Closer view of water stains and dark stains/rust marks at nails in the Attic.

Photo #32  View of internal roof drain line (northwest corner of attic – line runs from roof to upper portion of north exterior elevation).
APPENDIX B

TERRACON LICENSURE
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

Be it known that

TERRACON CONSULTANTS INC

is licensed to perform as a

Mold Assessment Company

in the State of Texas and is hereby governed by the rights, privileges, and responsibilities set forth in Title 25, Texas Administrative Code, Chapter 295, relating to Texas Mold Assessment and Remediation Rules, as long as this license is not suspended or revoked.

Kirk Cole, Interim Commissioner of Health

License Number: ACO0117
Expiration Date: 12/14/2017

Control Number: 6827
(Void After Expiration Date)

VOID IF ALTERED NON-TRANSFERABLE
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

BE IT KNOWN THAT

RICHARD I HOWES

is hereby licensed and authorized to perform as a

Mold Assessment Consultant

in the State of Texas and is hereby governed by the rights, privileges, and responsibilities set forth in

Title 25, Texas Administrative Code, Chapter 295, relating to Texas Mold Assessment and Remediation

Rules, as long as this license is not suspended or revoked.

Kirk Cole, Interim
Commissioner of Health

License Number: MAC0112
Control Number: 8420

Expiration Date: 12/13/2017
(Void After Expiration Date)
TEXAS DEPARTMENT OF STATE HEALTH SERVICES

BE IT KNOWN THAT

MITCHELL W STOGNER
is hereby licensed and authorized to perform as a

Mold Assessment Consultant

in the State of Texas and is hereby governed by the rights, privileges, and responsibilities set forth in
Title 25, Texas Administrative Code, Chapter 295, relating to Texas Mold Assessment and Remediation
Rules, as long as this license is not suspended or revoked.

John Hellerstedt, M.D.
Commissioner of Health

License Number: MAC1177
Expiration Date: 10/28/2018
Control Number: 8646 (Void After Expiration Date)

VOID IF ALTERED  NON-TRANSFERABLE
Exhibit 3

EMLab P&K
A TestAmerica Company

Report for:

Nicky Emery, AIA
Quimby McCoy
3200 Main Street
Unit 3.6
Dallas, TX  75226

Regarding:  Project: Kreische House 2017-09; Task lb: Biological Growth Analysis
EML ID: 1918131

Approved by:  Dates of Analysis:

Technical Manager
Magzoub Ismail

1-Media fungi surface culture (Incl. Asp spp.): 05-07-2018

AIHA-LAP, LLC accredited service, Lab ID #193549

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

EMLab P&K's LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.

EMLab ID: 1918131, Page 1 of 3
The limit of detection is a raw count of 1 at the lowest dilution plated. The analytical sensitivity is equal to 1 raw count/reporting unit x the dilution factor.

A "Version" indicated by "x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

§ Total has been rounded to two significant figures to reflect analytical precision.
<table>
<thead>
<tr>
<th>Lab ID-Version</th>
<th>Location Analysis Date</th>
<th>Sample Size/Report Unit</th>
<th>Medium</th>
<th>Dilution Factor</th>
<th>Fungal ID</th>
<th>Colony Counts</th>
<th>CFU/unit</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>9019514-1</td>
<td>B7</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>MEA</td>
<td>10</td>
<td>Penicillium</td>
<td>25</td>
<td>250</td>
<td>100</td>
</tr>
<tr>
<td></td>
<td>green biological growth on wood Analysis date: 05/07/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9019516-1</td>
<td>B9</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>MEA</td>
<td>100</td>
<td>Cladosporium, Penicillium</td>
<td>3</td>
<td>300</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>black biological growth on wood Analysis date: 05/07/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>21</td>
<td>2,100</td>
<td>88</td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9019518-1</td>
<td>B10</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>MEA</td>
<td>10</td>
<td>Aspergillus niger, Cladosporium, Non-sporulating fungi, Penicillium</td>
<td>1</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td>bright blue-green biological growth on stone Analysis date: 05/07/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>4</td>
<td>40</td>
<td>50</td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td>10</td>
<td>13</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>2</td>
<td>20</td>
<td>25</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The limit of detection is a raw count of 1 at the lowest dilution plated. The analytical sensitivity is equal to 1 raw count/reporting unit x the dilution factor.

† A "Version" indicated by "+x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

§ Total has been rounded to two significant figures to reflect analytical precision.
Report for:

Nicky Emery, AIA
Quimby McCoy
3200 Main Street
Unit 3.6
Dallas, TX 75226

Regarding: Project: Kreische House 2017-09; Task Id: Biological Growth Analysis
EML ID: 1018131

Approved by: Technical Manager
Magzoub Ismail

Dates of Analysis:
Bacteria surface culture 3-Genus ID: 05-17-2018

Service SOPs: Bacteria surface culture 3-Genus ID (EM-BT-S-1050)
AIHA-LAP, LLC accredited service, Lab ID #193549

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client's customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client's customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company's own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company's liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

EMLab P&K's LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.
## CULTURE BACTERIA REPORT

<table>
<thead>
<tr>
<th>Lab ID-Version Location</th>
<th>Sample Size/Report Unit</th>
<th>Medium</th>
<th>Dilution Factor</th>
<th>Bacterial ID</th>
<th>Colony Counts</th>
<th>CFU/unit</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>9019507-1 B1</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>TSA</td>
<td>1,000</td>
<td>Bacillus sp.</td>
<td>63</td>
<td>63,000</td>
<td>100</td>
</tr>
<tr>
<td>green biological growth on plaster</td>
<td>Analysis date: 05/17/2018</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9019509-1 B3</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>TSA</td>
<td>10</td>
<td>Brachybacterium sp.</td>
<td>1</td>
<td>10</td>
<td>25</td>
</tr>
<tr>
<td>green biological growth on stone and mortar</td>
<td>Analysis date: 05/17/2018</td>
<td></td>
<td></td>
<td>Staphylococcus sp.</td>
<td>3</td>
<td>30</td>
<td>75</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9019511-1 B4</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>TSA</td>
<td>1,000</td>
<td>Bacillus sp.</td>
<td>3</td>
<td>3,000</td>
<td>25</td>
</tr>
<tr>
<td>white biological growth on stone and mortar</td>
<td>Analysis date: 05/17/2018</td>
<td></td>
<td></td>
<td>Corynebacterium sp.</td>
<td>4</td>
<td>4,000</td>
<td>33</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Staphylococcus sp.</td>
<td>5</td>
<td>5,000</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9019513-1 B5</td>
<td>Size: 1 gram Unit: 1 gram</td>
<td>TSA</td>
<td>100</td>
<td>Bacillus sp.</td>
<td>7</td>
<td>700</td>
<td>58</td>
</tr>
<tr>
<td>orange-brown biological growth on stucco</td>
<td>Analysis date: 05/17/2018</td>
<td></td>
<td></td>
<td>Brachybacterium sp.</td>
<td>5</td>
<td>500</td>
<td>42</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Comments:</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The limit of detection is a raw count of 1 at the lowest dilution plated. The analytical sensitivity is equal to 1 raw count/reporting unit x the dilution factor.

† A "Version" indicated by -"x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

§ Total has been rounded to two significant figures to reflect analytical precision.
The limit of detection is a raw count of 1 at the lowest dilution plated. The analytical sensitivity is equal to 1 raw count/reporting unit x the dilution factor.

† A "Version" indicated by "-x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".
§ Total has been rounded to two significant figures to reflect analytical precision.
Report for:

Nicky Emery, AIA
Quimby McCoy
3200 Main Street
Unit 3.6
Dallas, TX 75226

Regarding: Project: Kreische House 2017-09; Task lb: Biological Growth Analysis
EML ID: 1918131

Approved by:

[Signature]
Technical Manager
Magzoub Ismail

Dates of Analysis:
1-Media fungi surface culture (Incl. Asp spp.): 05-07-2018

AIHA-LAP, LLC accredited service, Lab ID #193549

All samples were received in acceptable condition unless noted in the Report Comments portion in the body of the report. Due to the nature of the analyses performed, field blank correction of results is not applied. The results relate only to the items tested.

EMLab P&K ("the Company") shall have no liability to the client or the client’s customer with respect to decisions or recommendations made, actions taken or courses of conduct implemented by either the client or the client’s customer as a result of or based upon the Test Results. In no event shall the Company be liable to the client with respect to the Test Results except for the Company’s own willful misconduct or gross negligence nor shall the Company be liable for incidental or consequential damages or lost profits or revenues to the fullest extent such liability may be disclaimed by law, even if the Company has been advised of the possibility of such damages, lost profits or lost revenues. In no event shall the Company’s liability with respect to the Test Results exceed the amount paid to the Company by the client therefor.

EMLab P&K’s LabServe® reporting system includes automated fail-safes to ensure that all AIHA-LAP, LLC quality requirements are met and notifications are added to reports when any quality steps remain pending.
# Fungal Culture Report

<table>
<thead>
<tr>
<th>Lab ID-Version</th>
<th>Location</th>
<th>Analysis Date</th>
<th>Sample Size/Report Unit</th>
<th>Medium</th>
<th>Dilution Factor</th>
<th>Fungal ID</th>
<th>Colony Counts</th>
<th>CFU/unit</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>9019506-1 B1</td>
<td>green biological growth on plaster</td>
<td>05/07/2018</td>
<td>Size: 1 gram/Unit: 1 gram</td>
<td>MEA</td>
<td>10</td>
<td>Cladosporium, Penicillium</td>
<td>1</td>
<td>70</td>
<td>10</td>
</tr>
<tr>
<td>9019508-1 B3</td>
<td>green biological growth on stone and mortar</td>
<td>05/07/2018</td>
<td>Size: 1 gram/Unit: 1 gram</td>
<td>MEA</td>
<td>10</td>
<td>Cladosporium, Penicillium</td>
<td>17</td>
<td>240</td>
<td>170</td>
</tr>
<tr>
<td>9019510-1 B4</td>
<td>white biological growth on stone and mortar</td>
<td>05/07/2018</td>
<td>Size: 1 gram/Unit: 1 gram</td>
<td>MEA</td>
<td>10</td>
<td>Cladosporium, Epicoccum, Non-sporulating fungi, Penicillium</td>
<td>17</td>
<td>70</td>
<td>170</td>
</tr>
<tr>
<td>9019512-1 B5</td>
<td>orange-brown biological growth on stucco</td>
<td>05/07/2018</td>
<td>Size: 1 gram/Unit: 1 gram</td>
<td>MEA</td>
<td>100</td>
<td>Cladosporium, Non-sporulating fungi, Penicillium</td>
<td>6</td>
<td>100</td>
<td>600</td>
</tr>
</tbody>
</table>

**Comments:**

The limit of detection is a raw count of 1 at the lowest dilution plated. The analytical sensitivity is equal to 1 raw count/reporting unit x the dilution factor.

* A "Version" indicated by "+x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

* Total has been rounded to two significant figures to reflect analytical precision.
# Fungal Culture Report

<table>
<thead>
<tr>
<th>Sample Size/Report Unit</th>
<th>Medium</th>
<th>Dilution Factor</th>
<th>Fungal ID</th>
<th>Colony Counts</th>
<th>CFU/unit</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 gram</td>
<td>MEA</td>
<td>10</td>
<td>Penicillium</td>
<td>25</td>
<td>250</td>
<td>100</td>
</tr>
<tr>
<td>1 gram</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Comments:**

- **9019514-1**
  - **B7**
  - green biological growth on wood
  - Analysis date: 05/07/2018

- **9019516-1**
  - **B9**
  - black biological growth on wood
  - Analysis date: 05/07/2018

- **9019518-1**
  - **B10**
  - bright blue-green biological growth on stone
  - Analysis date: 05/07/2018

---

The limit of detection is a raw count of 1 at the lowest dilution plated. The analytical sensitivity is equal to 1 raw count/reporting unit x the dilution factor.

‡ A "Version" indicated by "x" after the Lab ID# with a value greater than 1 indicates a sample with amended data. The revision number is reflected by the value of "x".

§ Total has been rounded to two significant figures to reflect analytical precision.
Certificate of Identity

Algal Strain: "B1-A"
Name provided by depositor: "B1-A".

Deposited for determination of strain identity: 26 June 2018 by Nicky Emery of Quimby McCoy Preservation Architecture, LLP.

Statement of identity:
Light microscope observations indicate that the most prevalent strain in sample "B1-A" is most likely to be Microcoleus sp.

Methods of strain analysis:
(1) Light microscope observations

David R. Nobles, Jr., Curator
Culture Collection of Algae (UTEX)

The University of Texas at Austin
UTEX Culture Collection of Algae

Curator, UT EX Culture Collection of Algae
Certificate of Identity

Algal Strain: "B3-A"
Deposited for determination of strain identity: 26 June 2018 by Nicky Emery of Quimby McCoy Preservation Architecture, LLP.
Name provided by depositor: "B3-A".

Methods of strain analysis:
(1) Light microscope observations

Statement of identity:
Light microscope observations indicate that the most prevalent strain in sample "B3-A" is most likely to be Chroococcus sp..

David R. Nobles, Jr., Curator
Culture Collection of Algae (UTEX)