



CITY OF HOUSTON

**CONTRACTOR PERFORMANCE
& SPECIFICATION MANUAL**

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CITY OF HOUSTON CONTRACTOR PERFORMANCE & SPECIFICATIONS MANUAL

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INTRODUCTION

PURPOSE OF PERFORMANCE MANUAL

The purpose of the Performance Manual is to provide and make a part of each contract, subcontract, contract bid, and contract proposal certain minimum standards of quality of workmanship and materials expected in the Work and required by the CITY, as well as certain contractual obligations expected in the performance of Work under the Program. It is intended that these minimum performance standards shall prevail except when in conflict with, or less stringent than, City of Houston, State, or Federal Regulations or Codes, in which instance the more stringent standards will prevail. The Performance Manual is set forth as a guideline for contractors. Where a direct conflict exists between a provision of the Performance Manual and a provision of a separate Contract Document on a Project, the specific Contract Document shall control. Otherwise the provisions of the Performance Manual shall be deemed to supplement the contractual requirements.

While the CITY has undertaken due diligence in creating the Performance Manual, the CITY reserves the right to make changes as deemed necessary. Contractors retained to rehabilitate or reconstruct homes within the City of Houston for the Program will be notified of any changes to the Performance Manual in writing. All changes become effective immediately upon receipt. Any questions or concerns regarding applicable changes must be submitted in writing to Cedrick LaSane, City of Houston, Housing and Community Development Department (713) 865-4153; 601 Sawyer Street, 4th floor Houston, Texas, 77007 within 24 hours of notification.

The Performance Manual is specifically designed to serve as a guide for the Rehabilitation and/or Reconstruction of residences for low to moderate income homeowners residing in City of Houston, excluding all surrounding cities.

MATERIALS AND WORKMANSHIP

All work shall be performed by competent workman pursuant to cost estimates and/or bid documents under the supervision of the contractor or his agent. All sizes and grades of materials shall be new, of a generally acceptable standard and in first class condition. All finished work shall be clean and free from tool marks or other foreign blemishes. All measurements shall be verified at building site. All work shall be in conformity with manufacturer's printed directions. All fittings, off-sets, etc. required shall be furnished and installed without additional expense to HOMEOWNER. All work and supplies shall be protected from the weather during the course of construction. Under no circumstances whatsoever shall CONTRACTOR install any materials supplied by the HOMEOWNER.

SECTION I - GENERAL CONDITIONS

ARTICLE I CONTRACT DEFINITIONS

1.1 Whenever the following terms are used in these General Conditions or in the other Contract Documents the intent and meaning shall be interpreted as follows:

- A. CITY: The City of Houston, referred to sometimes as the “CITY”, is the sub-recipient of General Land Office (GLO) funds dedicated to and allocated for the benefit of Homeowners in the City of Houston to provide reconstruction of single-family owner-occupied housing units and rehabilitation of storm damage units up to current building codes. The CITY is also the recipient of funds awarded pursuant to the Recovery Act in connection with HUD’s Lead Hazard Control program. The CITY is a contracting entity and representative of Homeowners in connection with the Program. The CITY will utilize the services of a Program Administrator to inspect and monitor the Program.
- B. CONTRACT: The agreement or agreements between the CITY, the CONTRACTOR and/or the HOMEOWNER for the Reconstruction or Rehabilitation of housing units pursuant to and in accordance with the Contract Documents.
- C. CONTRACT DATE: The date of the contract is the date shown as the effective date on the Homeowner/Contractor Construction Contract.
- D. CONTRACT DOCUMENTS: The Contract Documents consist of (i) the Request for Proposal (Reconstruction or Rehabilitation) (the “Request for Proposal”), (ii) Contractor’s Proposal as accepted by the CITY, (iii) the City of Houston Minimum Housing Standards (Reconstruction or Rehabilitation), (iv) the City of Houston Contractor Performance and Specifications Manual for CDBG Disaster Recovery Housing Program (the “Performance Manual”, (v) the signed Homeowner/Contractor Construction Contract; (vi) a signed Tri-Party Construction Loan Agreement; (vii) Escrow Agreement; (viii) Homeowner Assistance Agreement (Reconstruction or Rehabilitation); (ix) 1309C Due on Sale and Transfer of Property Disclosure; (x) 1309D Subrogation and Assignment Agreement; and (xi) 1309A Unsecured Forgivable Promissory Note.

As used herein, all references to the Homeowner/Contractor Construction Contract include and refer to the Homeowner/Contractor Reconstruction Contract, the Homeowner/Contractor Rehabilitation Construction Contract, and the Homeowner/Contractor Rehabilitation and Lead-Based Paint Remediation Construction Contract. Additionally, all references to the Tri-Party Construction Loan Agreement include the version of the Tri-Party Construction Loan Agreement executed in connection with the reconstruction program, the rehabilitation program, and the rehabilitation and lead-based paint remediation program.
- E. CONTRACT SUM: The contract sum is the total compensation payable to the Contractor for performing the Work as originally contracted or as subsequently adjusted by contract modifications.
- F. CONTRACTOR: The Contractor, referred sometimes as the “CONTRACTOR”, is the person or organization identified as such in the Homeowner/Contractor Construction Contract and is referred to throughout the Contract Documents as if singular in number and masculine in gender. The term, "Contractor," means the Contractor or his authorized representative.
- G. DAY: Whenever the word “day” is used in the Contract Documents it shall be interpreted to mean calendar day, unless otherwise specifically stipulated.
- H. HCDD: Housing and Community Development or Program Administrator.

- I. HOMEOWNER: The Homeowner is the person or organization identified as such in the Homeowner/Contractor Construction Contract and is referred to throughout the Contract Documents as if singular in number and masculine in gender (the "HOMEOWNER").
- J. INSTALL: Except as otherwise defined in greater detail, term "install" is used to mean supply and deliver to Project site, ready for unloading, unpacking, assembly, installation, etc., as applicable in each instance and operations at Project site including unloading, unpacking, assembly, erection, placing, anchoring, applying, working to dimension, finishing, curing, protecting, cleaning and similar operations, as applicable in each instance. If used in reference to existing Work this shall include the removal of all existing items which impede or otherwise is necessary for the completion of the new Work and at the cost of the Contractor. This Work shall be included as part of the total cost of Work
- K. INSPECTOR: City of Houston's Housing and Community Development staff will be responsible for construction oversight and project progression for overall quality, draw sign-offs and completion of each project.
- L. NOTICE TO PROCEED: The written notice by the CITY which establishes the date for commencement of contract Work and the date for completion of the contracted Project or Work.
- M. PROJECT: The term "Project" shall comprise the Work to be performed on an individual housing unit as established in the Work Write-Ups included in the Contract Documents.
- N. PROVIDE: Except as otherwise defined in greater detail, term "provide" means furnish and install, complete and ready for intended use, as applicable in each instance.
- O. SPECIFICATIONS: The term "Specifications" shall refer to the standards, requirements and conditions contained in Sections II through XV of the Performance Manual.
- P. SUBCONTRACTOR: A person or organization who has a direct contract with the CONTRACTOR to perform any of the Work at the site of a Project. The term "Subcontractor" is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Subcontractor or his authorized representative.
- Q. SUB-SUBCONTRACTOR: a person or organization who has a direct or indirect contract with a Subcontractor to perform any of the Work at the site of a Project. The term "Sub-subcontractor" is referred to throughout the Contract Documents as if singular in number and masculine in gender and means a Sub-subcontractor or an authorized representative thereof.
- R. TESTING LABORATORY: An independent entity engaged to perform specific inspections or tests of the Work, either at a Project site or elsewhere; and to report and (if required) interpret results of those inspections or tests.
- S. WORK: All labor, materials, facilities and all other things which are required to complete the Projects under the Contract Documents.
- T. WORK WRITE-UPS: The written descriptions and details of the scope of Work to be performed by CONTRACTOR on each individual Project or housing unit under the Program, as contained in the Request for Proposal and as accepted and approved by the CITY under the Contract. __

ARTICLE II LAWS GOVERNING CONSTRUCTION

- 2.1 COMPLIANCE WITH LAWS: In the execution of the Contract, the CONTRACTOR must comply with all applicable State and Federal laws, including but not limited to laws concerned with labor, environment, equal

employment opportunity, safety and minimum wages. The CONTRACTOR shall make itself familiar with and at all times shall observe and comply with all Federal, State and Local laws, ordinances and regulations which in any manner affect the conduct of the Work, and shall indemnify and hold harmless the HOMEOWNER, and the CITY against any claim arising from violation of any such law, ordinance or regulation by itself or by its employees. When requested, competent evidence of compliance with applicable laws shall be furnished.

- A. The CONTRACTOR shall cooperate with applicable CITY or other governmental officials at all times where their jurisdiction prevails. If such official or inspector deems special inspection necessary, the CONTRACTOR shall provide assistance and facilities that will expedite his inspection. The CONTRACTOR shall make application and pay all costs for any permits and all temporary services and utilities which are required for the execution and performance of the Contract. Costs of all permits, inspection fees, service, utility fees, taps, etc., shall be included as part of the total cost of the Work.
- B. Where a testing laboratory has established standards and issued labels for a particular group, class, or type of equipment, the label shall be required on all equipment in that category. CONTRACTOR shall meet the minimum requirements of the 2009 International Residential Code, as adopted by the CITY. When requested competent evidence of compliance with applicable codes shall be furnished.
- C. These Contract Documents shall be governed and interpreted in accordance with the laws of the State of Texas, and venue of any action hereunder shall lie in City of Houston, Texas.

ARTICLE III CONTRACT DOCUMENTS AND BONDS

- 3.1 COPIES FURNISHED - WORK WRITE UP: The CONTRACTOR will be furnished free of charge one (1) complete set of the Work Write-Ups before *on-site* Work commences. Additional complete sets of Work Write ups, if requested, will be the responsibility of the CONTRACTOR.
- 3.2 OWNERSHIP OF WORK WRITE-UPS AND SPECIFICATIONS: All Work Write-Ups and Specifications, and all copies thereof furnished by the CITY are and shall remain property of the CITY. They are not to be used on any Work or Project other than the Work and Projects awarded to CONTRACTOR pursuant to the Contract Documents.
- 3.3 SPECIFICATIONS AND WORK WRITE-UPS AT THE SITE: The CONTRACTOR shall maintain at the site one copy of all Specifications and one copy of all Work Write-Ups and/or approved Shop Drawings (if any) for construction, and shall at all times give the CITY or its representatives and agents access thereto. Failure to maintain such documents at job site shall constitute cause for denial of a progress payment otherwise due.
- 3.4 PERFORMANCE AND PAYMENT BONDS: The contract terms pertaining to Performance and Payment Bonds shall be as set forth in the Request for Proposal, and include the rights, duties and obligations set forth in the Contract Documents.
- 3.5 INTERRELATIONSHIP OF DOCUMENTS: The interrelation of Specifications, Work Write-Ups and the Performance Manual are as follows: The specifications contained in the Performance Manual determine the quality and conditions of the Work and the Projects, while the Work Write-Ups establish the quantities, dimensions and details required for each Project. Any requirement or detail included in any one of the Contract Documents shall be as if shown or mentioned in all Contract Documents. All quantities mentioned in the Work Write-Ups are only approximate. The CONTRACTOR is responsible for field verifying dimensions, quantities and conditions prior to submission of bid, and is responsible for providing all labor and materials for successful completion of the Work at no additional charge. Should there be a conflict between the Specifications, Work Write-Ups, the Performance Manual and/or other Contract Documents, the better quality or greater quantity of Work or materials shall be performed or furnished. In case of a

discrepancy, the matter shall be promptly submitted to the CITY, who shall make a determination in writing.

Any adjustment by the CONTRACTOR without such a determination shall be at the CONTRACTOR's own risk and expense. CONTRACTOR's failure to consult with the CITY will not release it from compliance with the more stringent of the items involved in the discrepancy.

ARTICLE IV CONTRACT ADMINISTRATION

- 4.1 GENERAL ADMINISTRATION: Unless otherwise provided for in the Contract Documents, the CITY, , will provide general administration of the Contract and will be the HOMEOWNER's representative during construction and until final payment. The CITY assumes no responsibility for any representation made orally by the CITY or its agents prior to the execution of the Contract Documents. The CITY assumes no responsibility for any conclusions or interpretations made by the CONTRACTOR. Any failure by the CONTRACTOR to become acquainted with available information will not relieve it from the responsibility for properly estimating the difficulty or cost of successfully performing the Work or mutually agreed changes thereto.
- A. The CITY, has the authority to act on behalf of the HOMEOWNER to the extent provided for in the Contract Documents.
 - B. The CITY, shall interpret the Contract requirements and have the authority to reject Work performed by the CONTRACTOR, which in the opinion of the CITY, does not meet the requirements of the Contract and to order such Work removed and replaced in accordance with paragraph 5.12.
 - C. Subcontracts: The CONTRACTOR shall not employ any subcontractor to which the CITY has made a reasonable objection to in writing. The CONTRACTOR will not be required to employ any subcontractor against which it has reasonable objection.
 - 1. The CONTRACTOR shall have every first-tier subcontractor agree to be bound in the same exact manner it is bound to the CITY to the extent of the portion of the Work covered under the subcontract, including without limitation with respect to the preparation and submittal of cost estimates and change order proposals in complete detail. The CONTRACTOR shall defend, indemnify, and hold harmless the CITY from and against any subcontractor's claim that may result from the failure of the CONTRACTOR so to bind every subcontractor to said terms.
 - 2. After the list of proposed subcontractors has been approved or deemed approved by the CITY, a change in any subcontractor or the addition of any new subcontractor can only be made with the written consent of the CITY.
- 4.2 ACCESS TO AND INSPECTION OF THE WORK: The CONTRACTOR shall provide sufficient, safe and proper facilities at all reasonable times for the observation and/or inspection of the Work by the authorized representatives of the CITY. The CITY, at their discretion, may make periodic visits to the site to familiarize themselves with the progress and quality of the Work and to determine if the Work is proceeding in accordance with the Contract Documents. Neither the periodic observations of the CITY in the administration of the Contract, nor any inspections, tests or approvals shall relieve the CONTRACTOR from its obligations to perform the Work in accordance with the Contract Documents.
- A. The CONTRACTOR shall not cover up any work with finishing materials or other building components prior to an inspection of the Work by the CITY or its PROGRAM ADMINISTRATOR for approval of the installation. Should corrections of the Work be required for approval, cover up shall be delayed until another inspection can be made and approval is indicated. Verbal approval to proceed with subsequent operations shall be confirmed to the CONTRACTOR in writing by the inspecting party.

- B. The CONTRACTOR shall be made responsible for providing notification of at least forty eight (48) hours to the CITY, of the anticipated need for cover up inspection. Should the CITY, fail to make the necessary inspection within a forty eight (48) hour period, the CONTRACTOR may proceed with the cover up Work, unless the CITY, through its PROGRAM ADMINISTRATOR, makes a written arrangement with the CONTRACTOR for additional time in which to complete desired inspections.
- 4.3 SEPARATE CONTRACTS: The CITY reserves the right to award other contracts in connection with other portions of the Work or other portion of the Program.
- A. CONTRACTOR shall properly connect and coordinate its Work with the Work of other contractors. If any part of CONTRACTOR's Work depends on proper execution or proper results on the Work of any other separate contractor, CONTRACTOR shall inspect and promptly report in writing to the CITY any discrepancies or defects it may find in such other Work that render it unsuitable for such proper execution and results. Failure of CONTRACTOR to so inspect and report shall constitute an acceptance of the other contractor's work as fit and proper to receive its work, except as in defects which may develop in the other separate contractor's work after the execution of CONTRACTOR's work.
- B. Should CONTRACTOR cause delay or cause damage to the work or property of any separate contractor on the Project, CONTRACTOR shall, upon due notice, endeavor to settle with such other contractor by agreement. If such separate contractor sues the CITY or HOMEOWNER on account of any damage alleged to have been so sustained, the CITY shall notify CONTRACTOR who shall defend such proceedings and pay all costs in connection therewith, and if any judgment against the CITY or HOMEOWNER arises there from, CONTRACTOR shall pay or satisfy it.
- C. The CONTRACTOR shall afford the CITY, the HOMEOWNER and/or other contractors reasonable opportunity for the introduction and storage of their materials and equipment and the execution of their work and shall properly connect and coordinate its Work with theirs.
- D. The CITY reserves the right, with the concurrence of the CONTRACTOR, to make essential installations which are pertinent to the early use of the building or project. Within this right the CITY may let other contractors or may authorize such work with its own labor forces and materials. The CONTRACTOR shall not commit or permit any act which will interfere with the performance of work by any other contractor or supplier. The CONTRACTOR shall cooperate to the end that the CITY may realize complete functioning of the building or Project on the day of substantial completion.
- 4.4 CONTRACT TERMINATION:
- A. TERMINATION BY CONTRACTOR. If the Work is stopped for a period of ninety (90) days under an order of any court or public authority having jurisdiction, or as a result of an act of government, such as a declaration of a national emergency making materials unavailable, through no act or fault of the CONTRACTOR or a Subcontractor or their agents or employees or any other persons performing any of the Work under a contract with the CONTRACTOR, then the CONTRACTOR may, upon seven (7) additional days written notice to the CITY, terminate the Contract and recover from the CITY payment for all Work completed and properly executed and for reasonable profit and overhead associated with such completed Work. If the cause of the Work stoppage is removed prior to the end of the seven (7) day notice period, the CONTRACTOR may not terminate the Contract.
- B. TERMINATION FOR CAUSE BY CITY. If the CITY, determines that the CONTRACTOR is adjudged as bankrupt, or if it makes a general assignment for the benefit of its creditors, or if a receiver is appointed on account of its insolvency, or if it persistently or repeatedly refuses or fails, except in cases for which extension of time is provided, to supply enough skilled workmen or proper materials, pay its subcontractors or suppliers, or if it persistently performs substandard work, or

persistently disregards laws, ordinances, rules, regulations or orders of any public authority having jurisdiction, or otherwise guilty of a substantial violation of a provision of the Contract Documents, or fails to so prosecute the Work as to insure its completion, within the time, or any extension of thereof, specified in the Contract, then the CITY may, without prejudice to any right or remedy and after giving the CONTRACTOR and its surety, if any, seven (7) days Certified Mail written notice at the last known business address, terminate the employment of the CONTRACTOR and take possession of the site and of all materials, and/or equipment on the job site which has been purchased and paid for by the CITY expressly for the purposes of construction of that Project. Should the surety, if any, fail to respond within seven (7) working days following such notice and pursue completion of the Work with diligence acceptable to the CITY, the CITY, may arrange for completion of the Work and issue a change order deducting the cost thereof from the unpaid CONTRACTOR the sum remaining, in which event no further payment shall then be made by the CITY until all costs of completing the Work shall have been paid. If the unpaid balance of the Contract sum exceeds the costs of finishing the Work, such excess shall be paid to the CONTRACTOR or its surety as applicable. If such costs exceed the unpaid balance, the CONTRACTOR or its surety shall pay the difference to the CITY. If the CITY sues the CONTRACTOR or Surety on account of failure to pay such difference in cost upon demand, the CONTRACTOR and Surety will pay all costs in connection therewith, including reasonable attorney's fees. This obligation for payment shall survive the termination of the Contract. In addition, all other obligations of the CONTRACTOR, except further performance, shall survive the termination of the Contract. It is further expressly agreed by and understood by and between all parties to the Contract, that should the CONTRACTOR be terminated pursuant to this Paragraph 4.4 B, no further funds shall be paid to said CONTRACTOR or his subcontractors unless and until the remaining unfinished Work has been completed by a substitute contractor, accepted by the CITY, and the substitute contractor has been paid in full. The payment of the balance remaining of the original contract amount shall constitute the full and complete discharge of any and all obligations owed said terminated CONTRACTOR regardless of the amount actually owed said CONTRACTOR. No claims filed by subcontractors of the CONTRACTOR shall be valid in excess of the amount authorized in this Article. No subcontractor shall have any statutory or other lien or claim against the HOMEOWNER, the CITY for any amount in excess of the amount agreed to be paid in the Contract Documents for such Work.

- C. TERMINATION FOR CONVENIENCE BY CITY: Prior to or during the performance of the Work, the CITY reserves the right to terminate the Contract for unforeseen causes not limited to court orders, loss of funding, acts of the federal government to discontinue the Work, etc., that may occur. Upon such an occurrence, the following procedures will be adhered to:
1. The CITY, will immediately notify the CONTRACTOR in writing, specifying the effective termination date of the Contract.
 2. After receipt of the notice of termination, the CONTRACTOR shall immediately proceed with the following obligations, regardless of any delay in determining or adjusting any amounts due at that point in the Contract:
 - a. Stop all Work.
 - b. Place no further subcontracts or orders for materials or services.
 - c. Terminate all subcontracts.
 - d. Cancel all material and equipment orders as applicable.
 - e. Take action that is necessary to protect and preserve all property related to the Contract which is the possession of the CONTRACTOR.

3. Within 30 days of the date of the Notice of Termination, the CONTRACTOR shall submit a final termination settlement proposal to the CITY, through its PROGRAM ADMINISTRATOR, based upon costs up to the date of termination, reasonable profit on Work done only, and reasonable demobilization costs. If the CONTRACTOR fails to submit the proposal within the time allowed, the CITY may determine the amount due to the CONTRACTOR because of the termination and shall pay the determined amount to the CONTRACTOR.
- D. **WRITTEN NOTICE OF TERMINATION:** Written notice of termination shall be considered to have been duly given if Notice is provided pursuant to the terms of the Request for Proposal.

ARTICLE V CONTRACT RESPONSIBILITIES

- 5.1 **HOMEOWNER RESPONSIBILITIES:** Responsibilities of HOMEOWNER are set forth in the Contract Documents, including the Homeowner/Contractor Construction Contract.
- 5.2 **CONTRACTUAL RELATIONSHIP:** CONTRACTOR binds itself, its partners, successors, assigns and legal representatives to HOMEOWNER and to the CITY under the Contract Documents, and to the partners, successors, assigns and legal representatives of each such other party in respect to all covenants, agreements and obligations contained in the Contract Documents. The CONTRACTOR shall not assign the Contract or sublet it as a whole without the written consent of the CITY, nor shall the CONTRACTOR assign any monies due or to become due, without the previous written consent of the CITY.
- 5.3 **DISPUTE RESOLUTION:** This paragraph concerns disputes over questions of fact that arise under the Contract Documents and that are not disposed of by agreement. Except as otherwise provided in the Contract Documents, the CONTRACTOR may obtain a decision on any such question of fact by making a written request, in which the question of fact is clearly stated and this paragraph is cited, to the CITY. The CITY may in its discretion make a decision on any such questions without a request by the CONTRACTOR. Any such request by the CONTRACTOR must be made before final payment on a Project is rendered to CONTRACTOR. The CONTRACTOR shall enclose with its letter of request or incorporate therein by specific reference to all information and documents that it wishes the CITY to take into account in making the decision. The CITY shall reduce its decision to writing and mail or otherwise furnish a copy thereof to the CONTRACTOR.

Pending final decision of a dispute hereunder, the CONTRACTOR shall proceed diligently with the performance of the Contract and in accordance with the CITY's decision.

- 5.4 **CONTRACTOR'S RESPONSIBILITIES:** Responsibilities of CONTRACTOR are set forth in the Contract Documents, including the Homeowner/Contractor Construction Contract. In addition to the provisions therein the CONTRACTOR shall supervise and direct the Work using its best skill and attention to assure that each element of the Work conforms to the contract requirements. CONTRACTOR shall be solely responsible for all construction means, methods, techniques, safety, sequences and procedures, and for coordinating all portions of the Work under the Contract Documents.
- A. The CONTRACTOR shall provide, without extra charge, all incidental items required as a part of the Work, even though not particularly specified or indicated in the Contract Documents. If the CONTRACTOR has good reason for objecting to the use of a material, appliance, or method of construction as shown or specified in the Work Write-Ups, it shall register its objections with the CITY, through the PROGRAM ADMINISTRATOR, in writing. Otherwise, it shall proceed with the Work with the understanding that a satisfactory job is required.
- 5.5 **CONTRACTOR'S SUPERINTENDENT:** The CONTRACTOR shall hire a superintendent or representative to be present at the job site full time during the progress of the Work. The CONTRACTOR is responsible for providing the CITY with a local representative who may be contacted at any time and will respond within a

two-hour time frame. Further, in case of an emergency, the representative must be able to be contacted within thirty (30) minutes. All communication given to the representative shall be as binding as if given to the CONTRACTOR; any such communications that affects contract time, contract cost and contract interpretation must be confirmed in writing.

- 5.6 ACTS AND OMISSIONS: The CONTRACTOR shall be fully responsible for acts and omissions of its employees and its subcontractors, their agents and employees. The CITY, through its PROGRAM ADMINISTRATOR, may, in writing, require the CONTRACTOR to remove from the Work any of its subcontractors or subcontractors' employees that the CITY finds to be careless, incompetent or otherwise objectionable.
- 5.7 CONDITIONS AT SITE OR BUILDING: The CITY, shall furnish to CONTRACTOR all currently available surveys describing the physical characteristic, legal description and known limitations of the property addressed in each Work Write-Up. The CITY make no representations as to the accuracy or completeness of the site information furnished to the CONTRACTOR and do not expressly or by implication warrant same and are not responsible for any interpretations or conclusions reached by the CONTRACTOR with respect thereto. It is the CONTRACTOR's sole responsibility to verify to its own satisfaction all site information, including but not limited to topographical data, borings, subsurface information, utilities and easements.
- A. The CONTRACTOR is responsible for having visited the site and having ascertained pertinent local conditions such as location, accessibility, and general character of the site or building, the character and extent of existing work within and adjacent to the site, and any other work being performed thereon at the time of the submission of its proposal. Any failure to do so will not relieve it from the responsibility for successfully performing the Work without additional expense to the CITY or to HOMEOWNER.
- B. If, in the performance of the Work, subsurface, latent or concealed conditions at the site are found to be materially different from the information included in the bid documents, or if unknown conditions of an unusual nature are disclosed differing materially from the conditions usually inherent in the Work of the character shown and specified, the CITY, shall be notified in writing of such conditions before they are disturbed. Upon noticing such conditions the CONTRACTOR will submit, and the CITY will reasonable consider, a Change Order in accordance with the provisions of Article 6.
- 5.8 INSURANCE: Please refer to Request for Proposal, Part VI, Attachment L.
- 5.9 SAFETY PRECAUTIONS AND PROGRAMS:
- A. It shall be the duty and responsibility of the CONTRACTOR and all of its subcontractors to be familiar and comply with all requirements of Public Law 91-596, 29 U.S.C. Sec. 651 et seq., the Occupational Safety and Health Act of 1970, (OSHA) and all amendments thereto, and to enforce and comply with all of the provisions of this Act.
- B. In any emergency affecting the safety of persons or property, the CONTRACTOR shall act, at its discretion, to prevent threatened damage, injury or loss. Any additional compensation or extension of time claimed by the CONTRACTOR resulting from emergency Work shall be considered in accordance with Article VI for Contract Change Orders.
- 5.10 MATERIALS AND WORKMANSHIP: All Work shall be executed in accordance with the Contract Documents, complete in all parts and in accordance with approved practices and customs, and of acceptable finish and workmanship. Unless otherwise specified, all materials and equipment incorporated in the Work under the Contract shall be new.
- 5.11 TESTS: If the Contract Documents, laws, ordinances, rules, regulations or orders of any public authority having jurisdiction require any Work to be inspected, tested or approved, the CONTRACTOR shall give the

CITY, timely notice of its readiness and of the date arranged so the CITY may observe such inspection, testing or approval. In addition, the CITY, , may require special inspection, testing or approval of material or Work for compliance with the requirements of the Contract Documents. Upon direction of the CITY, the CONTRACTOR shall promptly arrange for such special testing, inspection or approval procedure. Should the material or Work fail to comply with the requirements of the Contract Documents, the CONTRACTOR shall bear all costs of the testing, inspection or approval as well as the cost of replacement of unsatisfactory material or Work as provided by Paragraph 5.12; otherwise, the CITY shall bear such costs and an appropriate change order shall be issued. The costs of routine testing shall be borne by the CONTRACTOR, and the CONTRACTOR shall be responsible for the cost of materials tested.

When directed by the CITY, material compliance with the specifications shall be made by one of the following:

- A. Manufacturer's certificate of compliance
- B. Mill certificate
- C. Testing Laboratory certification

5.12 REMOVAL OF DEFECTIVE WORK: The CITY, shall interpret the Contract requirements and shall be the final judge of the acceptability of the Work under the Contract Documents. If any materials furnished under this Contract are condemned by the CITY, the CONTRACTOR shall, after having received notice from the CITY to that effect, proceed to remove from the grounds or buildings all condemned materials, whether worked or not worked, and to take down all portions of the Work which the CITY, shall by written notice condemn as unsound or improper or as in any way failing to conform to the Specifications and/or Work Write-Ups, and shall make good all Work damaged or destroyed thereby.

- A. The CONTRACTOR shall, without charge, replace any material or correct any workmanship found by the CITY, not to conform to the contract requirements, unless in the public interest the CITY, and the HOMEOWNER consents in writing to accept such material or workmanship with an appropriate adjustment in the contract price. The CONTRACTOR shall promptly correct all Work rejected by the CITY, as defective or as failing to conform to the Contract Documents whether observed before or after the date of Substantial Completion or final inspection and acceptance and whether or not fabricated, installed or completed. The CONTRACTOR shall bear all costs of correcting such rejected Work.
- B. If the CONTRACTOR does not promptly replace rejected material or correct rejected workmanship, the CITY, may, 1) contract or otherwise replace such material or correct such workmanship and charge the cost thereof to CONTRACTOR, or 2) terminate the CONTRACTOR's employment in accordance with paragraph 4.4, Contract Termination.
- C. If any portion of the Work is concealed by subsequent work contrary to the instructions of the CITY or the PROGRAM ADMINISTRATOR or to the requirements specifically expressed in the Contract Documents, it must be uncovered for observation and recovered at the CONTRACTOR's expense.
- D. If any other portion of the Work has been covered which the CITY has not specifically requested to observe prior to being covered, either may request to see such Work and it shall be uncovered by the CONTRACTOR. If such Work is found not to be in accordance with the Contract Documents, the CONTRACTOR shall pay such costs.

5.13 ROYALTIES AND PATENTS: The CONTRACTOR shall pay all royalties and license fees, and defend all suits or claims for infringement of any patent rights and shall hold the CITY and HOMEOWNER harmless from loss on account thereof, except that the CITY shall be responsible for all such royalties and license

fees and loss when a particular design or process, or the product of particular manufacturer or manufacturers are specified; provided, however, if the CONTRACTOR has reason to believe the design, process or product specified constitutes an infringement or a patent, it shall be responsible for such royalties, license fees and loss unless it promptly gives such information to the CITY.

5.14 EQUAL MATERIALS: It is not the intent of the Performance Manual to limit materials to the product of any particular manufacturer. Where definite materials, equipment and/or fixtures have been specified by name, manufacturer or catalog number, it has been done so as to set a definite standard and a reference for comparison as to quality, application, physical conformity, and other characteristics. It is not the intention to discriminate against or prevent any dealer, jobber or manufacturer from furnishing materials, equipment, and/or fixtures which meet or exceed the characteristics of the specified items. Substitution of materials shall not be made without prior written approval from the CITY.

- A. The CONTRACTOR shall be responsible for any additional costs or delays resulting from having furnished materials, equipment or fixture other than those specified, and shall reimburse the CITY for any increased design or administrative costs resulting from such substitutions.
- B. Samples are physical examples furnished by the CONTRACTOR to illustrate materials, equipment or workmanship, and to assist in the establishment of standards by which the Work will be judged.

5.15 SHOP DRAWINGS AND SAMPLES:

- A. Shop Drawings are drawings, diagrams, illustrations, schedules, performance charts, brochures and other data which are prepared by the CONTRACTOR or any Subcontractor, manufacturer, supplier or distributor, and which illustrate some portion of the Work.
- B. Samples are physical examples furnished by the CONTRACTOR to illustrate materials, equipment or workmanship, and to assist in the establishment of standards by which the Work will be judged.
- C. Upon written request by the CITY, the CONTRACTOR shall submit five (5) copies, with reasonable promptness and in orderly sequence, all Shop Drawings and Samples required by the Contract Documents, or subsequently by the CITY as covered by modifications. The CONTRACTOR shall review them for compliance with Contract Documents and shall certify that it has done so by stamp, or otherwise, affixed to each copy thereof. Submittal data presented without such certification will be returned without review or other comment, and any delay resulting there from will be the CONTRACTOR's responsibility.

- 1. Upon written request by the CITY, the CONTRACTOR shall within seven (7) calendar days after receipt of the Notice to Proceed, submit to the CITY, four (4) copies of a schedule, listing all items that shall be furnished, for review and approval by the CITY. The schedule shall also list all items that are to be reviewed and approved by the CONTRACTOR.
 - a. Such schedules shall include, among other things, shop drawings, manufacturer's literature, certificates of compliance, materials samples, materials colors, guarantees, etc.
 - b. The schedules shall indicate the type of item, contract requirements, the CONTRACTOR's scheduled dates for submitting the above and like items and the projected need dates for approval by the CITY and the projected or actual dates for procurement. The CONTRACTOR will revise and/or update this schedule as appropriate, and submit same with each payment estimate.
 - c. The submittal schedule shall be coordinated with progress schedule for all the Work. The CONTRACTOR shall revise and/or update the schedule monthly to

insure consistency with the progress schedule. Such revised submittal schedules shall be provided to the CITY in two (2) copies.

- D. Shop Drawings and Samples submitted pursuant to this paragraph shall be properly identified, as specified or as the CITY may require. At the time of submission, the CONTRACTOR shall inform the CITY in writing of any deviation in the Shop Drawings or Samples from the requirements of the Contract Documents.
- E. By submitting Shop Drawings and Samples, the CONTRACTOR thereby represents that it has determined and verified all field measurements, field construction criteria, materials, catalog numbers and similar data, or will do so in accordance with the requirements of the Work and the Contract Documents.
- F. If required, the CITY will review and approve the Shop Drawings and Samples within fourteen (14) calendar days or less, but only for conformance with the design concept of the Project and with the information given in the Contract Documents. The approval of a separate item shall not indicate approval of an assembly in which the item functions. The approval of the Shop Drawings or Samples shall not relieve the CONTRACTOR of responsibility for any deviation from the requirements of the Contract Documents unless the CONTRACTOR has informed the CITY in writing of such deviation at the time of submission and the CITY has not objected to the specific deviation. The approval shall not relieve the CONTRACTOR from responsibility for errors or omissions in the Shop Drawings or Samples.
- G. If required, the CONTRACTOR shall make any corrections required and shall resubmit the required number of corrected copies of the Shop Drawings or new Samples of materials until approved. The CONTRACTOR shall direct specific attention in writing to any new revisions other than the corrections requested on previous submission.
- H. No Work requiring a Shop Drawing or Sample submission shall be commenced until the submission has been approved. All such Work shall be in accordance with approved Shop Drawings and Samples submissions and shall not be changed except after a revised submittal has been made and approved.

5.15 CLEANING:

- A. Each subcontractor shall be responsible for removing his own trash from the work area and for the initial cleaning of his own Work when completed. The CONTRACTOR will perform final cleaning, without cost to the Subcontractors. Garbage collection shall be picked up daily.
- B. The CONTRACTOR shall be responsible for keeping the project free of garbage, trash, vermin and rodent infestation as a result of garbage or construction refuse at site. CONTRACTOR shall clear the site of trash daily and the interior of the building at least weekly. When rapid accumulation occurs, more frequent removals shall be required.
- C. CONTRACTOR shall remove highly combustible trash such as paper and cardboard daily. Removed debris shall be legally disposed of, and locations for disposal shall be of the CONTRACTOR's choice, within the above restriction. No debris or material may be buried or burned at the site. CONTRACTOR shall take all necessary precautions to prevent accidental burning of materials by avoiding large accumulations of combustible material. The Work shall be turned over to the HOMEOWNER in immaculate condition. Cleaning includes removal of smudges, marks, stains, fingerprints, soil, dirt, paint spots, dust, lint, discolorations and other foreign materials.

ARTICLE VI CONTRACT CHANGES

6.1 **CHANGE ORDERS:** After construction begins, circumstances may require a change in scope or cost from the original contract, upon the discovery of a need for a change, the follow process shall be followed:

- Step 1 CONTRACTOR notifies HCDD Field Supervisor of Change Order need. HCDD will designate a Senior Inspector and provide that person's name and contact information in the agreement between the HOMEOWNER and CONTRACTOR.
- Step 2 HCDD meets with CONTRACTOR in person regarding Change Order. CONTRACTOR must provide appropriate back-up to the Change Order which includes quantities and unit pricing as well as quotes from subcontractors if appropriate.
- Step 3 If research is necessary to determine the validity or accuracy of pricing or the necessity of the Change Order, the Field Supervisor can solicit assistance from others.
- Step 4 If the Senior Inspector of HCDD agrees change is required, the Field Supervisor will have the CONTRACTOR and the HOMEOWNER sign the Change Order Request Form 11.09 including identifying the work category. An additional line item will need to be added to TDCHA Form 11.09 if the following apply changes are sought: structure, elevation, lead-based paint.
- Step 5 The Change Order is forwarded to HCDD Financial to review funding requirements for the work being requested. HCDD Financial will enter the Change Order in for approval by management.
- Step 6 If the Change Order requires additional escrow funds the Case Manager is notified to meet with the HOMEOWNER to get agreement on additional funding or drop the Change Order Request.
- Step 7 If the HOMEOWNER agrees to additional escrow funds, HCDD is notified of additional funding HOMEOWNER is to deposit in account.
- Step 8 Housing Assistant Director approves Change Order upon notification that funding is available.
- Step 9 City of Houston reviews and approves the Change Order.
- Step 10 City of Houston submits Change Order to the State.
- Step 11 If the amount of the Change Order is less than 10 percent, the Change Order can be approved by the HCDD. If the change is greater than this amount, the Change Order must be presented to the Director's office for approval.
- Step 12 City of Houston notifies CONTRACTOR when the State has accepted the Change Order and/or the City of Houston has approved the use of other funding.

ARTICLE VII INSPECTIONS AND PROGRESS PAYMENTS

7.1 **INSPECTIONS:** The CONTRACTOR shall be responsible for coordinating all inspections required by the Contract Documents, including inspections by the local regulatory agencies, the CITY and/or HOMEOWNER. The CITY will complete up to nine (9) inspections for each housing unit, or Project to the satisfactory completion of designated portions of the Work, as follows:

1st INSPECTION: Foundation Repair/Demolition and Debris Removal. Inspection will cover a) for Reconstruction: removal of the old foundation (if necessary) and construction of the new foundation, with elevation where required, and all related debris removal; or, b) for Rehabilitation: full repair of

existing foundation, and demolition/removal of damaged components, with new work areas exposed for full rehabilitation. Work includes elevation component where necessary.

2nd INSPECTION: *Weather-tight, Roof on, Exterior Sheathed.* Inspection will require for both Reconstruction and Rehabilitation Projects that roofing be complete, structural framing be complete, and all exterior doors, exterior windows and exterior “skin” be completely installed.

3rd INSPECTION: *Rough-in-Repairs.* Inspection will require for both Reconstruction and Rehabilitation Projects that framing, rough wiring, rough plumbing, rough mechanical and rough electrical work are complete.

4th INSPECTION: *Finishes Completed, Systems Operating.* Inspection will require for both Reconstruction and Rehabilitation Projects the complete repair and installation of all finished systems, including water heater, HVAC, lighting and plumbing.

FINAL INSPECTION: Inspection will occur prior to occupancy and require full and final completion of all Work on the Project, including all punch-list items and documentation.

In simple rehabilitations there inspections 1 and 2 may be deleted. The CONTRACTOR shall also notify the CITY when the program inspections are to take place. There will be no additional cost for delays in work or time extensions granted for obtaining any required inspections. The HOMEOWNER is also required to approved and sign-off on any required inspections performed by the CITY on the GLO 11.04 form.

7.2 SCHEDULE OF VALUES AND PROGRESS PAYMENTS: CONTRACTOR shall be entitled to receive payment for Work completed and approved by the CITY on each Project.

REQUIREMENTS INCLUDE:

- A. Submit a Schedule of Values allocated to the various portions of the work, within 10 days after the Contract is awarded.
- B. Support the values with data which will substantiate their correctness. The breakdown of costs from City form 11.17 will be the basis for the schedule of values. Each scheduled value will be supported by a breakdown of the individual values from applicable items in GLO Form 11.17.
- C. The accepted Schedule of Values shall be used only as the basis for the CONTRACTOR's Applications for Payment.

FORM AND CONTENT OF SCHEDULE OF VALUES:

- A. Schedule shall list the installed value of the component parts of the work in sufficient detail to serve as a basis for computing values for progress payments during construction.
- B. Identify each line item with the number and title of the respective Section from Form 11.17.
- C. For the various portions of the work:
 1. Each item shall include a directly proportional amount of the CONTRACTOR's overhead and profit.
- D. The sum of all values listed in the schedule shall equal the total Contract Sum.

Each of these interim progress payments will be reduced by a retainage of 10% of the value of the payment, which retainage will be held until Final Payment on each Project is released following Final Inspection.

The CONTRACTOR shall promptly pay each subcontractor and supplier, upon receipt of payment from the CITY, out of the amount paid to the CONTRACTOR, on account of such subcontractor or supplier's Work, the amount to which said subcontractor or supplier is entitled, reflecting the percentage actually retained, if any, from payments to the CONTRACTOR on account of such subcontractor or supplier's Work.

In accordance with the Performance Manual (Division I, Article 7), the CONTRACTOR will receive payment for the lump sum rehabilitation at pay points (PP) shown in the table below. Inspections (I) will be made at points indicated in table below.

Inspection/Pay Point Category	1	2
Inspection	Reconstruction	Rehabilitation <\$50,000
Demo & Foundation (incl rough-in utilities if required)	PP/I	I
Structure (dry-in)	PP/I	I
Rough-in (consolidated)	I	I
Finished systems and work	PP/I	PP/I
Final	PP/I	PP/I

The CONTRACTOR will provide in a Schedule of Values as specified for each home, with a value of work for each of the three pay points in Inspection and Pay Point Category 1. The CONTRACTOR will provide in a Schedule of Values as specified for each home, with a value of work for each of the two pay points in Inspection and Pay Point 2. The Pay Point value for the Final inspection point shall not be less than 10 percent of the total value of the work for each individual home. The total of all pay point values will equal the total price quoted for each individual home to be rehabilitated. The Schedule of Values will be submitted to the SFHR Program section for review and acceptance. All payment packages will be turned in on the 4th Floor of 601 Sawyer, Houston, Texas 77007, Attn: SFHR Program Accounting.

- 7.3 **NOTIFICATION AND REQUEST FOR FINAL INSPECTION:** When the Work is completed on a particular Project, the CONTRACTOR shall notify the CITY, in writing that the Work will be ready for final inspection on a definite date. Upon verification by the CITY, that the Work is ready for final inspection and acceptance, the CITY will make a final inspection and, if the Work is found acceptable under the Contract Documents and the Work is fully performed as to the inspected Project, authorize final payment on the Project by the CITY to the CONTRACTOR pursuant to the Contract Documents.
- 7.4 **RETAINAGE:** Final payment shall include the remaining 10% of the Contract Price plus retainages withheld on partial payments. It is expressly agreed and understood that the Final Payment of the Contract Price on a Project shall be retained for a period not less than sixty (60) days following acceptance and completion of all work.
- 7.5 **FINAL PAYMENT DOCUMENTATION:** Final payment on a Project shall not be due and will not be made until after the Final Inspection is completed and a Certificate of Completion is issued to the CITY and the HOMEOWNER. Neither the final payment nor the remaining retained percentage shall become due until the CONTRACTOR submits to the CITY for transmittal to the HOMEOWNER (1) executed releases of liens or claims for liens by the CONTRACTOR, subcontractor or laborers; (2) an affidavit that all payrolls, bills for materials and equipment, and other indebtedness connected with the Work for which the HOMEOWNER or its property might in any way be responsible, have been paid or otherwise satisfied; (3) consent of Surety, if any,

to the final payment or satisfaction of all such obligations arising out of the Contract and (4) all close-out documents as required by the Project Close-out Checklist. If any Subcontractor refuses to furnish a release or waiver required by the CITY, the CONTRACTOR may furnish a bond satisfactory to the CITY to indemnify the CITY and HOMEOWNER against any such claim.

- 7.6 FINAL PAYMENT: The making of final payment on a Project shall constitute a waiver of all claims by the CITY and the HOMEOWNER by reason of defects in materials and workmanship, except those arising from: (1) faulty or defective Work appearing after Substantial Completion; (2) failure of the Work to comply with the requirements of the Contract Documents; or (3) terms of any special warranties required by the Contract Documents including warranties and guarantees pursuant to Article X herein. Acceptance of final payment on a Project shall constitute a waiver of all claims by the CONTRACTOR.
- 7.7 HOMEOWNER APPROVAL: In instance where the approval of HOMEOWNER is required for payment, it is expressly agreed by CONTRACTOR that the CITY shall accept the signature of the HOMEOWNER as identified on the Homeowner/Contractor Agreement as the only signature(s) required on behalf of the property owners for the approval of Work done to the date of such payment. Upon death or incapacity of the above designated party, the CITY may accept the signature of any remaining property owners for approval and acceptance of payment to the CONTRACTOR.
- 7.8 WITHHOLDING OF PAYMENT: The CITY may withhold or, on account of subsequently discovered evidence, nullify that part of any Certificate of Completion to such extent as may be necessary to protect and compensate the CITY or HOMEOWNER from loss on account of:
- A. Defective Work not remedied.
 - B. Damage to Work of another contractor.
 - C. Failure to maintain scheduled progress.
 - D. Receipt of written notice or of reasonable evidence by the CITY of unpaid bills.
 - E. Persistent failure to carry out the Work in accordance with the Contract Documents.
 - F. Reasonable evidence that the Work will not be completed within the Contract Time.
 - G. Reasonable evidence that the Work cannot be completed for the remainder of the Contract Sum.
 - F. Assessment of fines for violations of Prevailing Wage Rate laws.
- 7.9 OWNERSHIP OF WORK: All material and Work covered by partial payments made on a Project shall thereupon become the sole property of the HOMEOWNER, but this provision shall not be construed as relieving the CONTRACTOR from the sole responsibility for the care and protection of materials and Work upon which payments have been made or the restoration of any damaged Work, or as a waiver of the right of the CITY to require the fulfillment of all of the terms of the Contract.
- 7.10 LIMITATION OF PROGRESS PAYMENTS: If progress payments are made to CONTRACTOR as the Work progresses on multiple Projects, the total of all such progress payments shall not exceed 90% of the total value of the total Work due under the Contract. Payments to the CONTRACTOR shall not be construed to release the CONTRACTOR (or its surety) from any obligations
- 7.11 CONTRACTOR PAYMENT PROCESS:

Preliminary Administrative Matters:

Homeowner's Escrow: At the document signing held at the title company, the HOMEOWNER will escrow funds if they have any outstanding Duplication of Benefits or personal funds to contribute toward alternates or upgrades.

Contractor's Electronic Banking Information: Within five (5) days of the fully executed Homeowner/Contractor Construction Contract, the CONTRACTOR must provide electronic banking information to the CITY so that payments made directly into the CONTRACTOR's account.

Steps in Payment Process:

- Step 1 Upon completion of any one of the five (5) project inspection phases outlined in the Contract Documents, the CONTRACTOR shall request a Draw Inspection.
- Step 2 CONTRACTOR schedules the inspection with HOMEOWNER and the CITY.
- Step 3 After approval of the inspection, the CONTRACTOR submits the Draw package to the SFHR Accounting with the following:
- A. GLO Form 11.04 – Building Contractor's Request for Payment
 - B. Interim lien waivers from all subcontractors and suppliers and from the prime contractor.
 - C. Inspection Approval Report signed by CITY, HOMEOWNER and CONTRACTOR.
 - D. The CITY and State may require invoices from subcontractors and suppliers to support payment request.
- Step 4 CONTRACTOR shall provide Payment Package to the SFHR Accounting on the 4th floor of 601 Sawyer Street for approval.
- Step 5-A If the funds are to be drawn from the Homeowner's Escrow Account, the CITY will release these funds 1st to the CONTRACTOR's electronic account once the CITY has completed its review and approval process. The CITY will notify the CONTRACTOR of the same.
- Or
- Step 5-B If the funds are to be drawn from the Homeowner's Assistance Award and no escrow account is involved, the request will be forwarded on to the State once the CITY has reviewed and approved the payment request. Upon notification by the State of its approval of the request for payment, the CONTRACTOR will receive direct pay from the State Controller's Office.

ARTICLE VIII CONTRACTOR COMPLETION TIME

- 8.1 NOTICE TO PROCEED: The Contract Time will begin on the date designated in the Notice to Proceed issued by the CITY for each Project. The CONTRACTOR is required to complete the Work in the time that is stated in the Contract Documents, or any mutually approved written extensions thereof, in which case the time for completion of the Work will be extended by an equivalent amount of time.
- 8.2 WORK PROGRESS SCHEDULE: Within five (5) days after receipt of a Notice to Proceed, the CONTRACTOR shall submit in duplicate to the CITY, for approval an estimated progress schedule for the Work in relation to the each Project. This schedule shall indicate the dates for the starting and completion of the various classifications of construction.
- 8.3 DELAYS AND EXTENSION OF TIME:

- A. The CONTRACTOR may be granted an extension of time because of changes ordered in the Contract or because of strikes, lockout, fire, unusual delay in transportation, unavoidable casualties, inclement weather in excess of normal weather conditions, or any cause beyond the CONTRACTOR's control, provided that such an extension of time is justifiable and that such cause of delay prevented the execution of major critical items of Work as a result of which the final completion of the contract was delayed. The CITY will extend the time subject to the following provisions of this paragraph 8.3.
- B. Claims for extensions of time must be made in writing within five (5) calendar days after the occurrence of the delay or hindrance to the Work. All time extension claims shall be supported by sufficient written evidence to justify the claim. In the case of a continuing cause of delay, only one claim is necessary. Claims for extensions of time shall be stated in numbers of whole or half calendar days.
1. The CITY shall ascertain the facts and the extent of the delay and extend time for completing the Work when in the representative's judgment the findings justify such an extension of contract time. The findings of the CITY are final and conclusive on both parties, subject to the dispute resolution procedure provided in paragraph 5.3.
- C. NO DAMAGES FOR DELAY: The CONTRACTOR shall have no claim for monetary compensation or damages for delay or hindrances to the Work from any cause including without limitation any act or omission of the HOMEOWNER, the CITY. The CONTRACTOR's only claim for any such delay or hindrance shall be for an extension of time as provided in this paragraph 8.3.
- D. No extension of time shall release the CONTRACTOR (or the Surety furnishing a performance or payment bond) from any obligations under the contract or such a bond. Those obligations shall remain in full force until the discharge of the Contract.
- 8.4 COMPLETION OF WORK: The CONTRACTOR will be held to account for the Work being completed in the time that is stated in the Contract Documents, or any extension thereof.
- A. If, in the judgment of the CITY, the Work is behind schedule and the rate of placement Work is inadequate to regain scheduled progress so as to insure timely completion of the entire Work or a separable portion thereof, the CONTRACTOR, when so informed by the CITY, shall immediately take action to increase the rate of Work placement. This increase shall be accomplished by any one or a combination of the following or other suitable measures:
1. An increase in working forces.
 2. An increase in equipment or tools.
 3. An increase in hours of Work or number of shifts.
 4. Expedite delivery of materials.
- B. The CONTRACTOR shall, within ten (10) calendar days after being so informed, notify the CITY of the specific measures taken and/or planned to increase the rate of progress together with an estimate as to when scheduled progress will be regained. Should the plan of action be deemed inadequate by the CITY, the CONTRACTOR will take additional steps or make adjustments as necessary to the plan of action until it meets with the CITY's approval. The increased rate of Work will continue until scheduled progress is regained. Scheduled progress will be established from the latest revised progress schedule for the job. Timely completion will be understood to be the contract completion date as revised by all-time extensions granted at the time acceleration is undertaken. The CONTRACTOR shall not be entitled to additional compensation for the additional effort it applies to the Work under the

terms of this subparagraph.

8.5 **FAILURE TO COMPLETE WORK ON TIME:** The time set forth in the Contract Documents for the completion of Work is an essential element of the Contract. CONTRACTOR's failure to complete the Work within such time will cause damage to the HOMEOWNER.

- A. Time is of the essence and if the CONTRACTOR shall fail in the full performance of the entire Work or in the performance of Work on a Project within the specified time limit, CONTRACTOR shall pay the CITY \$250.00 per day of delay on each Project and/or the Work until the Work is completed, and such funds shall be credited against any money owed CONTRACTOR by the CITY on a Project under the Program, and may be required to cover living expense incurred by the Program for delayed completion. Said sum shall represent damages which may have been sustained due to CONTRACTOR's default. However, the CONTRACTOR shall not be charged with liquidated damages for any delays due to (i) acts of the government restricting labor, equipment, or materials by reason of national emergency; (ii) causes beyond the control and without the fault or negligence of the CONTRACTOR including but not restricted to the following: Acts of God; fires, floods, epidemics, quarantine restrictions; strikes; freight embargoes; and adverse weather conditions affecting the Work to be performed. The cause and extent of delays shall be evaluated and if delays are found to be properly excusable, extension of time for project completion will be adjusted to commensurate with the period of the excusable delays.

It is the responsibility of the CONTRACTOR to notify the CITY, of any such delays within ten (10) days.

- B. The time specified for completion in the Contract Documents shall cover final cleanup of the premises and completion of punch list deficiencies.
- C. For each consecutive calendar day after the expiration of the Contract Time that any Work, including the correction of deficiencies found during the final inspection, is not completed and accepted, the amount per day as stipulated in the Contract will be deducted from the money due or to become due the CONTRACTOR, [not as a penalty but as liquidated damages and added expense for contract supervision and the HOMEOWNER's delay costs in obtaining the use of the Work].

ARTICLE IX CONTRACT WARRANTY AND GUARANTEE

9.1 **ONE YEAR WARRANTY:** Except as otherwise specified, the CONTRACTOR warrants and guarantees all Work against defects in materials, equipment or Workmanship or one (1) year from the date of substantial completion of the entire project or designated portions thereof. However, some portions of the Work may have longer warranty periods and the circumstances and period will be listed.

General Contractors are held directly responsible for all work done by sub-contractors. Prior to final payment, Contractors shall provide a written guarantee directly to the HOMEOWNER warranting all work included in the contract for a period of ONE (1) year after final completion and acceptance of his work; manufacturers' warranties shall also be provided to HOMEOWNER by CONTRACTOR.

9.2 **CORRECTION OF DEFECTS:** Upon receipt of written notice from the CITY or HOMEOWNER of the discovery of any defects, the CONTRACTOR shall remedy the defects and replace any property damaged there from occurring within the warranty and guarantee period. If the CONTRACTOR, after notice, fails to proceed promptly and remedy such defects within 10 days or within any other period of time which has been agreed to in writing, or to comply with the terms of the warranty and guarantees, the CITY and or the HOMEOWNER may have the defects corrected and the CONTRACTOR (and its Surety) shall be liable for all expenses incurred.

ARTICLE X OPERATION AND STORAGE AREAS

- 10.1 The CONTRACTOR will operate and maintain operations areas and associated storage areas at the site of the Work in accordance with the following:
- A. All of CONTRACTOR's operations, including storage of materials and employee parking upon the site of Work, shall be confined or as designated by the CITY.
 - B. The CONTRACTOR will use only established roadways or construct and use such temporary roadways as may be authorized by the CITY. Load limits of vehicles shall not exceed the limits prescribed by appropriate regulations or law. The CONTRACTOR will provide protection to road surfaces, curbs, sidewalks, trees, shrubbery, sprinkler systems, drainage structures, and other like existing improvements to prevent damages, and any damage thereto shall be required by and at the expense of the CONTRACTOR.
- 10.2 The CITY, may restrict the CONTRACTOR's entry to the site to specifically assigned entrances and routes.
- 10.3 The CONTRACTOR shall at all times keep construction areas, including storage areas used by it, free from the accumulation of water, waste materials or rubbish during performance of the Work. During the period of construction, and no less frequently that once a week, the CONTRACTOR shall remove from the site any and all waste materials, rubbish and trash, and shall dispose of such waste materials, rubbish and trash off the property. Prior to the CONTRACTOR's requested date for a pre-final inspection, the CONTRACTOR shall remove any and all remaining equipment for the site and shall leave the premises in a clean, neat and workmanlike condition satisfactory to the HOMEOWNER and the CITY.

SECTION II – SUPPLEMENTAL CONDITIONS HISTORIC REHABILITATION

ARTICLE I HISTORIC REHABILITATION

- 1.1 Houses located within the Historic District of the City of Houston, in the National Historic Districts, in a National Conservation District or are designated as a Houston Landmark will be required to be repaired or rehabilitated within the standards of the governing preservation organizations.
- 1.2 Houses requiring Historic Rehabilitation will be designated as such in the Work Order for each property.
- 1.3 Historic rehabilitation is the repair or replacement of exterior building system utilizing like materials and maintaining existing forms in a way that preserves the visual appearance of the existing building.
- 1.4 Historic Rehabilitation only pertains to the exterior of the building.
- 1.5 The following building elements and materials must conform to the requirements of Historic Rehabilitation:
- A. Roofing
 - B. Siding
 - C. Exterior Doors
 - D. Windows
 - E. Shutters
 - F. Architectural Details

- G. Porches
 - H. ADA Compliant Lifts and Ramps
- 1.6 Exterior paint colors within Local Historic Districts are not reviewed by the Houston Landmark Commission. All exterior exposed wood is to be painted.

ARTICLE II DEFINITIONS

- 2.1 Whenever the following terms are used in these Supplemental Conditions or in the other Contract Documents the intent and meaning shall be interpreted as follows:
- A. **DESIGN STANDARDS:** The Design Standard is a ten chapter document used as a tool by the Landmark Commission to review and approve exterior alterations of properties located in the Locally Zoned Historic District. The design standards are based on the Secretary of the Interior's Standards for the Rehabilitation established by the National Park Service.
 - B. **HOUSTON LANDMARK:** A property designated a Houston landmark the property is subject to review by the Landmark Commission in the same manner as if the property was in a historic district.
 - C. **LOCAL LANDMARK:** See definition of Houston Landmark.
 - D. **NEIGHBORHOOD CONSERVATION DISTRICT:** This is a district which falls into the same requirements as a local historic district. San Jacinto is a Neighborhood Conservation District.
 - E. **REHABILITATION:** The act of upgrading, repairing and adding sensitive additions while preserving the character defining elements of the historic building.
 - F. **REPAIR:** Repair is the patching, piecing-in, splicing, consolidating or otherwise reinforcing. Repair may also include replacement in kind of extensively deteriorated or missing parts with the same material.
 - G. **REPLACE IN KIND:** When a form or detail is too deteriorated to be repaired, the item is to be replaced using the same material with the same form or detail of the original.
 - H. **STATE HISTORIC PRESERVATION OFFICES (SHPO'S):** This office is the Texas Historical Commission (THC) in Texas.

ARTICLE III BUILDING ELEMENTS

- 3.1 Roofing
- A. If damage to roof is less than 50% the existing roof is to be repaired, except for Asbestos Shingle roofs.
 1. **Slate Roof:** Slate Roofs are to be repaired with matching slate roofing in size and gauge of existing material utilizing a copper tab or hook repair method.
 2. **Asphalt Shingles:** Asphalt shingles are to be repaired with matching roofing material in size, color and tab configuration.
 3. **Asbestos Shingle Roofs:** Asbestos Shingle roofs are not to be repaired. Abatement of all of the roofing material in conformance with EPA and state guidelines for abatement and

disposal is to occur. Inspection of roofing felt and substrate are to occur. If substrate is satisfactory replace roofing felt as per specifications and install Architectural Tab Shingle Roof. Reference specifications for installation. If substrate is not satisfactory install substrate as designated in specifications and proceed with installation of felt and building material.

4. **Architectural Tab Shingles:** Architectural tab shingles are repaired with matching roofing material in size, color and tab configuration. Refer to specifications for installation.
 5. **Metal Shingle Roof:** Metal Shingle roofs are to be repaired with metal shingles in shape and size as similar to existing, as possible. The following are two approved sources: Berridge Classic or Victorian Shingles in Galvalume finish (www.berridge.com) or W.F. Norman Corporation Victorian Metal Shingles in Galvanized finish (wfnorman.com), other manufacturers will be considered.
- B. If the roof is a total replacement then **Architectural Tab Shingle** roof is to be provided. Reference specifications for proper removal and disposal of existing roof, inspection of existing substrate and installation of roofing felt and architectural tab shingle roof assembly.

3.2 Siding

- A. If siding damage is less than 50% of the total surface and Lead Paint Abatement does not prevent repairs then the siding is to be repaired then the following applies:
1. **Vinyl Siding:** If vinyl siding exists then the vinyl siding is to be repaired with like material in size profile and color. Painting of entire wall surface of siding may be required to match existing and is included in work. Refer to specifications for installation requirements. **THIS IS THE ONLY CONDITION WHERE VINYL SIDING IS ALLOWED IN A HISTORIC DISTRICT OR ON A HISTORIC LANDMARK.**
 2. **Wood Siding:** Wood siding is to be replaced in kind with like material in size and profile. Refer to specification for installation requirements.
 3. **Cement Siding:** If cement siding is existing then the siding is to be repaired with like material in size and profile and color. **CEMENT SIDING IS NOT ALLOWED IN THE PATCHING OR REPAIR OF EXISTING WOOD SIDING.**
- B. If siding is more than 50% damaged and or Lead Paint Abatement requires the removal of siding then the following applies:
1. **Vinyl Siding:** Vinyl Siding is to be removed. The substrate is to be examined. If wood siding is present it is to be refurbished and repaired. If wood siding is not repairable, wood siding is to be installed, refer to specifications. The size and profile is to match the existing. Trim profiles are to match existing.
 2. **Wood Siding:** Existing siding is to be removed. New wood siding is to be replaced in kind, refer to specifications. The size and profile is to match the existing. Trim profiles are to match existing.
 3. **Cement Siding:** **CEMENT SIDING IS NOT ALLOWED.**

3.3 Exterior Doors

- A. Maintain Size and shape of original door openings.

- B. Where possible, repair existing wood doors.
- C. Replacement Doors should be wood and match as close as possible the original at all publicly visible façades.
- D. DOORS WITH FAN OR OVAL LITES ARE NOT ALLOWED.
- E. METAL DOORS ARE NOT ALLOWED ON ANY PUBLICLY VISIBLE FACADE.
- F. Paneled wood door replacements are allowed.
- G. A historic door from another non-publicly visible façade location may be used.
- H. Existing transoms and side lights must be maintained and repaired if required.

3.4 Windows

- A. Maintain size and shape of existing window openings.
- B. Repair existing wood frame windows and sashes at all publicly visible facades.
- C. If repair of wood windows at publicly visible facades is not possible, provide wood window in profile as close as possible to match existing removed windows.
- D. Replace vinyl or aluminum windows located in visible facades with wood windows. (Most historic windows are double hung sash.)
- E. Replacement windows at non-visible facades are to be vinyl windows as specified.
- F. TINTED GLASS IN WINDOWS IS NOT ALLOWED.

3.5 Shutters

- A. Maintain existing shutters.
- B. Repair shutters when possible.
- C. Replacement shutters must match existing shutters in size and scale.
- D. Replacement shutters installed only for appearance must appear as if they are operable.
- E. Shutters must fit the size of the window opening.
- F. Remove metal and vinyl storm shutters which are visible from street.

3.6 Architectural Details

- A. Architectural details are typically found on the front façade and are commonly made of wood. The following are all considered architectural details: fish scale pattern shingles, spindles, brackets, handrails, balustrade, shutters, turned columns and newel posts.
- B. Repair architectural details where possible.

- C. The replacements of architectural details are to be as close as possible to the material, size and scale of the originals.
- D. If a replacement of a missing or in appropriate architectural detail is required, match detail of similar type on house of similar appearance as approved by HPO or the Landmark Commission.
- E. Inappropriate architectural details added at a later date are to be replaced with appropriate details. Examples are inappropriate handrails, or metal decorative trim and columns. Replacements of inappropriate details are included in the Work Order.
- F. DO NOT ADD ARCHITECTURAL DETAILS TO A HOUSE, WHERE NONE EXISTED.

3.7 Porches

- A. Original process and galleries are to be repaired in kind.
- B. If replacement of porch or gallery is necessary duplicate details and utilize same materials. Retain as much of the original ornament as possible.
- C. Material other than wood is acceptable only if it is documented that it was used on the house originally.

3.8 ADA Compliant Lifts and Ramps

A. Ramps

1. The installation of ramps or lifts per the specifications must comply with the Design Standards for Historic Properties.
2. Ramps shall be located at the side or rear of the house so as not to obscure the view of the house from the street if possible.
3. Ramps are to be designed in such a way that the original house material is not removed. The ramp construction and attachment to the house shall be reversible.
4. Ramps of wood construction must be of a simple design configured to match the original porch railings in materials, dimensions and detailing.
5. Ramps are to be painted to match color of porch rail or overall house paint color.

B. Lifts

1. Lifts are to be located at the side or rear of the house so as not to obscure the view of the house from the street if possible.
2. Lifts and the associated pad and landing are to be designed in such a way that the original house material is not removed. The ramp construction and attachment to the house shall be reversible.
3. Associated landings required for lifts shall be of a matching design to original house and be painted to match color of porch rails or overall house paint color.

END OF INTRODUCTION

SECTION 01 60 00

PRODUCT REQUIREMENTS

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SUMMARY

- A. This Section includes the following administrative and procedural requirements: selection of products for use in Project; product delivery, storage, and handling; manufacturers' standard warranties on products and special warranties.

1.3 DEFINITIONS

- A. Products: Items purchased for incorporating into the Work, whether purchased for Project or taken from previously purchased stock. The term "product" includes the terms "material", "equipment", "system", and terms of similar intent.
 - 1. Products: All products are designated by establishing significant qualities related to type, function, dimension, in-service performance, physical properties, appearance and other characteristics.
 - 2. New Products: Items that have not previously been incorporated into another project or facility. Products salvaged or recycled from other projects are *not* considered new products.
 - 3. Comparable Product: Product that is demonstrated and approved through submittal process, or where indicated as a product substitution, to have the indicated qualities related to type, function, dimension, in-service performance, physical properties, appearance, and other characteristics that equal or exceed those of specified product.
- B. Substitutions: Changes in products, materials, equipment and methods of construction from those required by the Contract Documents and proposed by Contractor.
- C. Manufacturer's Warranty: Preprinted written warranty published by individual manufacturer for a particular product and specifically endorsed by manufacturer to Owner.
- D. Special Warranty: Written warranty required by or incorporated into the Contract Documents, whether to extend time limit provided by manufacturer's warranty or to provide more rights for Owner.

1.4 QUALITY ASSURANCE

- A. Compatibility of Options: If Contractor is given option of selecting between two or more products for use on Project, product selected shall be compatible with products previously selected, even if previously selected products were also options.
 - 1. Each Contractor is responsible for providing products and construction methods compatible with products and construction methods of other contractors.

1.5 PRODUCT DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store, and handle products using means and methods that will prevent damage, deterioration, and loss, including theft. Comply with manufacturer's written instructions.

- B.
1. Schedule delivery to minimize long-term storage at Project site and to prevent overcrowding of construction spaces.
 2. Coordinate delivery with installation time to ensure minimum holding time for items that are flammable, hazardous, easily damaged, or sensitive to deterioration, theft, and other losses.
 3. Deliver products to Project site in an undamaged condition in manufacturer's original sealed container or other packaging system, complete with labels and instructions for handling, storing, unpacking, protecting, and installing.
 4. Inspect products on delivery to ensure compliance with Contract Documents and to ensure that products are undamaged and properly protected.
 5. Store products to allow for inspection and measurement of quantity or counting of units.
 6. Store materials in a manner that will not endanger Project structure.
 7. Store products that are subject to damage by elements, under cover in weather tight enclosure above ground, with ventilation adequate to prevent condensation.
 8. Comply with product manufacturer's written instructions for temperature, humidity, ventilation, and weather-protection requirements for storage.
 9. Protect stored products from damage.

1.6 PRODUCT WARRANTIES

- A. Warranties specified in other Sections shall be in addition to, and run concurrent with, other warranties required by the Contract Documents. Manufacturer's disclaimers and limitations on product warranties do not relieve Contractor of obligations under requirements of the Contract Documents.
- B. Special Warranties: Prepare a written document that contains appropriate terms and identification, ready for execution.
1. Manufacturer's Standard Form: Modified to include Project-specific information and properly executed.
 2. Specified Form: Forms are included with the Specifications. Prepare a written document using appropriate form properly executed.
 3. Refer to Division 2 through 32 Sections for specific content requirements and particular requirements for submitting special warranties.

PART 2 – PRODUCTS

2.1 PRODUCT OPTIONS

- A. General Product Requirements: Provide products that comply with the Contract Documents, that are undamaged, and unless otherwise indicated, that are new at time of installation.
1. Provide products complete with accessories, trim, finish, fasteners, and other items needed for a complete installation and indicated use and effect.
 2. Standard Products: If available, and unless custom products or nonstandard options are specified, provide standard products of types that have been produced and used successfully in similar situations on other projects.
 3. Descriptive, performance, and reference standard requirements in the Specifications established "salient characteristics" of products.

END OF SECTION 01 60 00

SECTION 01 77 00

CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SUMMARY

- A. This Section includes administrative and procedural requirements for contract closeout, including, but not limited to, the following:
 - 1. Inspection procedures.
 - 2. Project Record Documents.
 - 3. Operation and maintenance manuals.
 - 4. Warranties.
 - 5. Demonstration and Owner training.
 - 6. Final cleaning.

1.3 SUBSTANTIAL COMPLETION

- A. Preliminary Procedures: Before requesting inspection for determining state of Substantial Completion, complete the following list and items below that are incomplete in request.
 - 1. Prepare a list of items to be completed and corrected (punch list), the value of items on the list and reasons why the Work is not complete.
 - 2. Advise Sub Recipient of pending insurance changeover requirements.
 - 3. Submit specific warranties, maintenance service agreements, final certifications, and similar documents.
 - 4. Obtain and submit releases permitting Owner unrestricted use of the Work and access to services and utilities. Include occupancy permits, operating certificates, and similar releases.
 - 5. Prepare and submit Project Record Documents, operation and maintenance manuals, damage or settlement surveys, property surveys, and similar final record information.
 - 6. Make final changeover of permanent locks and coordinated delivery of keys to Owner. Advise Owner of changeover in security provisions.
 - 7. Complete startup testing of systems.
 - 8. Terminate and remove temporary facilities from Project site, along with construction tools, and similar elements.
 - 9. Advise Owner of changeover in Electricity, water, gas and other utilities.
 - 10. Submit changeover information related to Owner's occupancy, use, operation, and maintenance.
 - 11. Complete final cleaning requirements, including touchup painting.
 - 12. Touch up and otherwise repair and restore marred exposed finishes to eliminate visual defects.
 - 13. Obtain final windstorm inspections and WPI-8 certificates if required.
- B. Inspection: Submit a written request for inspection for Substantial Completion.
 - 1. Re-Inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

2. Results of completed inspection will form the basis of requirements for Final Completion

1.4 FINAL COMPLETION

- A. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 1. Submit a final Application for Payment.
 2. Submit copy of Substantial Completion inspection list of items to be completed or corrected (punch list), endorsed and dated by Contractor. The list shall state that each item has been completed or otherwise resolved for acceptance.
 3. Submit evidence of final, continuing insurance coverage complying with insurance requirements.
 4. Instruct Owner in operations, adjustment, and maintenance of products, equipment and systems.
- B. Inspection: Submit a written request for final inspection for acceptance.
 1. Re-inspection: Request re-inspection when the Work identified in previous inspections as incomplete is completed or corrected.

1.5 OPERATION AND MAINTENANCE MANUALS

- A. Assemble a complete set of operation and maintenance data indicating the operation and maintenance of each system, subsystem, and piece of equipment not part of a system. Include operation and maintenance data required in individual Specification Sections and as follows:
 1. Operation Data:
 - a. Emergency instructions and procedures.
 - b. System, subsystem, and equipment descriptions, including operating standards.
 - c. Operating procedures, including startup, shutdown and seasonal operations.
 - d. Description of controls and sequence of operations.
 - e. Piping diagrams.
 2. Maintenance Data:
 - a. Manufacturer's information,
 - b. Name, address, and telephone number of Installer or supplier.
 - c. Maintenance procedures.
 - d. Maintenance and service schedules for preventive and routine maintenance.
 - e. Maintenance record forms.
 - f. Copies of maintenance service agreements.
 - g. Copies of warranties.
- B. Organize operation and maintenance manuals into an appropriately sized folder so that all operation and maintenance manuals can be easily accessed.

1.6 WARRANTIES

- A. Submit written warranties.
- B. Organize warranty documents into an appropriately sized folder so that warranty documents can be easily accessed.
- C. Provide owner with contact information and how to report requests for one year construction warranty.

PART 2 – PRODUCTS

1.7 MATERIALS

- A. Cleaning Agents: Use cleaning materials and agents recommended by manufacturer or fabricator of the surface to be cleaned. Do not use cleaning agents that are potential hazardous to health or property or that might damage finished surfaces.

PART 3 – EXECUTION

3.1 DEMONSTRATION AND TRAINING

- A. Instruction: Instruct Owner to adjust, operate, and maintain systems, subsystems, and equipment not part of a system.
 - 1. Provide instructors experience in operation and maintenance procedures.
 - 2. Provide instruction at mutually agreed on times. For equipment that requires seasonal operation, provide instruction for each season.
- B. Program Structure: Develop an instruction program that includes training for each system and equipment not part of a system, as required by individual Specification Sections. For each system include instruction for the following:
 - 1. System design and operational philosophy.
 - 2. Review of documentation.
 - 3. Operation
 - 4. Adjustments
 - 5. Troubleshooting
 - 6. Maintenance
 - 7. Repair

3.2 FINAL CLEANING

- A. General: Provide final cleaning. Conduct cleaning and waste-removal operations to comply with local laws and ordinances and Federal and local environmental and antipollution regulations.
- B. Cleaning: Clean each surface complying with manufacturer's written instructions.
 - 1. Complete the following cleaning operations before requesting inspection for certification of Substantial Completion for entire Project:
 - a. Clean Project site, yard and grounds in areas disturb by construction activities, including landscape development areas, of rubbish, waste material, litter, and other foreign substances.
 - b. Sweep paved areas broom clean. Remove petrochemical spills, stains, and other foreign substances.
 - c. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - d. Remove tools, construction equipment, machinery, and surplus material from Project site.
 - e. Clean exposed exterior and interior hard surfaced finishes to a dirt-free condition, free of stains, films, and similar foreign substances. Avoid disturbing natural weathering of exterior surfaces. Restore reflective surfaces to their original condition.
 - f. Remove debris and surface dust from limited access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, attics, and similar spaces.
 - g. Sweep concrete floors broom clean in unoccupied areas.

- h. Vacuum carpet and similar soft surfaces, removing debris and excess nap; shampoo if visible soil or stains remain.
 - i. Clean transparent materials, including mirrors and glass in doors and windows per manufacturer's instructions (do not use metal scrapers or blades). Remove glazing compounds and other noticeable, vision-obscuring materials. Replace chipped or broken glass and other damaged transparent materials. Polish mirrors and glass, taking care not to scratch surfaces.
 - j. Remove labels that are not permanent.
 - k. Touch up and otherwise repair and restore marred, exposed finishes and surfaces. Replace finishes and surfaces that cannot be satisfactorily repaired or restored or that already show evidence of repair or restoration. Remove any paint over "UL" and similar labels, including mechanical and electrical nameplates. If needed, replace important labels that have been damaged.
 - l. Wipe surfaces of mechanical and electrical equipment and similar equipment. Remove excess lubrication, paint, and mortar droppings, and other foreign substances.
 - m. Replace parts subject to unusual operating conditions.
 - n. Clean plumbing fixtures to a sanitary condition, free of stains, including stains resulting from water exposure.
 - o. Replace disposable air filters and clean permanent air filters. Clean exposed surfaces of diffusers, registers, and grilles.
 - p. Clean ducts, blowers, and coils if units were operated without filters during construction.
 - q. Clean light fixtures, lamps, globes and reflectors to function with full efficiency. Replace burned out bulbs, and those noticeably dimmed by hours of use, and defective and noisy starters in fluorescent and mercury vapor fixtures to comply with requirements for new fixtures.
 - r. Leave Project clean and ready for occupancy.
- C. Comply with safety standards for cleaning. Do not burn waste materials. Do not bury debris or excess materials on Owner's property. Do not discharge volatile, harmful, or dangerous materials into drainage systems. Remove waste materials from Project site and dispose of lawfully.

END OF SECTION 01 77 00

SECTION 02 41 00

DEMOLITION

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes demolition and removal of the following:
 - 1. Buildings and structures.
 - 2. Site improvements including site utilities.
- B. Scope:
 - 1. The site work includes all labor material and equipment required for site excavation, vegetation removal, grading, and soil preparation as shown on the drawings and/or specified herein.
 - 2. Excavation and grading the site to sub-grade of paved or unpaved areas as shown on the drawings and/or specified herein.
 - 3. Excavation for footings, retaining walls, slabs, walks, curbs, and other structures.
 - 4. Excavation of trenches for the location of storm or footing drain tile.
 - 5. Installation of back-fill, base-course material, drain tile and catch basin.
 - 6. Stripping, storage and re-use of topsoil.
 - 7. Preparation of site to receive fill, topsoil or base course.
 - 8. Relocation and reuse of acceptable excavated material.
 - a. Removal from the site of all debris and unsuitable material.
 - b. Also included are:
 - 1) Concrete flatwork slabs and walks
 - 2) Bituminous flatwork driveways and walks
 - 3) Waterproofing
 - 4) Landscaping
 - 5) Fencing - metal and wood
 - 6) Railings

1.2 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site unless indicated to be removed and salvaged.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner ready for reuse.
- C. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or recycled.

1.3 MATERIALS OWNERSHIP

- A. Historic items, relics, and similar objects including, but not limited to, cornerstones and their contents, commemorative plaques and tablets, antiques, and other items of interest or value to Owner that may be encountered during building demolition remain Owner's property. Carefully remove and salvage each item or object in a manner to prevent damage and deliver promptly to Owner.

1.4 SUBMITTALS

- A. Qualification Data: For the following:
 - 1. Demolition firm.

2. Professional engineer.
 3. Refrigerant recovery technician. Schedule of Building Demolition Activities: Indicate detailed sequence of demolition and removal work, with starting and ending dates for each activity, interruption of utility services, and locations of temporary protection and means of egress.
- B. Landfill Records: Indicate receipt and acceptance of hazardous wastes by a landfill facility licensed to accept hazardous wastes.
- C. Statement of Refrigerant Recovery: Signed by refrigerant recovery technician responsible for recovering refrigerant, stating that all refrigerant that was present was recovered and that recovery was performed according to EPA regulations. Include name and address of technician and date refrigerant was recovered.

1.5 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Refrigerant Recovery Technician Qualifications: Certified by EPA-approved certification program.
- C. Regulatory Requirements: Comply with governing EPA notification regulations before beginning demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- D. Standards: Comply with ANSI A10.6 and NFPA 241.
- E. Pre-demolition Conference: Conduct conference at Project site.

1.6 PROJECT CONDITIONS

- A. Buildings and sections of buildings to be demolished will be vacated and their use discontinued before start of Work.
- B. Owner assumes no responsibility for buildings and structures to be demolished.
1. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
 2. Before building demolition, give Owner the opportunity to remove items.
- C. Hazardous Materials: It is not expected that hazardous materials will be encountered in the Work.
1. If materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Homeowner Recover Program.
- D. Hazardous Materials: Hazardous materials are present in buildings and structures to be demolished. A report on the presence of hazardous materials is on file for review and use. Examine report to become aware of locations where hazardous materials are present.
1. Hazardous material remediation is specified elsewhere in the Contract Documents.
 2. Do not disturb hazardous materials or items suspected of containing hazardous materials except under procedures specified elsewhere in the Contract Documents.
 3. Owner will provide material safety data sheets for materials that are known to be present in buildings and structures to be demolished because of building operations or processes performed there.
- E. Storage or sale of removed items or materials on-site is not permitted.

1.7 COORDINATION

- A. Arrange demolition schedule so as not to interfere with Owner's, building manager's, and other tenants' on-site operations.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soils: Shall be free of debris and other detrimental material. Fill shall be compacted to a density that will avoid damaging settlement. Fill shall be placed when ground is frost free and weather is favorable. Back Fill "Marine" Clay Soil: "Marine" Clay is not to be used as back fill for foundation, retaining walls, or compacted fill under slabs, walls or driveways. Dirt excavated must be removed with new soil brought in its place. Compacted with 6" lifts to 95% standard proctor density.

2.2 DAMPROOFING MATERIALS

- A. Manufacturers Approved
 1. Anti-Hydro Waterproofing Co.
 2. Celotex Corp.
 3. Chem Master Corp.
 4. Euclid Chemical Co.
 5. Flintkote Co.
 6. Grace & Co.
 7. Karnak Chemical Corp.
 8. Koppers Co., Inc.
 9. Meadows, Inc.
 10. Sika Chemical Corp.
 11. Sonneborn/Contech
 12. Weatherguard Products Corp.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of building demolition required.
- B. Inventory and record the condition of items to be removed and salvaged.
- C. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Architect.
- D. Engage a professional engineer to perform an engineering survey of condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during building demolition operations.
- E. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

- A. Refrigerant: Remove and store refrigerant according to 40 CFR82 and regulations of authorities having jurisdiction.
- B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings or sections of buildings to be demolished.
 1. Arrange to shut off indicated utilities with utility companies.
 2. If utility services are required to be removed, relocated, or abandoned, before proceeding with building demolition provide temporary utilities that bypass buildings

and structures to be demolished and that maintain continuity of service to other buildings and structures.

3. Cut off pipe or conduit a minimum of 24 inches (610 mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- C. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.
- D. Removed and Salvaged Items: Comply with the following:
 1. Clean salvaged items of dirt and demolition debris. Pack or crate items after cleaning. Identify contents of containers.
 2. Store items in secure area until delivery to Owner.
 3. Transport items to Owner's storage area indicated on Drawings.
 4. Protect items from damage during transport and storage.

3.3 PROTECTION

- A. Existing Facilities: Protect adjacent walkways, and remaining building elements, if any.
- B. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during demolition. When permitted by Architect, items may be removed to a suitable, protected storage location during demolition, and cleaned and reinstalled in their original locations after demolition operations are complete.
- C. Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. Maintain utility services indicated to remain and protect them against damage during demolition operations.
 1. Do not interrupt existing utilities serving adjacent occupied or operating facilities unless authorized in writing by Owner and authorities having jurisdiction.
 2. Should uncharted, or incorrectly charted, piping or other utilities be encountered during excavation, consult utility owner immediately for directions. Cooperate with Owner and utility companies in keeping respective services and facilities in operation. If contractor damages existing utility lines during the course and/or scope of work, the contractor shall repair such utility lines at the contractors own expense to the satisfaction of the utility company and authorities having jurisdiction.
 3. Provide temporary services during interruptions to existing utilities, as acceptable to Owner and to authorities having jurisdiction.
- D. Temporary Protection:
 1. Protect existing site improvements, appurtenances, and landscaping to remain.
 2. Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
 3. Protect walls, windows, roofs, and other adjacent exterior construction that are to remain and that are exposed to building demolition operations.

3.4 DEMOLITION, GENERAL

- A. Extent of demolition identified in work order. Demolition and partial demolition of items to be removed or replaced shall be done in a safe and orderly manner without damage to other portions of the property or adjacent properties. Any resulting damage or loss shall be corrected at the expense of the contractor. Complete demolition shall include building, foundation, and paving in its entirety unless otherwise in Work Order.
- B. Use methods required to complete the Work within limitations of governing regulations and as follows:
 1. Do not use cutting torches until work area is cleared of flammable materials. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.

2. Maintain adequate ventilation when using cutting torches.
 3. Locate building demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.
- C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from Owner or building manager and authorities having jurisdiction. Provide alternate routes around closed or obstructed traffic ways if required by authorities having jurisdiction.
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations. Do not use water when it may damage adjacent construction or create hazardous or objectionable conditions, such as ice, flooding, and pollution.

3.5 MECHANICAL DEMOLITION

- A. Remove indicated buildings, structures, and site improvements intact when permitted by authorities having jurisdiction. Contractor shall remove and haul away the structure indicated. Contractor shall be responsible for the safe removal of all utilities (gas, water, sewer and electric). If structure is attached to an existing structure that is not to be removed, utilities shall be discontinued for the demolished section only. All parts and debris from the demolition shall be removed from the site within 72 hours from commencement of work unless otherwise written into the contract.
- B. Proceed with demolition of structural framing members systematically, from higher to lower level. Complete building demolition operations above each floor or tier before disturbing supporting members on next lower level.
1. Remove structural framing members and lower to ground by method suitable to minimize ground impact or dust generation.
- C. Vegetation and Tree/Brush Removal:
1. Contractor shall remove the following vegetation from the site:
 - a. Remove all trees or vegetation described or marked in RED on site;
 - b. All vegetation shall be cut a minimum of 4" below ground surface;
 - c. A fill shall be installed into the cleared area, and properly compacted and graded;
 - d. Fill material shall be a local loam and placed properly on location and compacted to avoid erosion;
 - e. Color of fill shall blend with location;
 - f. No clay or debris in fill will be accepted;
 - g. Final work will result in proper area drainage.
- D. Concrete: Cut concrete full depth at junctures with construction indicated to remain, using power-driven saw, then remove concrete between saw cuts.
1. Patching Concrete:
 - a. Mix and apply bonding agent to prepared concrete areas in accordance with manufacturer's printed instructions.
 - b. Mix concrete mortar for patches, using Portland cement, sand and water in proper proportions for a workable mix.
 - c. The amount of mixing water shall be as little as is consistent with the requirements for handling and placing. Retemper mortar without the addition of water.
 - d. Thoroughly compact mortar into place and screed off to leave patches slightly higher than surrounding surfaces.

- e. Leave patch undisturbed for a period of 1 to 2 hours to permit initial shrinkage before finally finishing. Finish patches in such a manner to match adjoining surfaces.
 - f. When repairing concrete all patches shall be mechanically cut, doweled and repoured. Depth, width and height for new reinforced concrete retaining wall; install a 2" sand cushion and No. 3 and No. 4 steel rebar tied in an "H" pattern the full length of the beam; pour a premixed concrete into forms; temperature must be a minimum of 40 degrees. F and rising; rough finish all surfaces. Remove all debris and excess materials.
- E. Masonry: Cut masonry at junctures with construction indicated to remain, using power-driven saw, then remove masonry between saw cuts.
- F. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished at junctures with construction indicated to remain, then break up and remove. Structural Steel: Dismantle field connections without bending or damaging steel members. Do not use flame-cutting torches unless otherwise authorized by Architect.
- 1. Transport steel trusses and joists as whole units without dismantling them further.
- G. Carpet and Pad: Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, and tack strips.
- H. Building Components: Remove the following components, as whole units, intact and undamaged:
- 1. Doors.
 - 2. Windows.
 - 3. Door hardware.
 - 4. Cabinets.
 - 5. Mirrors.
 - 6. Plumbing fixtures.
 - 7. Light fixtures.
- I. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.
- J. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.

3.6 EARTHWORK

- A. Excavation:
- 1. Clearing, grubbing, cleanup of vegetation, and tree trimming and/or removal is to be done where excavation and grading are required
 - 2. Excavate to elevations and dimensions indicated, plus sufficient space to permit erection of forms, shoring, drain tile, waterproofing, masonry and the inspection of foundations. Control the grading around buildings so that ground is pitched to prevent water from running into the excavated areas of buildings or damaging other structures. Furnish all pumping required to keep excavated spaces clear of water during construction. Water shall not be conducted onto an adjacent property. All property shall be protected with straw bails or earth berms, per applicable soil erosion standards, to prevent dirt runoff.
 - 3. Excavations shall be properly shored and braced to assure against any danger to life and/or property. Drainage to be provided by contractor as necessary.
 - 4. Except where rock is encountered, care shall be taken not to excavate below the depths indicated. Where rock excavation is required, the rock shall be removed and the over depth filled with certified compacted backfill. Unauthorized over depths in excavation shall be backfilled with concrete or certified compacted fill to correct elevation or bear cost of a deeper wall. Whenever wet or otherwise unstable soil is

encountered, such soil shall be removed to the depth and extent directed, and the trench backfilled to the proper grade with concrete or certified compacted fill at the Contractor's expense.

5. Excavations for footings shall be in neat and accurately cut trenches. Contractor is to backfill upon completion of foundation work. Footing excavations for single-story dwellings, are to be a minimum of 12" into undisturbed soil and 12" wide; for two story dwellings a minimum of 15" wide and 12" into undisturbed soil, footings are to be 20" in depth.
 - a. In no case shall the load per square foot, under any portion of any footing, due to the combined dead load, live load, wind, and/or any other loads exceed the safe bearing capacity of the soil upon which the footing rests.
6. Water shall not be permitted to accumulate in excavated or crawl space areas. Drain by standard accepted method to a storm sewer or natural drainage area.

B. Backfill:

1. Backfill all areas with clean, dry soil free from wood, root matt, or other debris. Only approved granular materials shall be used for backfill. Soil should be carefully placed by a machine located perpendicular to the wall being backfilled. It shall be brought to a suitable elevation above finished grade and properly compacted in order to prevent lateral displacements of soil.
2. Care is to be taken not to fracture the wall by having heavy equipment located too near to the structure.
3. Backfill is to be compacted to prevent excess settling. No backfill shall be placed until the construction adjacent thereto, or the utility to be backfilled, has been inspected, tested and approved.
4. Use only earth materials, free from perceptible amounts of debris, wood, or topsoil. It shall be free of frost at the time of placement, and shall not contain marl or other elements which tend to keep it in a plastic state. Rock of proportional size may be included in the backfill when so distributed as to permit proper compaction without creating voids. Rock shall not be placed closer than twelve (12) inches to a wall or utility.

3.7 SITE RESTORATION

- A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.

3.8 REPAIRS

- A. General: Promptly repair damage to adjacent construction caused by building demolition operations.
- B. Where repairs to existing surfaces are required, patch to produce surfaces suitable for new materials.
- C. Restore exposed finishes of patched areas and extend restoration into adjoining construction in a manner that eliminates evidence of patching and refinishing.

3.9 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

1. Do not allow demolished materials to accumulate on-site.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

3.10 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by building demolition operations. Return adjacent areas to condition existing before building demolition operations began.

END OF SECTION 02 41 00

SECTION 02 83 33

LEAD-BASED PAINT REMOVAL AND DISPOSAL

PART 1 – GENERAL

1.1 DESCRIPTION

- A. This section specifies abatement and disposal of lead-based paint (LBP) and controls needed to limit occupational and environmental exposure to lead hazards.

1.2 RELATED WORK

- A. Section 02 41 00, DEMOLITION.
- B. Section 09 90 00, PAINTING.

1.3 APPLICABLE PUBLICATIONS

- A. The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.
- B. Code of Federal Regulations (CFR):
 - CFR 29 Part 1910 Occupational Safety and Health Standards
 - CFR 29 Part 1926 Safety and Health Regulations for Construction
 - CFR 40 Part 148 Hazardous Waste Injection Restrictions
 - CFR 40 Part 260 Hazardous Waste Management System: General
 - CFR 40 Part 261 Identification and Listing of Hazardous Waste
 - CFR 40 Part 262 Standards Applicable to Generators of Hazardous Waste
 - CFR 40 Part 263 Standards Applicable to Transporters of Hazardous Waste
 - CFR 40 Part 264 Standards for Owners and Operations of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - CFR 40 Part 265 Interim Status Standards for Owners and Operators of Hazardous Waste Treatment, Storage, and Disposal Facilities
 - CFR 40 Part 268 Land Disposal Restrictions
 - CFR 49 Part 172 Hazardous Material Table, Special Provisions, Hazardous Material Communications, Emergency Response Information, and Training Requirements
 - CFR 49 Part 178 Specifications for Packaging
- C. National Fire Protection Association (NFPA):
 - NFPA 701-2004..... Methods of Fire Test for Flame-Resistant Textiles and Films
- D. National Institute for Occupational Safety And Health (NIOSH)
 - NIOSH OSHA Booklet 3142 Lead in Construction
- E. Underwriters Laboratories (UL)
 - UL 586-1996 (Rev 2009) High-Efficiency, Particulate, Air Filter Units
- F. American National Standards Institute
 - Z9.2-2006 Fundamentals Governing the Design and Operation of Local Exhaust Systems
 - Z88.6-2006 Respiratory Protection

1.4 DEFINITIONS

- A. Action Level: Employee exposure, without regard to use of respirations, to an airborne concentration of lead of 30 micrograms per cubic meter of air averaged over an 8-hour period. As used in this section, "30 micrograms per cubic meter of air" refers to the action level.

- B. Area Monitoring: Sampling of lead concentrations within the lead control area and inside the physical boundaries which is representative of the airborne lead concentrations which may reach the breathing zone of personnel potentially exposed to lead.
- C. Physical Boundary: Area physically roped or partitioned off around an enclosed lead control area to limit unauthorized entry of personnel. As used in this section, "inside boundary" shall mean the same as "outside lead control area."
- D. Certified Industrial Hygienist (CIH): As used in this section, refers to an Industrial Hygienist employed by the Contractor and is certified by the American Board of Industrial Hygiene in comprehensive practice.
- E. Change Rooms and Shower Facilities: Rooms within the designated physical boundary around the lead control area equipped with separate storage facilities for clean protective work clothing and equipment and for street clothes which prevent cross- contamination.
- F. Competent Person: A person capable of identifying lead hazards in the work area and is authorized by the contractor to take corrective action.
- G. Decontamination Room: Room for removal of contaminated personal protective equipment (PPE).
- H. Eight-Hour Time Weighted Average (TWA): Airborne concentration of lead averaged over an 8-hour workday to which an employee is exposed.
- I. High Efficiency Particulate Air (HEPA) Filter Equipment: HEPA filtered vacuuming equipment with a UL 586 filter system capable of collecting and retaining lead-contaminated paint dust. A high efficiency particulate filter means 99.97 percent efficient against 0.3 micron size particles.
- J. Lead: Metallic lead, inorganic lead compounds, and organic lead soaps. Excluded from this definition are other organic lead compounds.
- K. Lead Control Area: An enclosed area or structure with full containment to prevent the spread of lead dust, paint chips, or debris of lead-containing paint removal operations. The lead control area is isolated by physical boundaries to prevent unauthorized entry of personnel.
- L. Lead Permissible Exposure Limit (PEL): Fifty micrograms per cubic meter of air as an 8-hour time weighted average as determined by 29 CFR 1910.1025. If an employee is exposed for more than 8 hours in a work day, the PEL shall be determined by the following formula. $PEL \text{ (micrograms/cubic meter of air)} = 400/\text{No. of hrs worked per day}$
- M. Personnel Monitoring: Sampling of lead concentrations within the breathing zone of an employee to determine the 8-hour time weighted average concentration in accordance with 29 CFR 1910.1025. Samples shall be representative of the employee's work tasks. Breathing zone shall be considered an area within a hemisphere, forward of the shoulders, with a radius of 150 mm to 225 mm (6 to 9 inches) and the center at the nose or mouth of an employee.

1.5 QUALITY ASSURANCE

- A. Before exposure to lead-contaminated dust, provide workers with a comprehensive medical examination as required by 29 CFR 1926.62 (I) (1) (i) & (ii). The examination shall not be required if adequate records show that employees have been examined as required by 29 CFR 1926.62(I) without the last year.
- B. Medical Records: Maintain complete and accurate medical records of employees in accordance with 29 CFR 1910.20.
- C. CIH Responsibilities: The Contractor shall employ a certified Industrial Hygienist who will be responsible for the following:
 1. Certify Training.
 2. Review and approve lead-containing paint removal plan for conformance to the applicable referenced standards.
 3. Inspect lead-containing paint removal work for conformance with the approved plan.

4. Direct monitoring.
 5. Ensure work is performed in strict accordance with specifications at all times.
 6. Ensure hazardous exposure to personnel and to the environment are adequately controlled at all times.
- D. Training: Train each employee performing paint removal, disposal, and air sampling operations prior to the time of initial job assignment, in accordance with 29 CFR 1926.62.
- E. Training Certification: Submit certificates signed and dated by the CIH and by each employee stating that the employee has received training.
- F. Respiratory Protection Program:
1. Furnish each employee required to wear a negative pressure respirator or other appropriate type with a respirator fit test at the time of initial fitting and at least every 6 months thereafter as required by 29 CFR 1926.62.
 2. Establish and implement a respiratory protection program as required by 29 CFR 1910.134, 29 CFR 1910.1025, and 29 CFR 1926.62.
- G. Hazard Communication Program: Establish and implement a Hazard Communication Program as required by 29 CFR 1910.1200.
- H. Hazardous Waste Management: The Hazardous Waste Management plan shall comply with applicable requirements of Federal, State, and local hazardous waste regulations and address:
1. Identification of hazardous wastes associated with the work.
 2. Estimated quantities of wastes to be generated and disposed of.
 3. Names and qualifications of each contractor that will be transporting, storing, treating, and disposing of the wastes. Include the facility location and a 24-hour point of contact. Furnish two copies of //EPA// //state// //and// //local// hazardous waste //permit applications// //permits// //and// //EPA Identification numbers//.
 4. Names and qualifications (experience and training) of personnel who will be working on-site with hazardous wastes.
 5. List of waste handling equipment to be used in performing the work, to include cleaning, volume reduction, and transport equipment.
 6. Spill prevention, containment, and cleanup contingency measures to be implemented.
 7. Work plan and schedule for waste containment, removal and disposal. Wastes shall be cleaned up and containerized daily.
 8. Cost for hazardous waste disposal according to this plan.
- I. Safety and Health Compliance
1. In addition to the detailed requirements of this specification, comply with laws, ordinances, rules, and regulations of federal, state, and local authorities regarding removing, handling, storing, transporting, and disposing of lead waste materials. Comply with the applicable requirements of the current issue of 29 CFR 1910.1025. Submit matters regarding interpretation of standards to the Contracting Officer for resolution before starting work.
 2. Where specification requirements and the referenced documents vary, the most stringent requirements shall apply.
 3. The following local laws, ordinances, criteria, rules and regulations regarding removing, handling, storing, transporting, and disposing of lead-contaminated materials apply:
 - a. United States Environmental Protection agency (EPA) Construction Sector (NAICS23)
 - b. Clean Water Act (CWA) C.RCRA
- J. Pre-Construction Conference: Along with the CIH, meet with the Contracting Officer to discuss in detail the lead-containing paint removal work plan, including work procedures and precautions for the work plan.

1.6 SUBMITTALS

- A. Submit the following in accordance with Section 01 33 23, SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES.
- B. Manufacturer's Catalog Data:
 - a. Vacuum HEPA filters
 - b. Respirators
- C. Instructions: Paint removal materials. Include applicable material safety data sheets.
- D. Statements Certifications and Statements:
 - 1. Qualifications of CIH: Submit name, address, and telephone number of the CIH selected to perform responsibilities in paragraph entitled "CIH Responsibilities." Provide previous experience of the CIH. Submit proper documentation that the Industrial Hygienist is certified by the American Board of Industrial Hygiene in comprehensive practice, including certification number and date of certification/recertification.
 - 2. Testing Laboratory: Submit the name, address, and telephone number of the testing laboratory selected to perform the monitoring, testing, and reporting of airborne concentrations of lead. Provide proper documentation that persons performing the analysis have been judged proficient by successful participation within the last year in the National Institute for Occupational Safety and Health (NIOSH) Proficiency Analytical Testing (PAT) Program. The laboratory shall be accredited by the American Industrial Hygiene Association (AIHA). Provide AIHA documentation along with date of accreditation/reaccreditation.
 - 3. Lead-Containing Paint Removal Plan:
 - a. Submit a detailed job-specific plan of the work procedures to be used in the removal of lead-containing paint. The plan shall include a sketch showing the location, size, and details of lead control areas, location and details of decontamination rooms, change rooms, shower facilities, and mechanical ventilation system.
 - b. Include in the plan, eating, drinking, smoking and restroom procedures, interface of trades, sequencing of lead related work, collected wastewater and paint debris disposal plan, air sampling plan, respirators, protective equipment, and a detailed description of the method of containment of the operation to ensure that airborne lead concentrations of 30 micrograms per cubic meter of air are not exceeded outside of the lead control area.
 - c. Include air sampling, training and strategy, sampling methodology, frequency, duration of sampling, and qualifications of air monitoring personnel in the air sampling portion on the plan.
 - 4. Field Test Reports: Monitoring Results: Submit monitoring results to the Contracting Officer within 3 working days, signed by the testing laboratory employee performing the air monitoring, the employee that analyzed the sample, and the CIH.
 - 5. Records:
 - a. Completed and signed hazardous waste manifest from treatment or disposal facility.
 - b. Certification of Medical Examinations.
 - c. Employee training certification.

PART 2 - PRODUCTS

PAINT REMOVAL PRODUCTS: Submit applicable Material Safety Data Sheets for paint removal products used in paint removal work. Use the least toxic product, suitable for the job and acceptable to the Industrial Hygienist.

PART 3 - EXECUTION

3.1 PROTECTION

- A. Notification: Notify the Contracting Officer 7 days prior to the start of any paint removal work.
- B. Lead Control Area Requirements.
 - 1. Establish a lead control area by completely enclosing with containment screens around the area or structure where lead-containing paint removal operations will be performed.
 - 2. Contain removal operations by the use of a negative pressure full containment system with at least one change room and with HEPA filtered exhaust.
- C. Protection of Existing Work to Remain: Perform paint removal work without damage or contamination of adjacent areas. Where existing work is damaged or contaminated, restore work to its original condition.
- D. Boundary Requirements: Provide physical boundaries around the lead control area by roping off the area [designated on the drawings] or providing curtains, portable partitions or other enclosures to ensure that airborne concentrations of lead will not reach 30 micrograms per cubic meter of air outside of the lead control area.
- E. Heating, Ventilating and Air Conditioning (HVAC) Systems: Shut down, lock out, and isolate HVAC systems that supply, exhaust, or pass through the lead control areas. Seal intake and exhaust vents in the lead control area with 6-mil plastic sheet and tape. Seal seams in HVAC components that pass through the lead control area.
- F. Change Room and Shower Facilities: Provide clean change rooms and shower facilities within the physical boundary around the designated lead control area in accordance with requirements of 29 CFR 1926.62.
- G. Mechanical Ventilation System:
 - 1. Use adequate ventilation to control personnel exposure to lead in accordance with 29 CFR 1926.57.
 - 2. To the extent feasible, use fixed local exhaust ventilation connected to HEPA filters or other collection systems, approved by the industrial hygienist. Local exhaust ventilation systems shall be designed, constructed, installed, and maintained in accordance with ANSI Z9.2.
 - 3. If air from exhaust ventilation is recirculated into the work place, the system shall have a high efficiency filter with reliable back-up filter and controls to monitor the concentration of lead in the return air and to bypass the recirculation system automatically if it fails. Air may be recirculated only where exhaust to the outside is not feasible.
- H. Personnel Protection: Personnel shall wear and use protective clothing and equipment as specified herein. Eating, smoking, or drinking is not permitted in the lead control area. No one will be permitted in the lead control area unless they have been given appropriate training and protective equipment.
- I. Warning Signs: Provide warning signs at approaches to lead control areas. Locate signs at such a distance that personnel may read the sign and take the necessary precautions before entering the area. Signs shall comply with the requirements of 29 CFR 1926.62.

3.2 WORK PROCEDURES

- A. Perform removal of lead-containing paint in accordance with approved lead-containing paint removal plan. Use procedures and equipment required to limit occupational and environmental exposure to lead when lead-containing paint is removed in accordance with 29 CFR 1926.62, except as specified herein. Dispose of removed paint chips and

associated waste in compliance with Environmental Protection Agency (EPA), federal, state, and local requirements.

- B. Personnel Exiting Procedures:
1. Whenever personnel exist the lead-controlled area, they shall perform the following procedures and shall not leave the work place wearing any clothing or equipment worn during the work day:
 - a. Vacuum themselves off.
 - b. Remove protective clothing in the decontamination room, and place them in an approved impermeable disposal bag.
 - c. Shower.
 - d. Change to clean clothes prior to leaving the physical boundary designated around the lead-contaminated job site.
- C. Monitoring: Monitoring of airborne concentrations of lead shall be in accordance with 29 CFR 1910.1025 and as specified herein. Air monitoring, testing, and reporting shall be performed by a CIH or an Industrial Hygiene (IH) Technician who is under the direction of the CIH:
1. The CIH or the IH Technician under the direction of the CIH shall be on the job site directing the monitoring, and inspecting the lead-containing paint removal work to ensure that the requirements of the Contract have been satisfied during the entire lead-containing paint removal operation.
 2. Take personal air monitoring samples on employees who are anticipated to have the greatest risk of exposure as determined by the CIH. In addition, take air monitoring samples on at least 25 percent of the work crew or a minimum of two employees, whichever is greater, during each work shift.
 3. Submit results of air monitoring samples, signed by the CIH, within 24 hours after the air samples are taken. Notify the Contracting Officer immediately of exposure to lead at or in excess of the action level of 30 micrograms per cubic meter of air outside of the lead control area.
- D. Monitoring During Paint Removal Work:
1. Perform personal and area monitoring during the entire paint removal operation. Sufficient area monitoring shall be conducted at the physical boundary to ensure unprotected personnel are not exposed above 30 micrograms per cubic meter of air at all times. If the outside boundary lead levels are at or exceed 30 micrograms per cubic meter of air, work shall be stopped and the CIH shall immediately correct the condition(s) causing the increased levels and notify the Contracting Officer immediately.
 2. The CIH shall review the sampling data collected on that day to determine if condition(s) requires any further change in work methods. Removal work shall resume when approval is given by the CIH. The Contractor shall control the lead level outside of the work boundary to less than 30 micrograms per cubic meter of air at all times. As a minimum, conduct area monitoring daily on each shift in which lead paint removal operations are performed in areas immediately adjacent to the lead control area.
 3. For outdoor operations, at least one sample on each shift shall be taken on the downwind side of the lead control area. If adjacent areas are contaminated, clean and visually inspect contaminated areas. The CIH shall certify that the area has been cleaned of lead contamination.

3.3 LEAD-CONTAINING PAINT REMOVAL

- A. Remove paint within the areas designated on the drawings in order to completely expose the substrate. Take whatever precautions are necessary to minimize damage to the underlying substrate.

- B. Indoor Lead Paint Removal: Select paint removal processes to minimize contamination of work areas with lead-contaminated dust or other lead-contaminated debris/waste. This paint removal process should be described in the lead-containing paint removal plan. Perform manual sanding and scraping to the maximum extent feasible.
- C. Mechanical Paint Removal and Blast Cleaning: Perform mechanical paint removal and blast cleaning in lead control areas using negative pressure full containments with HEPA filtered exhaust. Collect paint residue and spent grit (used abrasive) from blasting operations for disposal in accordance with EPA, state and local requirements.
- D. Outside Lead Paint Removal: Select removal processes to minimize contamination of work areas with lead-contaminated dust or other lead-contaminated debris/waste. This paint removal process should be described in the lead-containing paint removal plan. Perform manual sanding and scraping to the maximum extent feasible.

3.4 SURFACE PREPARATIONS

- A. Avoid flash rusting or other deterioration of the substrate. Provide surface preparations for painting in accordance with Section 09 91 00, PAINTING.

3.5 CLEANUP AND DISPOSAL

- A. Cleanup: Maintain surfaces of the lead control area free of accumulations of paint chips and dust. Restrict the spread of dust and debris; keep waste from being distributed over the work area. Do not dry sweep or use compressed air to clean up the area. At the end of each shift and when the paint removal operation has been completed, clean the area of visible lead paint contamination by vacuuming with a HEPA filtered vacuum cleaner and wet mopping the area.
- B. Certification: The CIH shall certify in writing that the inside and outside the lead control area air monitoring samples are less than 30 micrograms per cubic meter of air, the respiratory protection for the employees was adequate, the work procedures were performed in accordance with 29 CFR 1926.62, and that there were no visible accumulations of lead-contaminated paint and dust on the worksite. Do not remove the lead control area or roped-off boundary and warning signs prior to the Contracting Officer's receipt of the CIH's certification. Reclean areas showing dust or residual paint chips.
- C. Testing of Lead-Containing Paint Residue and Used Abrasive Where indicated or when directed by the Contracting Officer, test lead containing paint residue and used abrasive in accordance with 40 CFR 261 for hazardous waste.
- D. Disposal:
 - 1. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing, which may produce airborne concentrations of lead particles.
 - 2. Store removed paint, lead-contaminated clothing and equipment, and lead-contaminated dust and cleaning debris into U.S. Department of Transportation (49 CFR 178) approved 55-gallon drums. Properly labels each drum to identify the type of waste (49 CFR 172) and the date lead-contaminated wastes were first put into the drum. Obtain and complete the Uniform Hazardous Waste Manifest forms from a licensed State of Texas Civil Engineer. Comply with land disposal restriction notification requirements as required by 40 CFR 268:
 - a. At least 14 days prior to delivery, notify the Contracting Officer who will arrange for job site inspection of the drums and manifests by [PWC Hazardous Waste Storage Facility personnel].
 - b. As necessary, make lot deliveries of hazardous wastes to the PWC Hazardous Waste Storage Facility to ensure that drums do not remain on the jobsite longer than 90 calendar days from the date affixed to each drum.

- c. Collect lead-contaminated waste, scrap, debris, bags, containers, equipment, and lead-contaminated clothing which may produce airborne concentrations of lead particles. Label the containers in accordance with 29 CFR 1926.62. Dispose of lead-contaminated waste material at a state approved hazardous waste treatment, storage, or disposal facility off Government property.
 - d. Store waste materials in U.S. Department of Transportation (49 CFR 178) approved 55-gallon drums. Properly label each drum to identify the type of waste (49 CFR 172) and the date the drum was filled. The Contracting Officer or an authorized representative will assign an area for interim storage of waste-containing drums. Do not store hazardous waste drums in interim storage longer than 90 calendar days from the date affixed to each drum.
 - e. Handle, store, transport, and dispose lead or lead-contaminated waste in accordance with 40 CFR 260, 40 CFR 261, 40 CFR 262, 40 CFR 263, 40 CFR 264, and 40 CFR 265. Comply with land disposal restriction notification requirements as required by 40 CFR 268.
- E. Disposal Documentation Submit written evidence that the hazardous waste treatment, storage, or disposal facility (TSD) is approved for lead disposal by the EPA and state or local regulatory agencies. Submit one copy of the completed manifest, signed and dated by the initial transporter in accordance with 40 CFR 262.

END OF SECTION 02 83 33

SECTION 03 30 00

CAST – IN – PLACE CONCRETE

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SCOPE OF WORK

- A. Section includes reinforcing steel and concrete for building structure.
- B. Refer to Section 32 13 13 of this document for Site Paving

1.3 QUALITY ASSURANCE

- A. In addition to specified requirements, the designs and execution of all building slabs, piers and other supporting structures must comply with the requirements of the IRC 2009 or later in accordance with authorities having jurisdiction.
- B. All building slabs, piers and other supporting structures shall be designed and sealed by a licensed Structural Engineer.**
- C. Before concrete is placed, a slab inspection must be requested from the Contract Administrator and then pass inspection. All building slabs, piers and other supporting structures must meet applicable codes.
- D. Materials and installed work may require testing and retesting as directed by the Architect at any time during the progress of the work. Allow free access to material stockpiles and facilities at all times. Retesting of rejected materials and installed work shall be done at the Contractor's expense.

PART 2 – PRODUCTS

2.1 MATERIALS

- A. Reinforcing steel
- B. Regular reinforcing conforming to ASTM A 615, grade 60, deformed
- C. Welded wire fabric conforming to ASTM A 185
- D. Concrete 3,000 psi 28 day compressive strength (building slab)
- E. Slump 5 1/2 in. maximum, 3 in. minimum
- F. Portland Cement conforming to ASTM C 150, Type 1
- G. Aggregates conforming to ASTM C 33 (1 ½ ft. maximum aggregate)
- H. Ratio of fly ash to cementitious material is 15 percent maximum.

PART 3 – EXECUTION

3.1 FORMWORK

- A. Construction forms to the exact sizes, shapes, lines and dimensions shown, and as required to obtain accurate alignment, location and grades. Provide for openings, blocking, inserts and other features required for the work.
- B. Cleaning and tightening. Thoroughly clean forms and adjacent surfaces to receive concrete.

- C. Remove chips, wood, sawdust, dirt or other debris just before concrete is to be placed. Retighten forms immediately after concrete placement as required to eliminate mortar leaks.
- D. Removal of Forms. Formwork not supporting the weight of concrete, such as sides of beams and similar parts of the work, may be removed 48-hours after placing the concrete, provided the concrete is sufficiently hard to not be damaged by the form removal operations, and provided that curing and protection operations are maintained.

3.2 REINFORCING STEEL

- A. Comply with the specified codes and standards and the concrete Reinforcing Steel Institute recommended practice for "Placing Reinforcing Bars", for detail and methods of reinforcement placement and supports, and as herein specified.
- B. Clean reinforcement to be free from loose rust, mill scale, earth, ice, and other materials that reduce or destroy bond with concrete.
- C. Accurately position, support and secure reinforcement against displacement by formwork, construction, or concrete placement operations. Locate and support reinforcing by metal chairs, runners, bolsters, spacers and hangers as required.
- D. Place reinforcement to obtain at least the minimum coverage's for concrete protection. Arrange; space, and accurately tie bars and bar supports together with 16 gauge wire to hold reinforcement accurately in position during concrete placement operations.
- E. Provide sufficient numbers of support and of strength to carry the reinforcement.
- F. Space reinforcing bars to comply with ACI 318.
- G. Provide standard reinforcement by lapping ends, placing bars in contact, and tightly wire tying. Comply with the requirements of ACI 318, for minimum lap of spliced bars.

3.3 BEAMS

- A. Exterior beams shall comply w/ structural drawings stamped by a Structural Engineer licensed by the State of Texas.
- B. Interior beams shall comply w/ structural drawings stamped by a Structural Engineer licensed by the State of Texas.

3.4 CONCRETE

- A. All concrete is to be poured when the temperature is at forty degrees Fahrenheit (40 F) or above and rising. If the surface temperature is over ninety degrees Fahrenheit (90 F) steps to cool the surface such as watering will be taken as required.
- B. All concrete slab on grade foundations shall be placed monolithically and be a minimum of 4 inches thick. Top of slab placed on grade must be a minimum of 12 inches above surrounding soil level.
- C. Place concrete in compliance with the practices and recommendation of ACI 304R "Guide for Measuring, Mixing, Transporting, and Placing Concrete," and as herein specified. Concrete must not be placed over grass, roots, or foreign materials. Deposit concrete continuously or in layers of such thickness that no concrete will be placed on concrete that has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, provide construction joints. Perform concrete placing at such a rate that concrete which is being integrated with fresh concrete is still plastic. Deposit concrete as neatly as practicable to its final location to avoid segregation due to re-handling of flowing. Do not subject concrete to any procedure that will cause segregation. Screed concrete which is to receive other construction to the proper level to avoid excessive skinning or grouting. Do not use concrete which becomes non-plastic and unworkable, or does not meet the required quality limits, or which has been contaminated by foreign materials. Do not use re-tempered concrete.

- D. Placing Concrete in Forms. Deposit concrete in forms in horizontal layers not deeper than 18 in. and in a manner to avoid inclined construction joints. Remove temporary spreads in forms when concrete placing has reached the elevation of such spreaders. Consolidate all concrete placed in forms by mechanical vibrating equipment supplemented by hand-spading, rodding or tamping. Maintain reinforcing steel in proper position continuously during concrete placement operations.

3.5 MONOLITHIC SLAB FINISHES

- A. Float Finish. Apply float finish to monolithic slab surfaces that are to receive trowel finish or other finishes. After placing concrete slabs, do not work the surface further until ready for floating. Begin floating when the surface water has disappeared or when the concrete has stiffened sufficiently to permit the operation of a power-driven float or both. Consolidate the surface with power-driven floats, by hand-floating if the area is small or inaccessible to power units. Check and level the surfaces plane on the surface to a tolerance not exceeding $\frac{1}{4}$ in. in 10 ft. when tested with a 10 ft. straight edge placed in the surface at not less than 2 different angles. Cut down high spots and fill all low spots. Uniformly slope surfaces to drains. Immediately after leveling, re-float the surface to a uniform smooth, granular surface.
- B. Trowel Finish. Apply trowel finish to monolithic slab surface that are to be exposed to view or covered with coloring materials. After floating, begin the first trowel finish operation using a power-driven trowel. Begin final troweling when the surface produces a ringing sound as the trowel is moved over the surface. Consolidate the concrete surface by the final hand troweling operation, free of trowel marks uniform in texture and appearance, and with a surface plane tolerance not exceeding $\frac{1}{8}$ in. in 10 ft. when tested with a 10 ft. straight edge. Grind smooth surface defects which would telegraph through applied flooring system.
- C. Exposed Beams. Voids and honeycombed surfaces must be filled with cement grout

3.6 CONCRETE PORCHES

- A. All porches must be poured monolithically over select fill.
- B. Exterior beams must be a minimum of 12 in. in height with 4, No.4 rebar set in $\frac{3}{8}$ in., stirrups or No.6 wire mesh cut to fit @ 3 in. on center. Beam width to be a minimum of 14 in. at top and may taper to 10 in. at bottom. Lower two rebar to be a minimum of 3 in., off bottom. Beam to extend a minimum of 6 in., below undisturbed soil. Galvanized flashing to be used if wood is to be in contact with concrete.
- C. Pour level at doors or as noted on drawings and slope $\frac{1}{8}$ in. per foot from door sill to provide drainage and comply with no step entrance per Government Code 2306.514.

3.7 STEPS

- A. All steps must have treads a minimum of ten inches and a maximum rise of seven inches. They must span full width of door opening or they must be minimum 36 in. wide at porches.
- B. Pre-cast steps must be standard size with no defects. They must be set level with concrete bases under each corner. When set, the rise from the top step to the wearing surface must be the same as the rise for the steps or be in the wearing surface plane.
- C. Hollow poured steps must be formed and poured over an 8 in. x 16 in. footer. Wall thickness must be minimum of 4 in.
- D. All treads must be broom finished for slip resistance.

3.8 PIERS AND PADS

- A. Piers must be solid, monolithic, reinforced and shall be designed and sealed by licensed Structural Engineer.

- B. Pads must be monolithic concrete pad, 16 in. x 16 in. x 4 in. They must be set on firm prepared soil below existing ground surface.
- C. Coordinate equipment pad size with equipment installer to insure correct size.

END OF SECTION 03 30 00

SECTION 04 21 13

UNIT MASONRY

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Face-brick units.
- B. Reinforcement, anchorage and accessories.

1.3 REGULATORY REQUIREMENTS

- A. Conform to Standard Building Code requirements for masonry construction. PART 2

PART 2- PRODUCTS

2.1 BRICK UNITS

- A. Concrete Brick: Suitable for home construction and climate area, color as selected.

2.2 REINFORCEMENT AND ANCHORAGE

- A. Corrugated Wall Ties: Equal to Dur-O-Wall D/A CWT; 7/8 inch wide, 6-3/4 inch long; 16 gauge, hot dipped galvanized to ASTM A153 Class B2.

2.3 MORTAR

- A. Mortar Mixes: ASTM C270, Type S Mortar
- B. Mixing:
 - 1. Thoroughly mix mortar in accordance with ASTM C270 in quantities needed for immediate use.
 - 2. Do not use anti-freeze compounds to lower the freezing point of mortar.
 - 3. If water is lost by evaporation, re-temper only within two hours of mixing.
 - 4. Use mortar within two hours after mixing at temperatures of 90 degrees F, or two-and-one half hours at temperatures between 40 degrees and 90 degrees.

2.4 FLASHING

- A. Masonry Flashing: Fiber web 200 with Mylar tape; as manufactured by Dur-O-Wall or equal.
- B. Fiber Glass Mesh, ASTM D1668, Type 207
- C. Mastic: Gulf States, Gulf Seal 210 or equal.

2.5 ACCESSORIES

- A. Control and expansion joint filler: Equal to Dur-O-Wall DA2015; closed cell neoprene, full width of joint; 3/8 inch thick.

- B. Weeps: non-woven polymer mesh or polypropylene designed to prevent insects from entering. Cell vents shall be full height and depth of brick and 3/8 inch wide to completely fill joint.
- C. Fiberboard: 3/8 inch thick; asphalt saturated.
- D. Cleaning Solution: Non-acidic, not harmful to masonry work or adjacent materials.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that field conditions are acceptable and are ready to receive work.
- B. Verify items provided by other sections of work are properly sized and located.

3.2 PREPARATION

- A. Direct and coordinate placement of metal anchors supplied to other sections.
- B. Provide temporary bracing during installation of masonry work. Maintain in place until building structure provides permanent bracing.

3.3 COURSING

- A. Establish lines, levels, and coursing indicated. Protect from displacement.
- B. Maintain masonry courses to uniform dimension. Form vertical and horizontal joints of uniform thickness.
- C. Brick Units:
 - 1. Bond: Running or as selected by Owner.
 - 2. Coursing: One unit and one mortar joint to equal 3-3/8 inches.
 - 3. Mortar Joints: Concave.

3.4 PLACING AND BONDING

- A. Lay solid masonry units in full bed of mortar, with full head joint and full mortar coverage on horizontal and vertical joints, uniformly jointed with other work.
- B. Buttering corners of joints or excessive furrowing of mortar joints are not permitted.
- C. Remove excess mortar as Work progresses.
- D. Interlock intersections and external corners. Except at control joints.
- E. Adjust masonry units into final position while mortar is soft and plastic. Do not shift or tap masonry units after mortar has achieved initial set. Where adjustment must be made, remove mortar and replace.
- F. Perform job site cutting of masonry units with proper tools to provide straight, clean, unchipped edges. Prevent broken masonry unit corners or edges.
- G. Do not install cracked, broken or chipped masonry units.

3.5 WEEPS

- A. Install weeps in veneer at 24 inches oc horizontally at bottom of walls and immediately above all flashing.
- B. Provide weeps in veneer head joints at 12 inches oc, minimum 3 per opening.

3.6 CAVITY BEHIND VENEER

- A. Do not permit mortar to drop or accumulate into cavity air space or to plug weeps.

3.7 REINFORCEMENT AND ANCHORAGE

- A. Secure wall ties to stud framed back-up and embed into masonry veneer at a maximum 24 inches oc vertically nominally staggered on alternate studs and 16 inches oc horizontally. Place additional ties at a maximum of 12 inches oc nominally vertically around perimeter of openings within 16 inches of openings. Extend ties to within $\frac{3}{4}$ inch of face of bricks.

3.8 MASONRY FLASHING

- A. Provide flashings horizontally at bottom of walls and heads and sills of all openings.
- B. Extend flashing under veneer, turn flashing up minimum 8 inches behind moisture barrier and seal to sheathing over wood framed back-up.
- C. Cover top edge of flashing membrane with mesh, anchor in place, set in and coat with mastic.
- D. Lap end joints minimum 6 inches and seal watertight with Mylar tape.
- E. Turn flashing, fold, and seal at corners, bends and interruptions.
- F. Extend flashing from face of brick with drip edge.
- G. Flash around all doors and windows.

3.9 CONTROL JOINTS

- A. Install preformed control joint device in continuous lengths. Seal butt joints in accordance with manufacturer's instructions.
- B. Provide control joints at 20 ft. maximum.
- C. Joints shall be continuous full height of wall and shall be free from mortar, horizontal reinforcing, etc.
- D. Seal joint in accordance with Specification Section 07 90 00.

3.10 TOLERANCES

- A. Maximum Variation from Unit to Adjacent unit: 1/16 inch.
- B. Maximum Variation from Plane of Wall: $\frac{1}{4}$ inch in 10 feet and $\frac{1}{2}$ inch in 20 feet or more.
- C. Maximum Variation from Plumb: $\frac{1}{4}$ inch per story non-cumulative.
- D. Maximum Variation from Level Coursing: 1/2 inch in 3 feet and $\frac{1}{4}$ inch in 10 feet.
- E. Maximum Variation of Joint Thickness: 1/8 inch in 3 feet.

3.11 CUTTING AND FITTING

- A. Cut and fit for conduit, sleeves and other openings. Coordinate with other sections of work to provide correct size, shape and location.
- B. Obtain approval prior to cutting or fitting masonry work not indicated or where appearance or strength of masonry work may be impaired.

3.12 CLEANING

- A. Dry brush masonry surface after each days work. Scrub with acceptable cleaning agent.
- B. Remove excess mortar and mortar smears.
- C. Replace defective mortar. Match adjacent work.
- D. Clean soiled surfaces with cleaning solution.
- E. Use non-metallic tools in cleaning operations.

END OF SECTION 04 21 13

SECTION 06 10 00

FRAMING AND SHEATHING

PART 1 - GENERAL

- A. Any framing plan that has been designed reviewed and stamped by a Texas licensed structural engineer will govern over this specification.
- B. Federal, state, or local requirements govern over this specification.

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Structural wall, and roof framing.
- B. Wall and roof sheathing.
- C. Sill gaskets.
- D. Preservative treatment of wood.
- E. Miscellaneous framing and sheathing
- F. Concealed wood blocking for support of toilet and bath accessories, wall cabinets and similar items.

1.3 QUALITY ASSURANCE

- A. Perform work in accordance with the following agencies:
 - 1. Lumber Grading Agency: Certified by ALSC.
 - 2. Plywood Grading Agency: Certified by APA.
- B. All lumber must be identified by the appropriate grade stamp.

1.4 REGULATORY REQUIREMENTS

- A. Conform to IRC 2009 or later in accordance with authorities having jurisdiction, Texas Catastrophe Property Insurance Association requirements and any local ordinances.

PART 2 – PRODUCTS

2.1 LUMBER MATERIAL

- A. Lumber Grading Rules: SPIB, WCLIB, and WWPA.
- B. Beam Framing: Douglas Fir species, No. 2 grade, 19 percent maximum moisture content.
- C. Non-structural Light Framing: Douglas Fir species, No. 2 grade, Southern Yellow Pine, 19 percent maximum moisture content.
- D. Studding: Douglas Fir species, No. 2 grade, Southern Yellow Pine, 19 percent maximum moisture content.
- E. Bridging must be No. 2 grade Southern yellow pine or fir, graded and stamped as such (fir in non-load bearing areas only).
- G. Miscellaneous Framing: Southern Yellow Pine species, Standard grade, 19 percent maximum moisture content.

- H. All new or replaced wood in contact with concrete, earth or within 12 in., of ground level must be pressure treated or wolmanized lumber. or lumber with natural resistance to decay.
- I. Posts for porch framing must be SPF 4 in. x 4 in. wolmanized lumber, or as specified in project specifications.

2.2 SHEATHING MATERIALS

- A. Plywood Roof Sheathing: 7/16 inch OSB Radiant Barrier
- B. OSB Wall Sheathing: APA Rated Sheathing, Exposure Durability 1; oriented Strand Board; 7/16 inch thick by 4 x 8 feet sheet size.

2.3 ACCESSORIES

- A. Fasteners and Anchors:
 - 1. Nails: Hot dipped galvanized, common nails, size and spacing as required by codes.
 - 2. Bolts, ASTM A307, hot dipped galvanized.
 - 3. Ply-clips: Extruded 6063-T6 aluminum alloy.
 - 4. Staples: Not Permitted.
 - 5. Drywall Screws: Bugle head, hardened steel, length as required.
 - 6. Ballistic Fasteners: Powder actuated, size and length as recommended by fastener manufacturer.
- B. Die Stamped Connectors: Hot dipped galvanized steel; type indicated.
- C. Bar or Strap Anchors: Hot dipped galvanized; 18 gauge minimum.
- D. Sill Sealer: ¼ inch thick, 2 inch wide, glass fiber insulation strip.
- E. Wind Anchors: Provide 1 inch wide, 18 gauge, galvanized steel strap anchors spaced at 32 inches o.c. Install plates and other locations required by Windstorm Resistant Construction requirements.
- F. Dryer Vents: Aluminum; through the roof type, with rain hood.
- G. Insulation Baffles: Equal to Ampcor IB-24.

2.4 FACTORYWOOD TREATMENT

- A. Wood Preservative (Pressure Treatment): AWPB Treatment LP-2.

PART 3 – EXECUTION

3.1 FRAMING

- A. Set structural members level and plumb, in correct position.
- B. Make provisions for erection loads, and for sufficient temporary bracing to maintain structure safe, plumb and in true alignment until completion of erection and installation of permanent bracing.
- C. Place horizontal members flat, crown side up.
- D. Wood stud bearing partitions shall be 2 x 4 studs at 16 inches o.c. with double top plates at all partitions or as required by governing code.
- E. Single bottom plates on exterior walls shall be pressure treated.
- F. Exterior bottom plates shall be attached to concrete with bolts at a maximum of 4 feet o.c and Go-Bolts or equal shall be located a maximum of 1 foot from ends, joints, and corners at exterior walls, each jamb side of all openings and otherwise located at minimum 6 feet-0 inches o.c. at all exterior walls and party wall at ridge line of roof, or as approved by Certified Windstorm Engineer.

- G. Secure bottom plates at interior partitions to concrete with ballistic fasteners spaced 32 inches on center with first fastener within 8 inches of end of wall. Provide a minimum of 2 fasteners at plates shorter than 24 inches long.
- I. Install poly sill sealer under bottom plate at exterior walls.
- J. Provide studs in continuous lengths without splices.
- K. Toenail studs to bottom plate and endnail to lower top plate.
- L. Overlap double top plates minimum of 6 inches at corners and intersections.
- M. Triple studs at corners and partition intersections.
- N. Face nail upper top plate to lower top plate.
- O. Frame Openings: All windows, doors and arched openings must have double headers and studs. Headers must have ½ in., spacers.
 - 1. Double Studs and Headers: Openings 4 feet and less.
 - 2. Triple Studs and Headers: Openings 5 feet and greater.
 - 3. Maximum allowable span for double headers are shown in Chapter 6 Wall Construction of the IRC 2009 or later in accordance with authorities having jurisdiction.
- P. Triple studs at corners to form corner posts. Frame corner posts to receive interior finish.
- Q. If plywood (4ft. x 8 ft. x 1/2 inch CDX) grade sheathing, or other approved materials is not used for bracing, new corner posts on exterior wooden walls must be diagonally braced with 1 in. x 4 in., No. 2 grade lumber let in at each corner from the bottom to the top plate or galvanized metal corner brace.
- R. Secure framing with size and quantity of nails as required by code.
- S. Plates and studs cut for passage of pipe or conduit shall be provided with a steel plate to develop full strength of member.
- T. Coordinate installation of prefabricated wood trusses.
- U. Provide horizontal blocking between all studs at party wall.
- V. Provide blocking for casework, toilet and bath accessories and similar items. Secure with drywall screws. See drawing for mounting heights.

3.2 FLOOR FRAMING

- A. Minimum allowable spans for floor joists are as shown in Chapter 5 Floors of the IRC 2009 or later in accordance with authorities having jurisdiction.
- B. All new or replaced floor joists must be supported at their extreme ends by either a 2 in. x 4 in., ledger or metal joist hanger. Toe nailing only will not be acceptable. Splicing of floor must be properly reinforced (bridging).
- C. All sub-floors must be ¾ in., nominal dimension T&G plywood.. All sub-floors shall be glued and screwed to floor framing.
- D. Underside of insulated floors shall be protected by plywood or equivalent material and shall be caulked at perimeter, trim and joints.

3.3 ROOF FRAMING

- A. Sufficient bracing must be installed to remove and prevent reoccurrence of swag, and to maintain a true and even plane.
- B. Collar beams must be installed on upper 1/3 of rafter pairs, and ridge board must be placed on every 3 pairs of rafters.
- C. Purlins must be installed perpendicular to rafters to allow bracing to load bearing walls and to remove and/or prevent reoccurrence of swag.
- D. Load bearing wall rafter supports must be installed along purlins to even roof rafters to one another in such a manner as to provide the decked roof surface to be in a true and even plane.

- E. Maximum allowable spans for ceiling joist must be as shown and comply with the IRC 2009 or later in accordance with authorities having jurisdiction.

Size	Spacing	Maximum Span
2 in. x 6 in.	16 in. o.c.	14 in. x 4 in.
2 in. x 6 in.	24 in. o.c.	11 in. x 10 in.
2 in. x 8 in.	16 in. o.c.	18 in. x 9 in.
2 in. x 8 in.	24 in. o.c.	15 in. x 4 in.
2 in. x 10in.	16 in. o.c.	22 in. x 2 in.
2 in. x 10 in.	24 in. o.c.	18 in. x 1 in.

- I. Ceiling joists must be continuous or may be joined together over a partition to provide a continuous tie across the structure.
- J. All damaged or deteriorated rafters must be removed entirely and splicing must not be permitted.
- K. Gable end rafters must be installed on every gabled roof. (to be same size as rafters)
- L. When a ridge board is required, it must be a minimum of 1 in., in thickness and not less in depth than the cut end of the rafter it joins. (one size larger than rafters to be used)
- M. All roof overhangs must be a minimum of 12 in., extending horizontally out from house wall, to a maximum of 18 in.
- N. Engineer-designed trusses may be used in lieu of conventional framing.
- O. 2 in. x 4 in. bracing must be cut into last two rafters and nailed to gable end rafters (minimum 4 per gable or every 2 feet as applicable.)

3.4 SHEATHING

- A. Secure roof sheathing perpendicular to framing members with ends staggered and sheet ends over firm bearing. Use sheathing clips between sheets between roof framing members. Allow 1/16 inch between end joints and 1/8 inch at edge joints for expansion and contraction of panels.
- B. Secure wall sheathing with long dimension parallel to wall studs, with ends over firm bearing. Allow 1/8 inch between panels.
- C. Install insulation baffles between roof trusses at exterior walls as indicated.

3.5 POST AND HANDRAILS

- A. Columns shall be a minimum 4 ft. x 4 ft. dimension and be treated lumber.
- B. Handrail shall be wolmanized treated lumber installed in accordance with building code.
- C. Porches shall be constructed of treated lumber and porch flooring shall be made of 2 x 6 wolmanized or treated lumber, rough cedar, or No. 2 yellow pine with No. 304 stainless steel nails.

3.6 TOLERANCES

- A. Framing Members: ¼ inch from true position, maximum.

END OF SECTION 06 10 00

SECTION 06 20 00

FINISH CARPENTRY

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Finish carpentry items, other than shop prefabricated casework.
- B. Hardware and attachment accessories.

1.3 DELIVERY, STORAGE AND HANDLING

- A. Store materials in a way that minimizes exposure to damage, humidity and temperature changes.

PART 2 - PRODUCTS

2.1 LUMBER MATERIALS

- A. Exterior Wood Fascia and Drip Strip: Southern Yellow Pine, No. 2 grade, preservative treated.
- B. Exterior Wood Trim: Refer to Section 07 46 00 Fiber Cement Lap Siding and Continuous Vent Soffit.
- C. Exterior Siding: Refer to Section 07 46 00 Fiber Cement Lap Siding and Continuous Vent Soffit
- D. Exterior Soffits: Refer to Section 07 46 00 Fiber Cement Lap Siding and Continuous Vent Soffit
- E. Interior Softwood Lumber: PS 20; Custom grade in accordance with AWI; maximum moisture content of 11 percent; White Pine, Ponderosa Pine, or Western Red Cedar species, with mixed grain, of quality capable of opaque finish.
- F. Softwood Stock Molding and Trim/Base: Douglas Fir; White Pine, Ponderosa Pine, or Western Red Cedar conforming to WCLB molding stock grade or Southern Yellow Pine conforming to SPA Grade C select or better, kiln dried to 11 percent moisture content.
- G. Interior Plywood:
 - 1. Plywood having two sides exposed: Douglas Fir, A-A, Int. – DFPA.
 - 2. Plywood having one side exposed: Douglas Fir, A-D, Int. – DFPA.
- H. Shelving:
 - 1. Shelves shall be nominally 1 inch thick solid stock or $\frac{3}{4}$ inch plywood and shall be supported at 3 feet on center maximum.
 - 2. Shelves not detailed on the drawings shall be 11-1/2 inches deep, closet shelves shall be 16 in. deep.
 - 3. Wire shelving equal to Closet Maid 100lb per ft. capacity may be used in lieu of wood shelving. Wire shelving shall be supported at 3 ft. 0 in. o.c. maximum.

- I. Closet Rods: 1-3/8 inch diameter wood with Stanley 7056 pole sockets or equal.
- J. Attic Stairs: Wood or aluminum with 350 LB minimum rating.

2.2 ACCESSORIES

- A. Nails: Size and type to suit application, plain finish on interior, galvanized finish on exterior.
- B. Bolts, Nuts, Washers, Blind Fasteners, Lags, and Screws: Size and type to suit application; plain finish on interior; galvanized finish on exterior.
- C. Lumber for Shimming, and Blocking: Softwood lumber of Douglas Fir or Southern Yellow Pine species.

2.3 WOOD TREATMENT PROCESSES

- A. Wood Preservative (Pressure Treatment): AWPA Treatment C1 using water borne preservative with 0.25 percent retainage.

2.4 FABRICATION

- A. Fabricate to AWI Custom standards.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces and openings are ready to receive work and field measurements are as shown on shop drawings and Drawings.
- B. Verify mechanical, electrical, and building items affecting work of this Section are placed and ready to receive this work.
- C. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

- A. Before installation, prime paint surfaces of items or assemblies to be in contact with cementitious materials.

3.3 INSTALLATION

- A. Install work in accordance with AWI Custom Quality Standard.
- B. Set and secure materials and components in place, plumb and level.
- C. Door trim baseboard and shoe mold must have mitered corners.
- D. Window sills must have mitered bull nosed front end.

3.4 TOLERANCES

- A. Maximum Variation from True Position: 1/16 inch
- B. Maximum Offset from True Alignment with Abutting Materials: 1/32 inch.

3.5 PREPARATION FOR SITE FINISHING

- A. Set exposed fasteners. Apply wood filler in exposed fastener indentations. Sand work smooth.
- B. Site Finishing: Refer to Section 09 90 00.

3.6 PROTECTION

- A. Protect finished installation.

END OF SECTION 06 20 00

SECTION 06 40 00

CASEWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Factory fabricated cabinet units.
- B. Countertops.
- C. Prepared for utilities

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Deliver, store and handle wood cabinets in manner to prevent damage and deterioration.
- B. Defer delivery to the job until the installation and storage areas are complete and dry of all wet-type construction.
- C. Protect all surfaces of cabinets subject to damage while in transit.
- D. Provide temporary skids under all large or heavy cabinets.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Store material in a way that minimizes damage, exposure to humidity and temperature changes.
- B. Ensure that overhead work, including testing and approval of mechanical and electrical work, installation of ceilings, and application of paint or finishes is completed before the work of this section begins.

PART 2 - PRODUCTS

2.1 COMPONENTS

- A. Provide all cabinets of size and configuration complete with tops and fillers as indicated on the Drawings.

2.2 CONSTRUCTION

- A. Hinges: ½ in. overlay concealed hinges.
- B. Face Frames: ¾ in. A grade – birch, ash, oak, maple, or similar in quality. End rails are dadoed to receive end panels.
- C. End Panels: ½ in. plywood. Base end panels are dadoed to receive shelves, backs and bottoms. Wall end dadoed to receive shelves, bottoms, and backs. Base end panels are notched to receive toe kick.
- D. Base Bottoms: ½ in. plywood. Base bottoms are let into end panels and face frames and are supported by vertically mounted floor supports on 16 in. centers.

- E. Shelves: ½ in. plywood industrial grade particle board with interior color vinyl both sides. Matching edge foil on front exposed side. Wall and ½ depth base shelves fixed. Adjustable shelves available.
- F. Backs: 3/8 in. medium density particle board attached with fasteners to shelf end panels and back rails, all four sides.
- G. Doors: ½ in. A grade – birch, ash, oak, maple, or similar in quality.
- H. Drawers: Fronts shall be same as doors. Sides and bottoms 3/8 in. plywood.
- I. Rabbeted sides to receive front and back which are glued and fastened for box style construction. Attached to front with equally spaced screws. Front style to match doors. All drawers are hot melted at all four sides to assure strength. Let into sides, back and front with machined groove.
- J. Toe kicks: Inset ½ in. plywood attaches to end panels with clips. 1/8 in. finished toe kick overlay supplied for field application.
- K. Corner blocks: Triangular nylon, secured to frame and end panel with fasteners.
- L. Exterior finish: Before the application of any finishing material, all parts requiring finish are carefully inspected and thoroughly sanded (frames, doors, drawer fronts). Cabinets may be painted or stained. If stained, a penetrating wood stain is the applied to all exposed surfaces with an application of sealer to be followed by traditional scuff sanding to remove roughness. A final coat of catalyzed varnish is the applied, resulting in a durable, lasting finish.
- M. Countertops shall be fabricated from 1-1/8" core stock. All countertops shall have
- N. waterfall edges and 4" integral splash with rolled edge unless otherwise noted. Contractor shall provide Owner with three (3) color selections.
- O. Drawer and cabinet pulls must be properly fitted for ease of use.

2.3 ACCESSORIES

- A. Fasteners: Size and type to suit application in accordance with AWI.
- B. Bolts, Nuts, Washers, Lags, Pins, and Screws: Size and type to suit application; bright finish in concealed locations and plated finish in exposed locations.

2.4 FABRICATION

- A. Shop assemble casework for delivery to site in units easily handled and to permit passage through building openings.
- B. When necessary to cut and fit on site, provide materials with ample allowance for cutting. Provide trim for scribing and site cutting. Apply a bead of clear sealant between end splash and countertops at wet area. Tool sealant smooth.
- C. Apply laminate finish for tops in full uninterrupted sheets consistent with manufactured sizes. Make corners and joints hairline. Slightly bevel arrises. Locate counter butt joints minimum 2 feet from sink cut-outs.
- D. Apply balancing sheet to reverse side of plastic laminate finished surfaces at all tops.
- E. Provide cutouts for plumbing fixtures, inserts, appliances, outlet boxes, and other fixtures and fittings. Verify locations of cutouts from onsite dimensions. Seal contact surfaces of cut edges.
- F. Finish work must be finished smooth, free from machine or tool marks, abrasions, raised grain, etc., on exposed surfaces, and must be machine sanded and hand dressed to a smooth finish.
- G. dressed to a smooth finish.
- H. All molded members and trim must be mitered or coped at corners.
- I. Nails must be countersunk and filed.

PART 3 - EXECUTION

3.1 INSPECTION

- A. Verify adequacy of backing and support framing.

3.2 INSTALLATION

- A. Set and secure casework in place; rigid, plumb, and level.
- B. Use purpose designed fixture attachments in concealed locations for wall mounted components.
- C. Use threaded steel concealed joint fasteners to align and secure adjoining cabinet units and countertops.
- D. Carefully scribe casework which is against other building materials, leaving gaps of 1/32 inch maximum. Do not use additional overlay trim for this purpose.
- E. Secure cabinet to floor using appropriate anchorages.
- F. Countersink anchorage devices at exposed locations used to wall mount components. Finish flush with surrounding surfaces.

3.3 ADJUSTING AND CLEANING

- A. Adjust doors, drawers, hardware, fixtures and other moving or operating parts to function smoothly and correctly.
- B. Clean casework, counters, shelves, hardware, fittings and fixtures.

END OF SECTION 06 40 00

SECTION 07 10 00

WEATHERPROOFING

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 WORK INCLUDED:

- A. 15 lb. Asphalt saturated felt over all exterior wall sheathing.
- B. Damp proofing Membrane (vapor barrier) – Under on-grade concrete floor slab.

1.3 RELATED WORK

- A. Section 03 30 00 – Cast-In-Place Concrete
- B. Section 06 10 00 – Framing & Sheathing
- C. Section 07 31 13 – Asphalt Shingles

1.4 SYSTEM DESCRIPTION

- A. Materials of this Section shall provide a continuous waterproof weather barrier at building enclosure elements.
- B. Floor slab damp proofing membrane (Vapor Barrier) – 6 mil. polyethylene film, unless otherwise noted, “Vis-Queen” or equal.
 - 1. Install vapor barrier over fill at floor slab of enclosed building area locations. Lap minimum 24 in. with top lap in direction of spreading concrete. Extend vapor barrier into beam trenches 6 in. below haunch.
- C. Door and window rough openings.
 - 1. Wrap all door and window rough frame openings with W. R. Meadows Mel-Rol Waterproofing System or equal.
- D. Seal all windows around nailing fins with peel and stick.
- E. Apply No.15 non-perforated asphalt-saturated organic felt paper (equal to Grade D building paper complying with ASTM D-226) or Tyvek or equal water barrier over all exterior wall sheathing.
- F. Fasteners:
 - 1. Galvanized steel fasteners (staples or nails) for wood stud applications; achieve penetration into wall framing members with minimum of 6 inch vertical centers and 16 inch horizontal centers. Nails shall be 8d common wire nails (shank diameter of 0.131 inch) and staples shall be a minimum of 7/16 in. crown width.
 - 2. Length of fasteners shall meet the following guidelines:
 - a. Staples - Rigid sheathing over wood framing: length sufficient to completely penetrate rigid sheathing and also make penetration into wood studs by at least one inch.
 - b. Nails – Rigid sheathing over wood framing: length sufficient to completely penetrate rigid sheathing and also make penetration into wood studs by at least 1½ inches.

1.5 ENVIRONMENTAL REQUIREMENTS

- A. Maintain ambient and surface temperatures above 40 degrees F for 24 hours before application, and continuously until damp proofing has cured.

PART 2 – PRODUCTS

2.1 BITUMEN MATERIALS

- B. Asphalt: ANSI/ASTM D449, Type 1.
- C. Asphalt Primer: ANSI/ASTM D41, compatible with substrate.

PART 3 – EXECUTION

3.1 INSPECTION

- A. Verify surfaces are solid, free of frozen matter, loose particles, cracks, pits, rough projections, and foreign matter detrimental to adhesion and application of damp proofing.
- B. Do not apply damp proofing to damp, frozen, dirty, dusty, or unacceptable surfaces.
- C. Insure all substrates are securely fastened and stable.
- D. Verify items which penetrate surfaces to receive damp proofing are securely installed.
- E. Insure all exterior plywood is securely attached in place and board seams are tight and securely taped.
- F. Beginning of installation means acceptance of substrate.

3.2 PREPARATION

- A. Clean and prepare surfaces to receive weatherproofing in accordance with manufacturer's instructions.
- B. Apply mastic to seal penetrations, small cracks, and honeycomb in substrate.
- C. Insure all plywood sheathing is securely fastened. Secure all loose membranes before proceeding.
- D. Seal all sheathing joints and penetrations.

3.3 APPLICATION

- A. Install in strict accordance with manufacturers written installation instructions.
- B. Apply weather barrier to all plywood sheathing.
- C. Start weather barrier installation at a building corner, leaving 6-12 inches of weather barrier extended beyond corner to overlap.
- D. Install weather barrier in a horizontal manner starting at the lower portion of the wall surface with subsequent layers installed in a shingling manner to overlap lower layers. Maintain weather barrier plumb and level.
- E. Sill Plate Interface: Extend lower edge of weather barrier over sill plate interface 3-6 inches. Secure to foundation with elastomeric sealant as recommended by weather barrier manufacturer.
- F. Overlap weather barrier:
 - 1. Exterior corners: minimum 12 inches
 - 2. Seams: minimum of 6 inches.
- G. Seal watertight all items projecting through damp proofing surface with mastic.

- H. Apply mastic to all perimeters (top and bottom), joints, seams, edges, fasteners, junctures between plywood sheathing and exposed corners to provide complete weatherproof skin.

3.4 CLEANING

- A. Cleaning of adjacent materials which have been soiled shall be done immediately and all due care shall be exercised to prevent discoloration of any adjacent materials. The contractor shall be responsible for and bear cost of replacing any damaged or discolored materials due to weatherproofing sealant.

END OF SECTION

SECTION 07 21 00

THERMAL INSULATION

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Insulation in exterior wall construction.
- B. Insulation for filling perimeter window and door shim spaces.
- C. Insulation above all ceilings in attic spaces above heated area of units.
- D. Accessories.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Batt Insulation: ASTM C665; preformed glass fiber batt or roll blanket; conforming to the following:
 - 1. Facing: Faced on one side with asphalt treated Kraft paper.
 - 2. Flame/Smoke Properties: 75/450 in accordance with ASTM E84.
- B. Nails and Staples: Steel wire, electroplated; type and size to suit application.
- C. Tape: Bright aluminum self-adhering type, mesh reinforced, 2 inch wide.
- D. Blown insulation, Cellulose blown insulation may be used in the attics
- E. Batt & blown insulation shall be American Rockwool mineral wool, Owens-Corning fiberglass or equal.
- F. Provide insulation baffles at roof insulation to accommodate venting.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that substrate, adjacent materials, and insulation are dry and ready to receive insulation.

3.2 INSTALLATION

- A. Install insulation in accordance with insulation manufacturer's instructions.
- B. Install in exterior walls and ceiling spaces without gaps or voids. Do not compress insulation.
- C. Trim insulation neatly to fit spaces. Insulate miscellaneous gaps and voids.
- D. Fit insulation tight in spaces and tight to exterior side of mechanical and electrical services within the plane of insulation.
- E. Install with factory applied vapor retarder membrane facing warm side of building spaces. Lap ends and side flanges of membrane over framing members.
- F. Staple or nail flanges in place at maximum 6 inches oc.

- G. Tape seal butt ends, lapped flanges, and tears or cuts in membrane.
- H. Provide attic stairs insulation cover which provides same level of insulation of ceiling.
- I. Install insulation with the proper R-values as per plans and the City of Houston Energy Codes and Ordinances

3.3 SCHEDULES

- A. Ceiling, wall and floor insulation as required by code.

END OF SECTION 07 21 00

SECTION 07 31 13
ASPHALT SHINGLES

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Granular surfaced asphalt shingle roofing.
- B. Moisture shedding underlayment.
- C. Associated metal and membrane flashings.
- D. Accessories.

1.3 REGULATORY REQUIREMENTS

- A. Conform to IRC 2009 or later in accordance with authorities having jurisdiction and any local authorities.
- B. ANSI/ASTM D3018 Class A and UL I-90 wind up-lift.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Do not install eave edge protection and shingles when ambient temperatures are below 50 degrees F.

1.5 WARRANTY

- A. **Submit manufacturer's 20 year warranty.**

PART 2 - PRODUCTS

2.1 ASPHALT SHINGLES

- A. Asphalt Shingles: ASTM D3018, Class A with Type I – Self Sealing; UL Rating of A and Wind Resistance Label, glass fiber mat base, mineral granule surface type; 220 minimum lb/square; self sealing type; square type. Architectural shingles.
- B. Owner to choose one color from three choices (to be light colors only).

2.2 SHEET MATERIALS

- A. Underlayment: 30 lb. un-perforated asphalt saturated felts as recommended for use in waterproofing and in construction of asphalt shingle roofs.
- B. Flashing Membrane: Smooth surface SBS modified asphalt bitumen membrane, trevira polyester (170 G/m²)

2.3 ACCESSORIES

- A. Nails: Standard round wire shingle type, hot dipped zinc coated steel minimum 13/64 inch head diameter and 0.080 inch shank diameter, of sufficient length to penetrate through roof sheathing.
- B. Plastic Cement: ANSI/ASTM D2822, asphalt type with mineral fiber components, free of toxic solvents, capable of setting within 24 hours at temperatures of 75 degrees F and 50 percent RH, asbestos-free.
- C. Tab Cement: Quick setting asphalt cement, trowel or gun consistency, as recommended by shingle manufacturer.
- D. Ridge Vents: Ridge Master as manufactured by Mid-America Buildings Products Corp., GAF Cobra, or equal.
- E. Rain Deflectors: 24 gauge prefinished galvanized steel, color selected, to match roofing.
- F. Metal Drip Edge: D-25, formed with horizontal shelf to support shingle overhang.
- G. Asphalt Primer: ASTM D41.
- H. Sealant: Polyurethane, single component, non-sag as specified in Section 07 90 00.

2.4 FLASHING MATERIALS

- A. Sheet Flashings: ASTM A361; 24 gauge thick steel with minimum 1.25 oz/sq. ft. galvanized coating.
- B. Nails: Large head barbed shank round wire roofing type, hot dipped zinc coated steel; minimum 19/64 inch head diameter and 0.104 inch shank diameter; of sufficient length to penetrate through roof sheathing, staples not permitted.

2.5 FLASHING FABRICATION

- A. Form flashings to protect roofing materials from physical damage and shed water.
- B. Form sections square and accurate to profile, in maximum possible lengths, free from distortion or defects detrimental to appearance or performance.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that roof penetrations and plumbing stacks are in place and flashed to deck surface.
- B. Verify roof openings are correctly framed prior to installing work of this Section.
- C. Verify deck surfaces are dry, free of ridges, warps, or voids.

3.2 PREPARATION

- A. Fill knot holes and surface cracks with latex filler.
- B. Broom clean deck surfaces under underlayment.

3.3 INSTALLATION – GENERAL

- A. Install asphalt shingle roofing over dry surfaces, free of ridges, warps, and voids.
- B. Coordinate installation of roof mounted components or work projecting through roof. Verify roof openings are framed, sized, and located prior to installing work of this Section.
- C. Completed installation to provide weathertight service.

3.4 INSTALLATION – PROTECTIVE UNDERLAYMENT

- A. Place one ply of 30 lb. un-perforated asphalt saturated felts underlayment over deck area, with ends and edges weather lapped minimum 4 inches. Stagger end laps of each consecutive layer. Nail in place.
- B. Install protective underlayment perpendicular to slope of roof.
- C. Weather lap and seal watertight with plastic cement, items projecting through or mounted on roof.

3.5 INSTALLATION – METAL FLASHING & ACCESSORIES

- A. Weather lap joints minimum 2 inches and seal weather tight with plastic cement.
- B. Secure in place with nails at 3 inches o.c. staggered. Conceal fastenings.
- C. Flash and seal work projecting through or mounted on roofing with plastic cement, weather tight.
- D. Valley tin must be “V” trough valley flashing 24 gauge (minimum 20 in. wide).
- E. Low profile gravity 740 vent, 1 per 150 square feet of roof space ventilated.
- F. Shingles may be trimmed to allow 4 in., trough or may be laced over flashing.
- G. All flashing must be installed only after all felt paper is in place.
- H. Gables and eaves must have galvanized 24 gauge drip edge.
- I. When the rake of a roof abuts a vertical wall, stepped metal flashing must be applied over the end of each course of shingles.
- J. All pipes projecting through the roof must have metal stack flashing or neoprene rings.

3.6 INSTALLATION – ASPHALT SHINGLES

- A. Install shingles in accordance with manufacturer’s instructions and adhere to the windstorm requirements and IRC 2009 or later in accordance with authorities having jurisdiction.
- B. Place shingles in straight coursing pattern with 5 inch weather exposure to produce double thickness over full roof area.
- C. Project first course of shingles beyond fascia boards flush with edge of extended horizontal lip of metal drip edge.
- D. Adhere all shingles 3 inches back from eaves and penetrations with tab cement.
- E. Cap ridges with individual shingles, maintaining 5 inch weather exposure. Place to avoid exposed nails. Cover ridge vent with shingles.
- F. Coordinate installation of roof mounted components or work projecting through roof with weather tight placement of flashings.
- G. Complete installation to provide weather tight service.

3.7 PROTECTION OF FINISHED WORK

- A. Do not permit traffic over finished roof surface.

END OF SECTION 07 31 13

SECTION 07 46 00

FIBER CEMENT LAP SIDING AND CONTINUOUS VENT SOFFIT

PART 1 - GENERAL

1.1 REFERENCED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 DESCRIPTION OF WORK

- A. Work covered under this section shall include all labor, materials, equipment and related items to install exterior siding and continuous vent soffit complete.

1.3 RELATED WORK

- A. Division 6
- B. Joint Sealant Section 07 90 00
- C. Painting 09 90 00

1.4 QUALITY ASSURANCE

- A. Siding shall be recognized as exterior wall claddings in National Evaluation Services (NES), Inc.
- B. Siding shall be non-combustible and show no flame support or loss of integrity when tested in accordance with ASTM test method E-136.
- C. When tested in accordance with ASTM test method E-84, Siding shall have zero (0) Flame spread and smoke development of five (5) or less.
- D. Flexural Strength, typical based on Equilibrium Moisture Contact in accordance with ASTM test method C1185 shall be 1850psi-along direction of sheet and 2500psi across direction of sheet.
- E. Siding shall not rot, shall be immune to permanent water damage, and shall withstand termite attacks.

1.5 WARRANTY

- A. Siding shall have a Manufacturers 50-year limited, transferable product warranty.

1.6 PRODUCT STORAGE AND HANDLING

- A. Siding must be covered, protected from the elements and kept DRY.
- B. Store siding off the ground on a flat surface, under a waterproof covering.
- C. Do not allow siding to become wet.
- D. Always carry siding planks on edge to avoid any possible snapping.

PART 2 – PRODUCTS

2.1 SIDING

- A. Fiber-cement siding shall be composed of Portland cement, ground sand, cellulose fiber, selected additives and water.

- B. Fiber-cement siding shall be composed of Portland cement, ground sand, cellulose fiber, selected additives and water.
- C. Siding shall NOT contain asbestos, fiberglass or formaldehyde.
- D. Exterior siding shall be one of the following materials of Equal Fiber Cement Product.
 - 1. Hardipanel Vertical Siding 5/16 in. thick
 - 2. Hardiplank lap siding 5/16 in. thick
 - 3. Hardishingle siding ¼ in. thick
 - 4. Harditrim planks 7/16 in. thick

2.2 FIBER-CEMENT CONTINUOUS VENT SOFFIT

- A. Fiber-cement continuous vent soffit shall be composed of Portland cement, ground sand, cellulose fiber, selected additions and water.

2.3 FASTENERS

- A. Fastener lengths shall be as recommended by manufacturers.
- B. Fasteners shall meet design requirements for 80 mph wind speed per building codes.
- C. Fasteners shall be No. 304 stainless steel nail.

2.4 TRIM

- A. Trim pieces shall be 7/16 in. thick harditrim planks for weather resistance (unless in conflict with SHIPO requirement for a historical structure).

PART 3 - EXECUTION

3.1 CUTTING FIBER CEMENT PRODUCTS

- A. Cutting of fiber cement siding shall be done in strict accordance with manufacturer recommendation.

3.2 FRAMING REQUIREMENTS

- A. Siding shall be anchored to wood studs spaced at 16 in. o.c. with sheathing and moisture barrier located between the wood stud and siding.

3.3 INSTALLATION

- A. Install a minimum ¼ in. thick lath starter strip at the bottom course of a wall.
- B. Apply siding planks horizontally with 1 ¼ in. wide laps at the top. Provide a 1 in. lap of the bottom edge of the first plank over the lath starter strip.
- C. Vertical joints shall butt over studs. Siding planks shall tightly butt and must be fastened on each side of the joint. Butt joints of planks shall not be caulked and must be flashed appropriately behind the joint.
- D. Fasteners shall be placed no closer than 3/8 in. and no farther than ½ in. from the plank side edge and no closer than ¾ in. and no farther than 1 in. from the plank bottom edge.
- E. Top and bottom edges of planks shall overlap a minimum of 1 ¼ in. and blind nailing method shall be utilized so that no nails are visible.
- F. Provide minimum 6 in. clearances from ground. Provide clearance from roof overhang as recommended by manufacturer.
- G. Butt planks to Hardy-board trim at corners and openings and provide 1/8 in. gap between plank and trim and seal joints.

- H. When project is not located in Windstorm areas blind nailing method shall be utilized so that no nails are visible.
 - 1. In Windstorm areas DO NOT use blind nailing method.
 - 2. In Windstorm areas – all vertical and horizontal joints shall be sealed.

3.4 ROOF TRIM

- A. Fascia must be installed on wood band nailed to rafter tails and must be wider than the cut of the rafter.
- B. Soffit must be ¼ in. vented perforated hardisoffit panels installed to rafter.

3.5 FASTENER REQUIREMENT

- A. Drive fasteners perpendicular to siding and framing.
- B. Fastener heads should fit snug against siding.
- C. Do not over-drive nail heads or drive nails at an angle.
- D. If nail is countersunk; seal nail hole and add another nail below nail hole.
- E. If siding is installed using a pneumatic tool, contractor shall use a flush mount attachment.

3.6 PATCHING AND FINISHING

- A. Dents, chips, and cracks can be filled with a cementitious patching compound.
- B. Seal all butt joints and joints at trim.
- C. Siding shall be painted within 30 days of installation.

END OF SECTION 07 46 00

SECTION 07 90 00

JOINT SEALERS

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Preparing sealant substrate surfaces.
- B. Sealant and backing.
- C. Joint sealers scheduled.

1.3 QUALITY ASSURANCE

- A. Applicator: Company specializing in applying the work of this Section with minimum three years documented experience.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Do not install solvent curing sealants in enclosed building spaces.
- B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

PART 2 - PRODUCTS

2.1 SEALANTS

- A. Acrylic Sealant Type 1: Single component, solvent curing, non-staining, non-bleeding, non-sagging, capable of continuous water immersion; color as selected; Equal to Mono by Tremco or 60+Unicrylic by Pecora.
- B. Butyl Sealant Type 2: Single component, solvent release, non-skinning, non-sagging, color as selected, equal to Butyl Sealant by Tremco or BC-158 by Pecora.
- C. Polyurethane Sealant Type 3: Single component, chemical curing, non-staining, non-bleeding, capable of continuous water immersion, non-sagging type; color as selected; equal to Dymonic manufactured by Tremco or NP-1 by Sonneborn.
- D. Silicone Sealant Type 4: Single component, solvent curing, non-sagging, non-staining, fungus resistant, non-bleeding; color as selected; equal to 864 manufactured by Pecora or Omni Plus by Sonneborn.

2.2 ACCESSORIES

- A. Primer: Non-staining type, recommended by sealant manufacturer to suit application.
- B. Joint Cleaner: Non-corrosive and non-staining type, recommended by sealant manufacturer; compatible with joint forming materials.
- C. Joint Backing: Round, closed cell polyethylene foam rod; oversized 30 percent to 50 percent larger than joint width.
- D. Bond Breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that joint openings are ready to receive work and field measurements are as shown on Drawings and recommended by the manufacturer.
- B. Beginning of installation means installer accepts existing substrate.
- C. Joint surfaces to receive sealant shall be sound, smooth, clean, dry and free of visible contaminants. Applications on non-visible coatings or contaminants to surface of rabbet area prior to application of sealant shall be controlled by the Contractor in consultation with the sealant manufacturer.

3.2 PREPARATION

- A. Thoroughly clean joints and apply primer, if recommended by sealant manufacturer, to dry surfaces. Apply primer prior to application of joint backing, bond breaker or sealants.
- B. Remove loose materials and foreign matter which might impair adhesion of sealant.
- C. Verify that joint backing and release tapes are compatible with sealant.
- D. Perform preparation in accordance with manufacturer's instructions.
- E. Protect elements surrounding the work of this Section from damage or disfiguration.

3.3 INSTALLATION

- A. Install sealant in accordance with manufacturer's instructions.
- B. Measure joint dimensions and size materials to achieve required width/depth ratios.
- C. Install joint backing to achieve a neck dimension no greater than 1/3 of the joint width.
- D. Install bond breaker where joint backing is not used.
- E. Apply sealant within recommended application temperature ranges. Consult manufacturer when sealant cannot be applied within these temperature ranges.
- F. Install sealant free of air pockets, foreign embedded matter, ridges and sags.
- G. Tool joints concave.

3.4 CLEANING AND REPAIRING

- A. Clean adjacent soiled surfaces.
- B. Repair or replace defaced or disfigured finishes caused by work of this Section.

3.5 PROTECTION OF FINISHED WORK

- A. Protect finished installation.
- B. Protect sealants until cured.

3.6 SCHEDULE

	Location	Description	Type
A.	Exterior Door, Window Frames and Other Openings	Polyurethane Single Component	3
B.	Under Thresholds	Butyl	2
C.	Tile and Perimeter of Plumbing Fixtures	Silicone	4
D.	Interior Locations not Otherwise Scheduled	Acrylic Sealant	1

- E. Exterior at Fiber Cement Siding and Trim: Use non-hardening paintable, exterior grade sealant- A high quality acrylic or latex sealant for cementitious products that complies with ASTM C 834: range of movement \pm 12.5 percent: Equal to Acryseal product No. ACS 10.02 by GE Silicones 1-800-255-8886.

END OF SECTION 07 90 00

SECTION 08 11 00

EXTERIOR DOORS AND FRAMES

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Packaged doors and frames complete with threshold, adjustable sweep, hinges and weather-stripping for exterior doors and doors between garage and house, if attached garage is provided.

1.3 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the products specified in this section with minimum three years documented experience.

1.4 FIELD MEASUREMENTS

- A. Verify that field measurements are as indicated on Drawings.

1.5 RELATED SECTIONS

- A. Door Hardware: Section 08 71 00

1.6 COORDINATION

- A. Coordinate the work with frame opening construction, door and hardware installation.

1.7 WARRANTY

- A. Provide door and frame manufacturer's warranty.

PART 2 - PRODUCTS

2.1 EXTERIOR DOORS – GENERAL

- A. Exterior flush type doors shall be of steel, fiberglass, mahogany, birch or oak finish (or equal) solid core construction.
- B. Where fire doors are called for, they shall be flush type solid core or flush steel door, or equivalent, equipped with self-closing device and all other necessary hardware.
- C. The choice of door, including glass requirements, shall be made by the owner from the available options.
- D. All exterior doors shall have a dead bolt lock (turn button) and three hinges. Doors should include a door stop where there is an opportunity of causing wall damage.
- E. All exterior doors shall be made weather tight. A watertight threshold shall be provided. Doors shall be weather-stripped to prevent infiltration of dust, snow, and weather.

- F. Exterior wood doors shall be finished inside and out with two coats of paint or stain and varnish at owners option unless specified in the bid document. Painting and varnishing of doors to be done prior to being installed and shall have no physical defects such as runs, rough areas, etc.

2.2 METAL/WOOD

- A. Insulated Steel Entry Door: shall be 3'0"x6'8" embossed 20 gauge steel door with polyurethane or Polystyrene foam insulation mounted on Ponderosa Pine frame and trim or equal. Door shall come pre-fit complete with aluminum sill and all necessary hardware such as hinges, locksets and weather stripping.
- B. Wood Entry Door: shall be 3'0"x6'8" pre hung on Ponderosa Pine frame and trim or equal. Door shall come pre-fit complete with aluminum sill and all necessary hardware such as hinges, locksets and weather stripping.

2.3 THRESHOLD

- A. Thresholds shall be aluminum in full bed of caulking, shimmed level and secured with a minimum of four (4) countersunk brass flat head screws.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Wood Doors: shall be installed with door and frame set plumb, straight and true. All doors shall be undercut to allow for carpeting, thresholds, and weather- stripping. Doors shall be cut and planed to allow 1/8" clearance at head and jambs. All hardware shall be installed using template provided by the manufacturer, or shall come pre-fit. Mount door and hardware so door shall swing freely without springing of door hinges or binding of door.
- B. Insulated steel/fiberglass doors: Door and frame to be installed plumb and true and to come complete with three (3) hinges, entry locks and keyed dead bolts. Door and frame shall be installed in complete accordance with manufacturer's instructions. Pre-fit pre-hung doors shall fit frame squarely with minimum 1/8" even allowance at head and jambs. Door frame is to be securely anchored to framing in accordance with manufacturer's instructions.

3.3 ADJUSTING AND CLEANING

- A. Adjust hardware for smooth and balanced door movement.
- B. All doors shall be undercut to allow proper operation.

END OF SECTION 08 11 00

SECTION 08 14 00

INTERIOR DOORS

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 SECTION INCLUDES

- A. Hollow core interior doors; non-rated; pre-hung.

1.3 QUALIFICATIONS

- A. Manufacturer: Company specializing in manufacturing the Products specified in this section with minimum three years documented experience.

1.4 QUALITY ASSURANCE

- A. Quality Standards: Comply with the following standards:
 - 1. NWWDA Quality Standards: I.S.I. "Industry Standard for Wood Flush Doors", of National Wood Window and Door Association (NWWDA).
 - 2. AWI Quality Standard: "Architectural Woodwork Quality Standards"; Section 1300 "Architectural Flush Doors", of Architectural Woodwork Institute (AWI) for grade of door, core construction, finish and other requirements exceeding those of NWWDA quality standard.

PART 2 - PRODUCTS

2.1 DOOR TYPES

- A. Minimum 1 3/8 inches thick; hollow core construction. Pre-hung door and frame units for non-rated doors.

2.2 DOOR FACING

- A. All doors shall have panel design as selected by Owner and shall be painted or stained.
- B. Door facing shall be oak, maple, mahogany or hardboard.
- C. Door hardware should include a door stop when opportunity of wall damage exists.

2.3 FABRICATION

- A. Core- Heavy-duty corrugated paper interlocked to form a honeycomb. Cell size shall not exceed 2 in. x 2 in., when material is fully expended. Core material shall be mechanically fastened to stiles, rails, and glue bonded to the face panels.
- B. Edges – stiles and rails shall be of one-piece solid stock (Poplar or Aspen) with a minimum size 1 – 1/8 inch thick x 2 -1/4 inch width after machining.

- C. Hardware reinforcement blocks – All doors shall have a one-piece solid block (on each side) to properly secure lock to the door. Lock block shall be 20 inches long x 2 – ¼ inches wide minimum, mechanically attached to the stile and glue bonded to face skins.
- D. Face Panel – 1/8 inch thick tempered hardboard manufactured by Georgia Pacific STD HDBD 515 or equal.
- E. Glue Bond – Type II water resistant adhesive.
- F. Factory machine doors for finish hardware in accordance with hardware requirements and dimensions.
- G. Pre-hung units must have a frame made of ¾ inch material with a properly plowed jamb to receive 1 ¾ inch or 1 3/8 inch doors. A pre-hung unit must be equipped with the door panel, jamb and all trim.

2.4 FINISH

- A. Field finish in accordance with Painting-Section 09 90 00.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that opening sizes and tolerances are acceptable.
- B. Do not install doors in frame openings that are not plumb or are out-of-tolerance for size or alignment.

3.2 INSTALLATION

- A. Install non-rated doors in accordance with AWI Quality Standards requirements.
- B. Pilot drill screw and bolt holes.
- C. Machine cut for hardware. Core for handsets and cylinders.
- D. Coordinate installation of doors with installation of hardware specified in Section 08 71 00.
- E. Pre-hung units must be installed plumb and level to insure proper operation. Bottom of the door may be cut off to allow proper ventilation and operation.
- F. All doors shall be undercut to allow for carpeting, thresholds, and weather-stripping.

3.3 INSTALLATION TOLERANCES

- A. Maximum Diagonal Distortion (Warp): 1/16 inch measured with straight edge or taught string, corner to corner, over an imaginary 36 x 84 inch surface area.
- B. Maximum Vertical Distortion (Bow): 1/16 inch measured with straight edge or taught string, top to bottom, over an imaginary 36 x 84 inch surface area.
- C. Maximum Width Distortion (Cup): 1/16 inch measured with straight edge or taught string, edge to edge, over an imaginary 36 x 84 inch surface area.

3.4 ADJUSTING

- A. Adjust door for smooth and balanced door movement.

END OF SECTION 08 14 00

SECTION 08 51 13

WINDOWS

PART 1 - GENERAL

2.1 SUMMARY

- A. Scope: Provide all Labor, Materials, Equipment, and Services and perform all operations required for complete installation of:
 - 1. Windows:
 - a. Including replacement sash, window repairs, aluminum, wood, vinyl, vinyl replacement window units. Window units shall be constructed of type "S" or "T" stiles, check rail or plain rail. Material shall be minimum thickness of 1-3/8". Repair of a window unit shall include but not be limited to putting the unit into working order, replacing rotten or broken sashes, re-glazing, installing latches and re-roped. Windows shall be low-E to comply with applicable local codes.
- B. This Section includes the following unfinished, aluminum-clad, vinyl-clad wood-framed window product types:
 - 1. Wood windows Double-hung; (Replacement)
 - 2. Casement or Sliding Windows; (Replacement)
 - 3. Aluminum Window; (Replacement)
 - 4. Vinyl Clad Window Double-hung; (New)
 - 5. New Vinyl clad casement or siding windows.

1.2 PERFORMANCE REQUIREMENTS

- A. General: Provide windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of minimum test size required by AAMA/NWWDA 101/I.S.2.
- B. Design Pressure: All "new" window assemblies to meet design pressure rating of DP-50.

1.3 QUALITY ASSURANCE

- A. Installer: A qualified installer, approved by manufacturer to install manufacturer's products.
- B. Fenestration Standard: Comply with AAMA/NWWDA 101/I.S.2, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors," for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.
- C. Glazing Publications: Comply with published recommendations of glass manufacturers and GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.4 WARRANTY

- A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace wood windows which fail in materials and workmanship within **two** years from date of Substantial Completion.
- B. Warranty Period for Metal Finishes: Five years from date of Substantial Completion.

PART 2 PRODUCTS

2.1 MANUFACTURERS

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
1. Andersen Commercial Group; Andersen Corp.;
 2. BiltBest Windows and Patio Doors;
 3. Caradco Window Corp.; Jeld-Wen, Inc.;
 4. Crestline; a division of SNE Enterprises, Inc.; a Nortek Company;
 5. Eagle Window & Door, Inc.; an American Architectural Products Corporation Company;
 6. Hurd Millwork Co.;
 7. Kolbe & Kolbe Millwork Co., Inc.;
 8. Marvin Windows and Doors;
 9. Norco Windows and Patio Doors; Jeld-Wen, Inc.;
 10. Peachtree Doors and Windows; Nortek, Inc.;
 11. Pella Corporation;
 12. Pozzi Wood Windows; Jeld-Wen, Inc.;
 13. Vetter; a division of SNE Enterprises, Inc.; a Nortek Company;
 14. Weather Shield Mfg., Inc.

2.2 MATERIALS, GENERAL

- A. Aluminum Extrusions and Rolled Aluminum for Cladding, Baked-Enamel Finish: Manufacturer's standard baked enamel complying with AAMA 2603.
1. Color: Color as selected from manufacturer's standard color range.
 - a. Vinyl for Cladding: Permanent, integral color, manufacturer's standard color finish.
 - b. Wood Clad: required at Historical Rehab, when visible from street.

2.3 GLAZING

- A. Glass at Aluminum and Aluminum Vinyl Clad Windows: Clear, insulating-glass with low-e coating or film.
- B. Glazing System: Manufacturer's standard factory-glazing system that produces weather-tight seal.
- C. Glass at Wood window replacement: Clear float glass, Double strength, Grade B.
- D. Glass at Hazardous locations: Tempered glass per IRC Section R308.4.

2.4 INSECT SCREENS

- A. General: Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches. Locate screens on inside of window and provide for each operable exterior sash or ventilator.
1. Aluminum Tubular Frame Screens: Comply with SMA 1004, "Specifications for Aluminum Tubular Frame Screens for Windows," Residential R-20 class.

2.5 ACCESSORIES

- A. Grilles (False Muntins) at Insulated Window Units: Provide grilles in designs indicated, for removable application to inside of each sash lite.
1. Material: Extruded, rigid PVC.

2. Design: Rectangular.
3. Color: Match Unit.

2.6 FABRICATION

- A. General: Fabricate wood windows, in sizes indicated, that comply with AAMA/NWWDA 101/I.S.2 for performance class and performance grade indicated. Include a complete system for assembling components and anchoring windows.
- B. Fabricate wood windows that are re-glazable without dismantling sash or ventilator framing.
- C. Weather Stripping: Provide full-perimeter weather stripping for each operable sash and ventilator, unless otherwise indicated.
- D. Factory machine windows for openings and hardware that is not surface applied.
- E. Mullions: Provide mullions and cover plates as shown, matching window units, complete with anchors for support to structure and installation of window units. Allow for erection tolerances and provide for movement of window units due to thermal expansion and building deflections, as indicated. Provide mullions and cover plates capable of withstanding design loads of window units.
- F. Glazing Stops: Provide nailed or snap-on glazing stops. Provide glazing stops to match sash and ventilator frames.

2.7 WOOD FINISHES

- A. Factory-Primed Windows: Provide manufacturer's standard factory-prime coat on exposed exterior wood surfaces.

PART 3 EXECUTION

3.1 INSTALLATION

- A. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- B. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- C. Metal Protection: Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with requirements specified in "Dissimilar Materials" Paragraph in Appendix B in AAMA/NWWDA 101/I.S.2.
- D. Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weather-tight closure. Lubricate hardware and moving parts.
- E. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.
- F. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- G. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.
- H. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.2 INSTALLATION OF WINDOWS

- A. Wood Window Replacement with Aluminum Window
 - 1. Remove existing units;
- B. Remove and replace all rotted or damaged frame or wood trim;
 - 1. Install new single-hung aluminum unit into repaired frame (unit shall come complete with hardware and screen);
 - 2. Reinstall exterior and interior trim;
 - 3. Size of units shall match existing unless specified and approved;
 - 4. In replacement of frames, sills and trim, all items shall match existing;
 - 5. All windows shall be cleaned prior to final;
 - 6. Wood panels to be cut to size for each window and ply locks installed.
- C. Wood Window Repair with Aluminum Track
 - 1. Remove paint from aluminum track to allow upper and lower window sash to operate smoothly and close to form tight seal.
 - 2. Repair or replace locks to make operable.
 - 3. Tracks should be firmly attached to window frame at top and bottom.
 - 4. If fasteners are necessary, they should in no way impede the vertical motion of the window units. Tension of spring assembly should be adjusted to allow proper window movement.
- D. Wood Window Repair and Reglaze
 - 1. Remove paint from tracks to allow upper and lower window sash to operate smoothly and close to form tight seal. Repair or replace locks to make operable. Replace sash cords where necessary. Remove all loose or cracked glazing scrape down to wood. Replace broken or cracked glass and install new Latex base glazing compound and paint to match existing for finished appearance. In replacements of frames, sills, and sash, trim and hardware shall match existing work in design and dimensions unless otherwise specified in the work write-up. Chain shall be used in all sash cord replacement. Two window lifts and one locking device shall be installed on all sash replacements.
 - 2. When new sashes are installed into existing frame, the contractor shall check all window parting stops. Stops that are missing, broken, or rotted or impaired, proper window operation shall be replaced by the contractor.
- B. Wood and Aluminum Window Repair
 - 1. Free lower sash so that it opens properly;
 - 2. Replace broken glass;
 - 3. Reset loose glass;
 - 4. Remove bad glazing;
 - 5. Apply new glazing to units to make air tight seal;
 - 6. Replace all rotted sills, casings, framing member, screens and trim both inside and out;
 - 7. Install new lock and sash stop if existing is not present or cannot be repaired to operate;
 - 8. Paint unit and trim both inside and out;
 - 9. All items such as replacement frames, sills sash hardware and screens shall match existing;
 - 10. Use: Part from local supplier or equal;
 - 11. All windows shall be cleaned prior to final.
- C. Vinyl Window Install
 - 1. Furnish vinyl single hung-double glazed windows with insulated/laminated impact glass and screens. Windows to be of type and location specified in work write-up.
 - 2. Window units shall be furnished with necessary anchors and clips to provide a complete installation.

3. Each unit shall be equipped with a cam lock and keeper.
 4. Each sash shall be equipped with two (2) concealed sash balances in jambs, or equivalent, which permit removal of one (or both) sash to the interior of the structure for washing or maintenance without dismantling any frame members or use of special tools.
- D. Window Opening Closure
1. Removal of window unit(s);
 2. Replace rotted or damaged framing prior to closing opening;
 3. Install R-11 batt insulation in cavity;
 4. Install new wall covering inside and out to match adjacent areas;
 5. Use: Local supplier or equal;
 6. All closed openings shall blend as closely as possible to existing adjacent areas.
- 3.3 INSTALLATION OF WINDOW SCREENS
- A. General:
1. Contractor shall replace or repair all screens as specified in the work write-up. Screens shall be mounted in a removable aluminum frame. If the frame is over four feet high, an aluminum cross member shall be used. Screen shall be aluminum; fiberglass screening is not acceptable. Screens shall not be patched; a minimum repair is replacing the screen in an existing frame. If wood screen bead is replaced, the wood shall be primed and painted to match existing.
- B. Window Screen Install
1. Remove existing unit;
 2. Install new aluminum frame screen to opening;
 3. Use: A local supplier.
- C. Window Screen Repair
1. Repair any damaged frame members;
 2. Replace torn wire screen;
 3. Paint units if wood;
 4. Use: A local supplier.
- 3.4 INSTALLATION OF HURRICANE WINDOW TEMPLATES
- A. Brick
1. $\frac{3}{4}$ " Treated plywood with primer finish;
 2. Plywood measured and cut for each window with a $\frac{1}{8}$ " – $\frac{1}{4}$ " clearance around;
 3. Plylox hurricane clips or equal to be provided, minimum of 4 per window or at every 24".
- B. Cementious Board (Hardie Board or equal)
1. $\frac{3}{4}$ " Treated plywood with primer finish;
 2. Plywood measured and cut for each window with a $\frac{1}{8}$ " – $\frac{1}{4}$ " clearance around;
 3. $\frac{1}{4}$ " x $3\frac{1}{2}$ " SS stud with 2" tapered wood screws, $1\frac{1}{2}$ " standard SAE threads set 16" centered. Provided $\frac{1}{4}$ " washer and wing nut. Screws to be centered in exterior trim.

END OF SECTION 08 51 13

SECTION 08 71 00

DOOR HARDWARE

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Hardware for interior and exterior doors.

1.3 COORDINATION

- A. Coordinate work of this Section with other directly affected Sections involving manufacture of any internal reinforcement for door hardware.

1.4 REGULATORY REQUIREMENTS

- A. Exterior entrance doors on an accessible route shall conform to Texas Code 2306.514 with regard to maximum threshold height of 1/2 inch

PART 2 - PRODUCTS

2.1 HARDWARE

- A. Door locksets must meet industry standards.
- B. Deadbolts with thumblocks shall be installed on front and rear/side entry doors.
- C. All brands must be approved by Contract Administrator.
- D. Entrance locksets for all exterior doors for coastal residence must be type to withstand the harsh environment which provides for a life time finish.
- E. Interior Doors – All bathroom and bedroom doors must have privacy. All other doors must have passage locksets.
- F. All doors must have a wall mounted door stop, strike plate, lockset and appropriate hinges.
- G. Entrance doors must have 4 1/2 in., pair of door butts stainless steel for coastal location; satin chrome finish for inland locations, weather-strip (made of rolled vinyl with aluminum channel backing) and threshold.
- H. Interior door butts shall be 3-1/2 inches sized in width to clear trim.
- I. All door handles are to be lever door handles.

2.2 KEYING

- A. Door Locks: Entrance locksets must all be keyed alike (including deadbolts).
- B. Supply keys in the following quantities:
 - 1. Two keys for each lock.

2.3 ACCESSORIES

- A. Provide all bolts, screws, anchorage devices, brackets, templates, and similar accessories necessary or required to properly install all hardware.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that doors and frames are ready to receive work.
- B. Beginning of installation means acceptance of conditions.

3.2 INSTALLATION

- A. Install hardware in accordance with manufacturer's instructions.
- B. Use the templates provided by hardware item manufacturer.

END OF SECTION 08 71 00

SECTION 09 29 00

GYPSUM BOARD

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Gypsum board.
- B. Taped and sanded joint treatment.
- C. Surface treatment.

PART 2 - PRODUCT

2.1 FRAMING MATERIALS

- A. Furring, Framing and Accessories: GA 201 and GA-216
- B. Fasteners: ANSI/ASTM C646; 1-1/4 inch Type S screws FOR 1/2 in. wall board and 1 – 7/8 in. Type S screws for 5/8 in. wall board, spaced 6 in. on center.

2.2 GYPSUM BOARD MATERIALS

- A. Gypsum Board Walls: ANSI/ASTM C36; 1/2 inch thick, maximum permissible length; ends square cut, tapered edges.
- B. Gypsum Board Ceilings: ANSI/ASTM C36; 5/8 inch thick, maximum permissible length; ends square cut, tapered edges.
- C. Moisture Resistant Gypsum Board: ANSI/ASTM C630; 1/2 inch thick, maximum permissible length; ends square cut, tapered edges; to be used for all walls and ceiling in bath rooms.
- D. Moisture resistant cement board equal to “Hardi-Backer” will be used in wet locations such as behind the tile in bathrooms.

2.3 ACCESSORIES

- A. Corner Beads: Metal and paper combination.
- B. Edge Trim: GA 201 and GA 216; Type LC bead.
- C. Joint Materials: GA 201 and GA 216; reinforcing tape, joint compound, adhesive, water, and fasteners.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify site conditions are ready to receive work.
- B. Beginning of installation means acceptance of substrate.

3.2 GYPSUM BOARD INSTALLATION

- A. Install gypsum board in accordance with ASTM C840.
- B. Erect single layer gypsum board vertical, with ends and edges occurring over firm bearing and staggered joints.
- C. Use screws when fastening gypsum board to wood furring or framing. Nails or staples may not be used.
- D. Treat cut edges and holes in moisture resistant gypsum board with sealant.
- E. Place control joints consistent with lines of building spaces as directed; at 30 feet maximum.
- F. Place corner beads at external corners. Use longest practical length. Place edge trim where gypsum board abuts dissimilar materials.
- G. Both sides of all plumbing walls shall be 1/2 in. moisture resistant board.

3.3 JOINT TREATMENT

- A. Tape, fill and sand exposed joints, edges, and corners to produce smooth surface ready to receive finishes.
- B. Feather coats onto adjoining surfaces so that camber is maximum 1/32 inch.
- C. Pre-bow panels overnight prior to erection.
- D. Erect in accordance with manufacturer's instructions.

3.4 SURFACE TREATMENT

- A. Texture for all surfaces shall be light orange peel.
- B. Spray apply surface treatment to entire surface of gypsum board to match texture of approved samples.

3.5 TOLERANCES

- A. Maximum Variation of True Finished: 1/8 inch in 10 feet in any direction.

END OF SECTION 09 29 00

SECTION 09 31 00

CERAMIC TILE

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SCOPE

- A. Furnish all labor and materials to properly execute tile work. PART 2- PRODUCTS

2.1 MATERIALS

- A. Glazed Floor and Wall Tile: ANSI A137.1, and as follows:
 - 1. Stone look porcelain or ceramic or equivalent product.
 - 2. Moisture Absorption: 0.5 to 3.0 percent.
 - 3. Size and Shape: 12 inch square or 13 inch square.
 - 4. Thickness: ¼ inch to 3/8 inch.
 - 5. Edges: Square for walls, cushioned at floors.
 - 6. Surface Finish: Matte Glazed with "Plus Finish" for ADA compliance at floors.
 - 7. Colors: To be selected from manufacturer's standard range.
 - 8. Trim Units: Matching base, in sizes coordinated with field tile.
- B. Manufactures: Dal. Tile, Traffic Master or approved equal.

PART 3- EXECUTION

3.1 INSTALLATION OF TILE

- A. Install tile over concrete foundation using thin set method directly to concrete foundation.
- B. Install tile over wood subfloor as follows:
 - 1. Drive Corrosion-resistant screws through the plywood and into the joists below to ensure a firm foundation for the tile. Set the heads of all screws slightly beneath the wood surface. Use a light weight gypsum leveling compound to fill and level voids or low spots.
 - 2. Install 30 lb. felt over wood sub floor.
 - 3. Install ½ inch cement backer board using corrosion resistant screws at 6 in. on center. Tape the joints in the backer board and apply thin-set adhesive to the joints.
 - 4. Thin set tile over cement backer board.
- C. Do not use grout between fixtures and tile. Fill these joints with sealant with color to match grout allowing for movement.

3.2 WORKMANSHIP

- A. Center fields on applied areas so that no tile is less than half size. Cut and drill tile and trim shapes without damage. Rub all exposed cut edges smooth with stone. Joints in wall tile shall be vertical and horizontal and joints in floor tile perpendicular and parallel to walls. Fit tile closely around outlets, pipes, fixtures, and fittings so that plates, escutcheons, and collars will overlap cuts. Do not allow newly tiled floors to be walked on and protect from damage.

3.3 GROUTING

- A. The grout shall be used as manufactured and not mixed with anything other than water. Installation shall be in strict accordance with manufacturer's recommendations.

3.4 CLEANING

- A. Sponge and wash tile thoroughly with clear water after grout has stiffened. Clean by rubbing with damp cloths or sponges and polish with clean dry cloth.

END OF SECTION 09 31 00

SECTION 09 65 00
RESILIENT FLOORING

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 SECTION INCLUDES

- A. Resilient tile flooring.

1.4 ENVIRONMENTAL REQUIREMENTS

- A. Store materials for three days prior to installation in area of installation to achieve temperature stability.
- B. Maintain ambient temperature required by adhesive manufacturer three days prior to, during and 24 hours after installation of materials.

1.5 MAINTENANCE DATA

- A. Submit Maintenance Data: Include maintenance procedures, recommended maintenance materials, and suggested schedule for cleaning, stripping, and re-waxing.

PART 2 - PRODUCTS

2.1 MATERIALS – TILE FLOORING

- A. Vinyl Composition Tile:
 - 1. Size: 12 x 12 inch
 - 2. Thickness: 1/8 inch
 - 3. Color: As selected by Owner from minimum of three color choices.
 - 4. Manufacturer: Homogenous type by Roppe, Armstrong, Dal-Tile or approved equal.

2.3 ACCESSORIES

- A. Sub-floor Filler: White premix latex; type recommended by adhesive material manufacturer.
- B. Primers and Adhesives: Waterproof; types recommended by flooring manufacturer.
- C. Sealer and Wax: Types recommended by flooring manufacturer.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify concrete floors are dry to a maximum moisture content of 7 percent, and exhibit negative alkalinity, carbonization, or dusting.

- 3.2 Verify floor and lower wall surfaces are free of substances that may impair adhesion of new adhesive and finish materials.
- 3.3 PREPARATION
- A. Remove sub-floor ridges and bumps. Fill minor or local low spots, cracks, joints, holes and other defects with sub-floor filler to achieve smooth, flat, hard surface.
 - B. Prohibit traffic until filler is cured.
 - C. Vacuum clean substrate.
- 3.4 INSTALLATION – TILE FLOORING
- A. Install in accordance with manufacturer’s instructions.
 - B. Mix tile from container to ensure shade variations are consistent when tile is placed.
 - C. Installer to supply and spread only enough adhesive to permit installation of materials before initial set.
 - D. Set flooring in place; press with heavy roller to attain full adhesion.
 - E. Lay flooring wit joints and seams parallel to building lines to produce symmetrical tile pattern.
 - F. Allow minimum ½ full size tile width at room or area perimeter.
 - G. Install resilient edge strips at unprotected or exposed edges, and where flooring terminates.
 - H. Scribe flooring to walls, columns, cabinets, floor outlets, and other appurtenances to produce gapless tight joints.
- 3.5 CLEANING
- A. Remove excess adhesive from floor, base, and wall surfaces without damage.
 - B. Clean, seal, and wax floor and base surfaces in accordance with manufacturer’s instructions.
- 3.6 PROTECTION OF FINISHED WORK
- A. Prohibit traffic on floor finish for 48 hours after installation.

SECTION 09 65 00

SECTION 09 68 00

CARPET & PAD

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 SCOPE OF WORK

- A. Furnish all labor, materials and equipment necessary to complete the carpet and pad work shown on the drawings and specified herein. In general, the carpet and pad work shall include but not necessarily be limited to:
 - 1. Carpet with pad and accessories.
 - 2. Clean up.

PART2 – PRODUCTS

2.1 CARPET

- A. 25 oz. Nylon or equivalent. Secondary backing to be jute.

2.2 PAD

- A. 3/8 inch rebond with 6lb density.

PART3 – EXECUTION

3.1 CARPETING

- A. This subcontractor will scrape floors, patch all defects with latex floor patch stone, mechanically grind floor smooth and sweep floor clean before installing padding and carpet. In no case will any foreign matter remain under padding and carpet. All screws must be countersunk.
- B. Remove doors necessary for execution of work and place them in an orderly fashion to prevent damage. After completion, replace doors in original location and in original condition.
- C. All areas under carpet will be completely covered with pad and no trafficable concrete surfaces will be allowed to wear against carpet.
- D. Seams may be hand sewn or hot-ironed in keeping with manufacturer's specifications. Special care will be taken at all seams to prevent them from being visible from the top side.
- E. Carpet will be stretched tightly and attached securely to tack strip at walls to prevent bubbles wrinkled or loose carpet.
- F. Re-stretch carpet for a period of one year due to material characteristics or improper installation.

- G. Carpet stops to be "Z" bar metal strips or expanded metal strips. Brad over all tacks where exposed to foot traffic. Exposed metal at all bathrooms.

3.2 WARRANTY

- A. Warrant against defects in material supplied and workmanship for a period of one (1) year following the issuance of the Certificate of Occupancy for the final building of the project.

3.3 CLEAN UP

- A. Clean up all debris caused by the work of this section and remove from the job site.

END OF SECTION 09 68 00

SECTION 09 90 00

PAINTING

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Plan Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SECTION INCLUDES

- A. Surface preparation and field application of paints and coatings.

1.3 DEFINITIONS

- A. Conform to ANSI/ASTM D16 for interpretation of terms used in this Section.

1.4 QUALITY ASSURANCE

- A. **All paint shall be low or no VOC paints.**
- B. Exterior paint shall carry a quality of no less than a 15 year manufacturer's warranty.
- C. Interior paint shall carry a quality of no less than a 10 year manufacturer's warranty.

1.5 DELIVERY, STORAGE AND HANDLING

- A. Deliver products to site in sealed and labeled containers; inspect to verify acceptance.
- B. Container labeling to include manufacturer's name, type of paint, brand name, brand code, coverage, surface preparation, drying time, cleanup, color designation, and instructions for mixing and reducing.
- C. Store paint materials at minimum ambient temperature of 45 degrees F and a maximum of 90 degrees F, in ventilated area, unless required otherwise by manufacturer's instructions.
- D. Take precautionary measures to prevent fire hazards and spontaneous combustion.

1.6 ENVIRONMENTAL REQUIREMENTS

- A. Do not apply materials when surface and ambient temperatures are outside the temperature ranges required by the paint product manufacturer.
- B. Do not apply exterior coatings during rain.
- C. Minimum Application Temperatures for Latex Paints: 45 degrees F for interiors; 50 degrees F for exterior; unless required otherwise by manufacturer's instructions.
- D. Minimum Application Temperature for Varnish Finishes: 65 degrees F for interior or exterior, unless required otherwise by manufacturer's instructions.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Coatings: Professional painter's quality line. Ready mixed, except field catalyzed coatings. Process pigments to a soft paste consistency, capable of being readily and uniformly dispersed to a homogeneous coating; good flow and brushing properties; capable of drying or curing free of streaks or sags.
- B. Accessory Materials: Linseed oil, shellac, turpentine, paint thinners, and other materials not specifically indicated but required to achieve the finishes specified, of commercial quality.

2.2 FINISHES

- A. Refer to schedule at end of Section for surface finish schedule.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Verify that surfaces are ready to receive work as instructed by the product manufacturer.
- B. Examine surfaces scheduled to be finished prior to commencement of work. Report any condition that may potentially affect proper application.
- C. Test shop applied primer for compatibility with subsequent coatings.
- D. Beginning of installation means acceptance of surfaces.

3.2 PREPARATION

- A. Remove electrical plates, hardware, light fixture trim, and fittings prior to preparing surfaces of finishing.
- B. Correct defects and clean surfaces which affect work of this Section.
- C. Shellac and seal marks which may bleed through surface finishes.
- D. Impervious Surfaces: Remove mildew by scrubbing with solution of mildew remover. Rinse with clean water and allow surface to dry.
- E. Gypsum Board Surfaces: Fill minor defects with filler compound. Spot prime defects after repair.
- F. Galvanized Surfaces: Remove surface contamination and oils and wash with solvent. Apply coat of etching primer.
- G. Uncoated Steel and Iron Surfaces: Remove grease, scale, dirt, and rust. Where heavy coatings of scale are evident, remove by wire brushing or sandblasting; clean by washing with solvent. Apply a treatment of phosphoric acid solution, ensuring weld joints, bolts, and nuts re similarly cleaned. Spot prime paint after repairs.
- H. Shop Primed Steel Surfaces: Sand and scrape to remove loose primer and rust. Feather edges to make touch-up patches inconspicuous. Clean surfaces with solvent. Prime bare steel surfaces.
- I. Interior Wood Items Scheduled to Receive Paint Finish: Wipe off dust and grit prior to priming. Seal knots, pitch streaks, and sappy sections with sealer. Fill nail holes and cracks after primer has dried; sand between coats.
- J. Exterior Wood Scheduled to Receive Paint Finish: Remove dust, grit, and foreign matter. Seal knots, pitch streaks, and sappy sections. Fill nail holes with tinted exterior caulking compound after prime coat has been applied.

- K. Wood and Metal Doors Scheduled for Painting: Seal top and bottom edges with primer.

3.3 PROTECTION

- A. Protect elements surrounding the work of this Section from damage or disfiguration.
- B. Repair damage to other surfaces caused by work of this Section.
- C. Furnish drop cloths, shield, and protective methods to prevent spray or droppings from disfiguring other surfaces.
- D. Remove empty paint containers from site.

3.4 APPLICATION

- A. Apply products in accordance with manufacturer's instructions.
- B. Apply paint in full even coats. Do not thin more than manufacturer's instructions. Painted surfaces shall have uniform color, texture and sheen. If substrate or previous coats including previously painted surfaces are visible through finish coat apply additional coats until finish coat is uniform.
- C. Do not apply finishes to surfaces that are not dry.
- D. Apply each coat to uniform finish.
- E. Apply each coat of paint slightly darker than preceding coat unless otherwise approved.
- F. Sand lightly between coats to achieve required finish.
- G. Allow applied coat to dry before next coat is applied.
- H. Prime back surfaces of exterior woodwork with primer paint.
- I. All work must be uniform in appearance, of approved color, smooth and free from runs, sags, skips and defective brushing.
- J. Paint must be well mixed, not settled, badly caked, or thickened in container. It must be readily broken up with a paddle to a smooth consistency and have easy brushing and spraying properties.
- K. Install in accordance with manufacturer's suggested rate of coverage. All paint materials must be delivered in original unopened containers, with labels and tag intact.
- L. Paint must be allowed to dry hard between coats, as per manufacturer's recommendation. Full coverage is required.
- M. When color, wood grain, stain, or undercoat show through the final coat of paint, the work must be covered by additional coats until the paint is uniform in color and appearance and coverage is completed.
- N. Make edges of paint adjoining other materials or colors sharp and clean without overlapping.
- O. All cracks and joints must be completely sealed with caulking/sealant compound (both interior and exterior). Caulking/sealant compound must be delivered to the job in manufacturer's unopened containers.
- P. All work must be protected from damage by use of drop cloths.
- Q. Spray painting is allowed only where indicated by individual specifications.
- R. At completion of all construction of the job, all damaged surfaces must be touched up and left in first class condition.

3.5 FINISHING MECHANICAL AND ELECTRICAL EQUIPMENT

- A. Prime and paint insulated and exposed pipes, conduit, boxes, insulated and exposed ducts, hanger, brackets, collars and supports, except where items are prefinished.

- B. Replace identification markings on mechanical or electrical equipment when painted accidentally.
- C. Paint exposed conduit and electrical equipment occurring in finished areas.
- D. Replace electrical cover plates, hardware, light fixture trim, and fittings removed prior to finishing.

3.6 CLEANING

- A. As work proceeds, promptly remove paint where spilled, splashed or spattered.
- B. During progress of work, maintain premises free of unnecessary accumulation of tools, equipment, surplus materials, and debris.
- C. Collect cotton waste, cloths, and materials which may constitute a fire hazard, place in closed metal containers and remove daily from site.

3.7 PAINTING SCHEDULE

- A. Items above finish ceilings, in chases and similar concealed locations shall not be field painted.
- B. Factory applied paint on exterior and interior electrical panel covers, disconnect switches and similar items are considered to be factory painted and shall not be field painted.
- C. Exterior and interior exposed pipe, conduit, including aluminum and PVC and similar items shall be field painted.
- D. Items imbedded in or on floor surfaces, subject to foot or vehicular traffic shall not be painted.
- E. Anodized aluminum and fluoropolymer type factory applied finishes shall not be painted.
- F. All miscellaneous items on the exterior and in finished interior spaces shall be field painted in addition to factory applied prime or finish coat unless specified to be factory finished in the respective Section.

3.8 SCHEDULE – EXTERIOR SURFACES

- A. Wood:
 - 1. Prime: One coat equal to All-Weather Primer; 1102; 2.0 mils dft.
 - 2. Finish: Two coats equal to Wonder-Shield Acrylic Latex; 16XX; 1.3 mils dft per coat.
- B. Plywood:
 - 1. Prime: One coat equal to All-Weather Primer; 1102; 2.0 mils dft.
 - 2. Finish: Two coats equal to Wonder-Shield Acrylic Latex; 16XX; 1.3 mils dft per coat.
- C. Galvanized Steel:
 - 1. Prime: One coat equal to Mirrolac Galvanized Metal Primer; 13201; 1.5 mils dft.
 - 2. Finish: Two coats equal to Wonder-Shield Acrylic Latex; 16XX; 1.3 mils dft per coat.
- D. Steel – Unpainted:
 - 1. Prime: One coat equal to Mirrolac Cover Up Rust Penetrating Primer; 13101; 2.0 mils dft.
 - 2. Finish: Two coats equal to Wonder-Shield Acrylic Latex; 16XX; 1.3 mils dft per coat.
- E. Steel – Primed:
 - 1. Touch-up existing prime coat.

2. Finish: Two coats equal to Wonder-Shield Acrylic Latex; 16XX; 1.3 mils dft per coat.
- F. Exterior Fiber Cement Siding & Trim:
1. Prime: Equal to Sherwin Williams Loxon Exterior Masonry Acrylic Primer applied at 3.1 mils dft/coat.
 2. Finish: Two coats equal to Sherwin Williams A-100 Exterior Latex Satin (100 percent Acrylic) applied at 1.3 mils dft/coat.

3.9 SCHEDULE – INTERIOR SURFACES

- A. Wood - Painted
1. Prime: One coat equal to Velour Alkyd Undercoat; 8801; 2.0 mils dft.
 2. Finish: Two coats equal to Wonder Speed Latex Stain Enamel; 585XX; 1.2 mils dft per coat.
- B. Galvanized Steel
1. Prime: One coat equal to Mirrolac Galvanized Metal Primer; 13201; 1.5 mils dft.
 2. Finish: Two coats equal to Wonder Speed Latex Satin Enamel; 585XX; 1.2 mils dft per coat.
- C. Steel – Unprimed:
1. Prime: One coat equal to Mirrolac Cover Up Rust Penetrating Primer; 13101; 2.0 mils dft.
 2. Finish: Two coats equal to Wonder Speed Latex Satin Enamel; 585XX; 1.2 mils dft per coat.
- D. Steel – Primed
1. Touch-up existing prime coat.
 2. Finish: Two coats equal to Wonder Speed Latex Satin Enamel; 585XX; 1.2 mils dft per coat.
- E. Gypsum Board:
1. Prime: One coat equal to Wonder Tones Latex Primer; 50801; 1.2 mils dft.
 2. Finish: Two coats equal to Wonder Speed Latex Flat Wall Paint; 506XX; 1.0 mils dft per coat.
- F. Vent Piping
1. Paint all vent piping exposed above roof to match color of roof shingles.

3.10 COLOR SELECTIONS

- A. Owner shall select a maximum of two exterior color choices and a maximum of three interior color choices.

END OF SECTION 09 90 00

SECTION 10 80 10

TOILET AND BATH ACCESSORIES

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes the following:
1. Toilet and bath accessories;
 2. Medicine Cabinet;
 3. Vanity Unit;
 4. Tub Surround.

1.2 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace if defects in material.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Basis-of-Design Products: The design for toilet and bath accessories, and specific items, are described in Part 2 and are based on products indicated. Subject to compliance with requirements, manufacturers and products of equal quality are acceptable.

2.2 MATERIALS

- A. Accessories shall conform to Federal Specifications WW-P 54 lb.
1. Accessories shall be chrome finish brass or zinc die cast metal with concealed mounting brackets.
- B. Stainless Steel: ASTM A666, Type 304, No. 4 finish (satin), 0.0312-inch minimum nominal thickness, unless otherwise indicated.
- C. Brass: ASTM B19, ASTM B16, or ASTM B30 castings.
- D. Steel Sheet: ASTM A366/A366M, 0.0359-inch minimum nominal thickness.
- E. Galvanized Steel Sheet: ASTM A653/A653M, G60.
- F. Chromium Plating: ASTM B456, Service Condition Number SC2 (moderate service).
- G. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.
- H. Mirror Glass: ASTM C1036, Type I, Class 1, Quality q2, nominal 6.0 mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.

2.3 TOILET AND BATH ACCESSORIES

- A. Towel Bar: Install as shown on plans
1. Basis-of-Design Product: Nutone;
 2. Model: HM 896;
 3. Mounting: Recessed;
 4. Towel Type and Capacity: 24";
 5. Material: Chrome plated.
- B. Toilet Tissue Dispenser: 1 at ea. Toilet as shown on plans
1. Basis-of-Design Product: Nutone;
 2. Model: HM 770;
 3. Type: Single-roll dispenser;

4. Mounting: Surface mounted with concealed anchorage;
 5. Material: Chrome plated.
- C. Shower Curtain Rod: 1 at shower/tub
1. Basis-of-Design: Nutone;
 2. Model: HM 610;
 3. Stainless-steel shower curtain rod with 3-inch stainless-steel flanges designed for exposed fasteners, in length required for shower opening indicated;
 4. Type: Normal-duty, 1-inch OD;
 5. Size: 5'-0".
- D. Medicine Cabinet: 1 at lavatory
1. Basis-of-Design Product: Broan Metro Collection Bath cabinets;
 2. Type: Surface Mount with surface mount kit;
 3. Size: 15" x 35";
 4. Construction: **Corrosion-resistant steel** cabinet;
 5. Door: Framed mirror door concealing storage cabinet equipped and with continuous hinge and spring-buffered, rod-type stop and magnetic door catch;
 6. Shelves: Five.
- E. ADA Compliant Grab-Bar: 2 at lavatory
1. 36" Minimum length, (behind toilet) and 42" Minimum length (beside toilet)
 2. 1 1/2" to 1 1/4" diameter;
 3. Stainless Steel;
 4. Install 33" to 36" above finished floor.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
1. Install grab bars to withstand a downward load of at least 250 lb/ft when tested according to method in ASTM F446.
- B. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

END OF SECTION 10 80 10

SECTION 11 26 00
RESIDENTIAL APPLIANCES

GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

- A. Furnish materials, accessories, fittings, fixtures, and equipment; perform work required to place the appliances in a complete, proper and legal operating condition.
- B. Repair, renovations, alterations, reconstructions of existing electrical shall comply with the IRC 2009 with City of Houston Amendments.
- C. Where possible appliances are to be Energy Star Qualified.
- D. This section includes **Base** and **Alternate Upgrade** appliances:
 - 1. Cooking appliances.
 - 2. Kitchen exhaust ventilation.
 - 3. Refrigeration appliances.
 - 4. Cleaning appliances.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.
- B. Source Limitations: Obtain residential appliances from single source.
- C. Regulatory Requirements: Comply with the following:
 - 1. NFPA: Provide electrical appliances listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. ANSI: Provide gas-burning appliances that comply with ANSI Z21 Series standards.

1.4 WARRANTY

- A. Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.
 - 1. Warranty Period: One year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 RANGES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
 - 1. Amana; a division of Whirlpool Corporation.
 - 2. Electrolux Home Products (Frigidaire).
 - 3. Frigidaire.
 - 4. General Electric Company (GE).
 - 5. General Electric Company (Hotpoint).
 - 6. KitchenAid; a division of Whirlpool Corporation.

7. LG Appliances.
 8. Maytag; a division of Whirlpool Corporation.
 9. Samsung.
 10. Sears Brands LLC (Kenmore).
 11. Whirlpool Corporation.
- B. Electric Range Freestanding range with one oven and complying with AHAM ER-1. Basis-of-Design Product:
1. 30" freestanding electric range with one oven and 4 burners. Color to be selected by Owner.
- C. Gas Range Freestanding range with one oven. Basis-of-Design Product:
1. 30" freestanding gas range with one oven and 4 burners

2.2 KITCHEN EXHAUST VENTILATION

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
1. Electrolux Home Products (Frigidaire).
 2. Frigidaire.
 3. General Electric Company (GE).
 4. General Electric Company (Hotpoint).
 5. KitchenAid; a division of Whirlpool Corporation.
 6. Maytag; a division of Whirlpool Corporation.
 7. Sears Brands LLC (Kenmore).
 8. Broan
 9. Whirlpool Corporation.
- B. Overhead Exhaust Hood: Basis-of-Design Product:
1. Color to match range unit. White add suffix WW. Black add suffix BB.
 - a. Type: Wall-mounted exhaust-hood system.
 - b. Width: 30 inches.
 - c. Exhaust Fan: Two-speed fan built into hood.
 - d. Venting: Vented to outside through roof with weatherproof roof cap, backdraft damper, and rodent-proof screening or Vented to outside through wall with weatherproof wall cap, backdraft damper, and rodent-proof screening.
 - e. Where venting is not possible provide a Non-vented, re-circulating type with charcoal filter.
 - f. Color: Color to match range unit.

2.3 REFRIGERATOR/FREEZERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product by one of the following:
1. Amana; a division of Whirlpool Corporation.
 2. Dacor, Inc.
 3. Frigidaire.
 4. General Electric Company (GE).
 5. General Electric Company (Hotpoint).
 6. KitchenAid; a division of Whirlpool Corporation.
 7. LG Appliances.

8. Maytag; a division of Whirlpool Corporation.
9. Samsung.
10. Sears Brands LLC (Kenmore).
11. Whirlpool Corporation.

B. Refrigerator/Freezer: Two-door refrigerator/freezer; 18 c.f., min. with freezer on top and complying with AHAM HRF-1. Basis-of-Design Product:

1. **Base: NONE**

- a. Type: Freestanding
- b. Energy Performance, ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.
- c. Color: Match all other appliance colors

2.4 DISHWASHERS

A. **Basis-of-Design Product:** Subject to compliance with requirements, provide product indicated or comparable product by one of the following:

1. Amana; a division of Whirlpool Corporation.
2. Frigidaire.
3. General Electric Company (GE).
4. General Electric Company (Hotpoint).
5. KitchenAid; a division of Whirlpool Corporation.
6. LG Appliances.
7. Maytag; a division of Whirlpool Corporation.
8. Sears Brands LLC (Kenmore).
9. Whirlpool Corporation.

B. Dishwasher: Complying with AHAM DW-1 and ASSE 1006. Basis-of-Design Product:

1. **Base: NONE**

2. **Alternate Upgrade: (Clean Steel)** and dedicated circuit

- a. Type: Built-in under counter
- b. Energy Performance, ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates and conditions, with Installer present, for compliance with requirements for installation tolerances, power connections, and other conditions affecting installation and performance of residential appliances.

3.2 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's written instructions.
- B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Freestanding Equipment: Place units in final locations after finishes have been completed in each area. Verify that clearances are adequate to properly operate equipment.
- D. Range Anti-Tip Device: Install at each range according to manufacturer's written instructions.
- E. Utilities: Comply with plumbing and electrical requirements.

END OF SECTION 11 26 00

SECTION 22 00 00

PLUMBING

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SYSTEM DESCRIPTION

- A. Provide items of plumbing related equipment and accessories as indicated on drawings and specified herein.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements in following order of precedence:
 - 1. Codes, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction over installation, inspection, and testing, including local codes. . Where no local code exists, comply with IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.
 - 2. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Owner as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection certificates and approvals.

1.4 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. Cover and protect material in transit and at site. Material not properly protected and stored and which is damaged or defaced during installation shall be replaced.

1.5 COORDINATION

- A. Coordinate with responsible trades to establish, verify, and maintain field dimensions and job conditions. Consult with other trades in advance and make provisions for their work to avoid cutting and patching.

PART 2 – PRODUCTS

2.1 PLUMBING FIXTURES

- A. All fixtures shall be new and of good quality.
- B. Plumbing fixtures shall be complete with required trim faucets, waste plugs, traps, supplies, stop valves, escutcheons, casings and necessary hangers, plates, brackets, anchors and supports. Vitreous China fixtures shall have smooth glazed surfaces free from warp, cracks, discoloration or other imperfections. Fixtures shall be white.
- C. Fixtures:

1. Kitchen sink must be new stainless steel 8 in. deep double basin, 30 in. self-rimming unit to include strainers/drain plugs, water and waste line connections. Rim must be sealed to countertop with standard sealer (i.e. plumbers putty, dap sealer, etc). Water lines must have cut off valves at sink. Faucets must be a washerless, cartridge type, single lever unit unless otherwise selected. Unit must be chrome plated brass.
 2. Lavatory shall be one of the following as indicated in the drawings:
 - a. Wall mounted vitreous china - mount securely to wall frame located as per drawings.
 - b. Vitreous china recessed in plastic laminate counter top with wood base and laminate on front and sides.
 - c. Vanity unit with monolithic sink and top of resin cast marble
 3. Tub Unit – install new white enameled, fiberglass or steel tub unit as shown on drawings. To include new trap overflow and drain with stop valve, and water and waste connections. Valve must be washerless and high quality chrome plated brass unit with dual control, hot and cold connections.
 4. Shower Tub Unit – install new white fiberglass shower/tub unit as per drawings or porcelain tub with ceramic tile surround. To include new trap overflow and drain with stop valve and water connections. Valve must be washerless and high quality chrome plated brass unit with hot and cold connections.
 5. Water closet – install new white round bowl vitreous chine low-flow type unit where shown on drawings. Provide new tank gaskets, flow valve assembly, handle, mountings, lid and seat, and water and waste water line connections. Water line must have cut off valves.
 6. Washer connections – must be recessed mount box in wall with DWV and water faucets. Connect machine to operate properly as per drawings and specifications.
 7. Hose Bibs – must be installed at locations per design standards, drawings and specifications.
- D. Upon owner request, in all new construction, plumbing fixtures and bathroom hardware shall meet accessibility standards in a minimum of one bathroom per residence.

PART 3 – EXECUTION

3.1 INSTALLATION GENERAL

- A. Provide competent foreman or supervisor for the installation of equipment and to counsel other trades in regard to connections and installation. Install equipment level and square in proper planes with other work, secure anchorage in place. Test operation and provide full instructions and demonstrate to the Owner for the proper methods of care, operation, and maintenance of the equipment.

3.2 EQUIPMENT INSTALLATION

- A. Floor outlet fixtures shall be rigidly secured and bolted to the floor.

END OF SECTION 22 00 00

SECTION 22 10 00

DOMESTIC WATER

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SYSTEM DESCRIPTION

- A. Provide a complete system of domestic hot and cold water supply as indicated herein and to all fixtures shown on drawings.
- B. Provide shut off valves at each fixture.
- C. Provide a system free of water hammer.
- D. Isolate all piping components to eliminate all audible vibration and noise.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements in following order of precedence:
 - 1. Codes, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction over installation, inspection, and testing, including local codes. . Where no local code exists, comply with IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.
 - 2. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Owner as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection certificates and approvals.

PART 2 – PRODUCTS

2.1 PIPE AND FITTINGS

- A. After installation, plumbing must be pressure tested to 1.5 times service pressure for 30 minutes prior to concealment within structure or as required by local code. A dielectric fitting is required between piping of dissimilar metals. All Water lines above ground and not inside an insulated wall cavity or ceiling/attic space will be freeze protected with 1/2 inch fiberglass insulation or ½ inch Armorflex, sealed at joints.
- B. Exterior water line materials and installation must meet IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction and be installed with minimum of 12 inches of ground cover.

PART 3 – EXECUTION

3.1 PIPE AND FITTINGS

- A. Securely anchor all water lines. Provide expansion loops in hot water lines where necessary.

- B. Install all hot and cold water lines with grade from high to low point. Provide drain valves at low point. Install free of air traps.
- C. Valve Locations:
 - 1. In main hot and cold water lines at each fixture.
 - 2. Valve location at mains; shut off valve outside directly adjacent to structure.
- D. Provide insulation at all exposed exterior water lines and above ceilings.

3.2 FIELD QUALITY CONTROL

- A. Testing
 - 1. Tests of plumbing systems:
 - a. Plumbing piping systems shall be pressure tested
 - b. Underground piping shall be tested and successfully repaired prior to backfilling.
 - 2. Water Systems:
 - a. When rough-in is completed and before fixtures are set, entire hot and cold water and piping systems shall be tested at hydrostatic pressure of not less than 1.5 service pressure, and proved tight at this pressure for not less than 30 minutes or as required by local code.
 - b. Where portion of water piping system is to be concealed before completion, portion shall be tested separately as specified for entire system.
 - 3. Defective Work:
 - a. If inspection or test shows defects, defective work or material shall be replaced or repaired as necessary and inspection and tests shall be repeated.
 - b. Repairs to piping shall be made with new materials.
 - c. No caulking of screwed joints or holes will be acceptable.
- B. Disinfection
 - 1. After pressure tests have been made and leaks repaired, flush entire domestic water distribution system with water until entrained dirt and mud have been removed.

3.3 ADJUSTING AND CLEANING

- A. Equipment, pipes and valves shall be cleaned of grease, metal cuttings and sludge that may have accumulated from operation of system during test.
- B. Stoppage, discoloration, or other damage to finish, furnishings, or parts of building, due to failure to properly clean piping system, shall be repaired.
- C. When work is complete, adjust hot water systems for uniform circulation.

END OF SECTION 22 10 00

SECTION 22 13 00

SANITARY WASTE

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SYSTEM DESCRIPTION

- A. Provide a complete sanitary waste and vent system as indicated herein and as illustrated on the Drawings.
- B. Make connections to fixtures and other devices as specified herein or as shown on the drawings.
- C. Provide trap primer connections on floor drains or other devices as indicated and as required by local authorities having jurisdiction.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements in following order of precedence:
 - 1. Codes, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction over installation, inspection, and testing, including local codes. . Where no local code exists, comply with IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.

PART 2 – PRODUCTS

2.1 TRAPS

- A. Each fixture and piece of equipment requiring connection to the waste and sanitary drainage system, except a fixture with continuous waste, shall be equipped with a trap which shall be provided under this contract. Provide deep seal traps on all floor drains if allowed by local code.

PART 3 – EXECUTION

3.1 SANITARY, WASTE, VENT PIPING AND FITTINGS

- A. Soil Pipe and Joints Below and Above Ground: Drain, waste, and vent lines shall be schedule 40 polyvinyl chloride pipe and fittings. All piping passing through the roof must be properly flashed. Must have clean-outs located at exterior of house.
- B. Exterior line installation must meet IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction and be installed with minimum of 12 inches of ground cover.
- C. Vent Piping: All fixtures must be vented with the vents extending and flashed through the roof. Piping shall be assembled and installed without undue strains and stresses. Make provisions for expansion, contraction, and building settlement or pipe movement.

- D. Sanitary Piping: Grade uniformly to the outside sewer connection with fittings and connections installed in accordance with the local plumbing code or ordinances. In no case shall the grade for horizontal piping be less than a uniform grade of $\frac{1}{4}$ in. per foot for 4 in. piping and smaller.
- E. Vent Sizing: Vents not sized on the Drawings shall be sized, collected and terminated above the roof in accordance with the local plumbing code.

3.2 TRAPS

- A. Trap Locations: Place as near to the fixture as possible. No fixture shall be double trapped.

3.3 TRAP PRIMERS

- A. Whenever possible, all trap primer lines shall be continuously sloped from distribution unit to either drain body connection or tailpipe.

3.4 CLEANOUTS

- A. Cleanout Locations shall be provided at each change in direction of the soil and waste drain piping and at the end of piping runs. Provide double clean out at exterior sewer piping within 3 feet of exterior of structure. Distance between cleanouts in horizontal lines shall not exceed 50 feet. Distance between cleanouts on the exterior of the building shall be spaced no more than 90 feet. Cleanouts shall be installed in accessible locations.
- B. Cleanout Sizing: Cleanouts shall be of the same nominal size as the pipe with which they are installed.

3.5 FLOOR DRAINS

- A. Install in locations shown on Drawings. Set top of floor drain strainer level with finished surface.

END OF SECTION 22 13 00

SECTION 22 30 00

WATER HEATERS

PART 1 – GENERAL

1.1 RELATED DOCUMENTS

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 DESCRIPTION

- A. Water heater work is indicated on schedules and requirements of this section.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements in following order of precedence:
 - 1. Codes, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction over installation, inspection, and testing, including local codes. . Where no local code exists, comply with IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.
 - 2. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Owner as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection certificates and approvals.

PART 2 – PRODUCTS

2.1 WATER HEATER – STORAGE TYPE

- A. Provide 40 Gallon or larger as needed-, tank type heater located as per drawings. Unit must include all new venting and connections. Units shall have welded steel tank, glass lining, adjustable thermostat, fiberglass insulation and protective steel sheet metal jacket, with baked enamel finish, magnesium anode, temperature and pressure relief valve.
- B. Domestic Hot Water (DHW) equipment shall meet the following ENERGY STAR efficiency requirements:

	40 Gal	50 Gal	60 Gal	70 Gal	80 Gal
Gas	0.61 EF	0.59 EF	0.57 EF	0.55 EF	0.53 EF
Electric	0.93 EF	0.92 EF	0.91 EF	0.90 EF	0.89 EF

2.2 APPROVED MANUFACTURERS

- 2.3 Approved Manufacturers: Rheem, GE, AO Smith, American Standard, Ruud, or approved equal.

2.4 ELECTRIC, TANKLESS, DOMESTIC WATER HEATER

- A. Electric, Tankless, domestic water heaters shall be constructed with copper piping or tubing complying with NSF 61 barrier materials for potable water without storage capacity.
- B. The pressure rating shall be 1035 kPa (150 psig).
- C. The heating element shall be resistance heating system type.
- D. Temperature control shall be made with thermostat.
- E. The safety control shall be a high temperature limit cutoff device or system.
- F. The heater shall have a bracket for wall mounting and have an aluminum or steel with enameled jacket.

2.5 ATMOSPHERIC GAS FIRED, STORAGE DOMESTIC WATER HEATERS:

- A. The gas fired domestic water heater shall comply with // ANSI Z21.10.1 // ANSI Z21.10.3 //.
- B. The water heater design shall provide a combustion efficiency of at least //82// //84// //85// //88// //95// percent at operating conditions.
- C. The tank Construction shall be ASME code Steel, glass lined, with 1035 kPa (160 psig) working pressure rating.
- D. The tapping (Fittings) shall be factory fabricated of materials compatible with the tank and in accordance with appropriate ASME standards for piping connection, pressure and temperature relief valve, pressure gauge, thermometer, drain valve, anode rods and controls. the tapings shall be:
 - 1. 50-mm or DN50 (2 inch) and smaller: Threaded ends according to ASME B1.20.1.
 - 2. 65-mm or DN65 (2 1/2-inch) and larger: Flanged ends according to ASME B16.5 for steel and stainless steel flanges, and according to ASME B 16.24.
- E. The natural, gas fired burn shall include the following:
 - 1. Thermostatically adjustable.
 - 2. High temperature limit and low water cutoff devices for safety controls.
 - 3. Automatic ignition in accordance with ANSI Z21.20.
 - 4. Automatic damper in accordance with ANSI Z21.66. The automatic dampers shall be //electrically operated// //mechanically activated// //thermally activated//, automatic vent damper device with size matching draft hood for 300,000 BTUH and below.
- F. Temperature Setting shall be set for a maximum water temperature of 55°C (130°F). The temperature setting shall be adjustable.
- G. The insulation shall surround the entire storage tank except connection and controls and shall comply with ASHRAE 90.1.
- H. The jacket shall be steel with enameled finish.
- I. The drain valve shall be corrosion resistant metal complying with ASSE 1005.
- J. The Combination Pressure and Temperature relief Valve shall be ANSI Z21.22 rated and constructed of all brass or bronze with a self-closing reseating valve.

2.2 POWER VENT, GAS FIRED, STORAGE DOMESTIC WATER HEATERS:

- A. The gas fired domestic water heater shall comply with // ANSI Z21.10.1 // ANSI Z21.10.3 //.
- B. The water heater design shall provide a combustion efficiency of at least //82// //84// //85// //88// //95// percent at operating conditions.
- C. The tank Construction shall be ASME code Steel, glass lined, with 1035 kPa (160 psig) working pressure rating.

- D. The tapping (Fittings) shall be factory fabricated of materials compatible with the tank and in accordance with appropriate ASME standards for piping connection, pressure and temperature relief valve, pressure gauge, thermometer, drain valve, anode rods and controls. The tappings shall be:
 - 1. 50-mm or DN50 (2 inch) and smaller: Threaded ends according to ASME B1.20.1.
 - 2. 65 mm or (DN65) (2 1/2-inch) and larger: Flanged ends according to ASME B16.5 for steel and stainless steel flanges, and according to ASME B 16.24.
- E. The natural gas-fired burner shall include the following:
 - 1. Thermostatic adjustment.
 - 2. Designed for use with power vent heaters
 - 3. High temperature limit and low water cutoff devices for safety controls.
 - 4. Automatic ignition in accordance with ANSI Z21.20.
 - 5. Automatic damper in accordance with ANSI Z21.66. The automatic dampers shall be //electrically operated// //mechanically activated// //thermally activated//, automatic vent damper device with size matching draft hood for 300,000 BTUH and below.
- F. Temperature Setting shall be set for a maximum water temperature of 55°C (130°F).
- G. The insulation shall surround the entire storage tank except connection and controls and shall comply with ASHRAE 90.1.
- H. The jacket shall be steel with enameled finish.
- I. The drain valve shall be corrosion resistant metal complying with ASSE 1005.
- J. The power vent system shall be interlocked with the burner.
- K. Combination Pressure and Temperature relief Valve: ANSI Z21.22 rated, constructed of all brass or bronze with a self-closing reseating valve.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. Install water heater where shown, according to equipment manufacturer's written instructions, and with recognized industry practices, to ensure that water heaters comply with requirements of state and local codes.
- B. Gas outlet and cut off must be located at front of water heater closet. At gas water heaters fresh air inlets are required at top and bottom to allow combustion air to vent from the outside. Installation must be according to IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.
- C. Provide overflow pan under water heater with ¾ in. pipe to exterior of residence.
- D. Flush water heaters upon completion of installation according to manufacturer's instructions.
- E. Startup water heaters according to manufacturer's written procedures, upon completion of heater installation, and demonstrate compliance with requirements.
- F. Install ASME temperature and pressure relief valves on storage tanks.
- G. Pipe temperature and pressure relief valve discharge to exterior.
- H. Install vacuum relief valves on cold water supplies
- I. Arrange for power supply
- J. Install water heaters on 18" high min. galvanized steel stand

END OF SECTION 22 30 00

SECTION 23 00 00

PROVISIONS FOR MECHANICAL

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 SCOPE

- A. The work to be provided under this Division of Specification shall include the furnishing, delivering, unloading, handling, storing, erecting, adjusting, and testing of all materials, apparatus and equipment required for complete, properly adjusted and operable mechanical systems for this project as shown on the drawings and in the Specifications. Provide all labor, equipment, tools and material necessary for the completion of this work.

1.3 CODES

- A. Regulatory Requirements: Comply with requirements in following order of precedence:
 - 1. Codes, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction over installation, inspection, and testing, including local codes. . Where no local code exists, comply with IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.
 - 2. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Owner as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection certificates and approvals.

1.4 LAYOUT

- A. The Contractor shall carefully lay out his work to conform to the site conditions, to avoid obstructions and provide proper grading of lines.
- B. All work shall be run parallel or perpendicular to the lines of the building.

1.5 EQUIPMENT SIZES AND REQUIREMENTS

- A. Standards for Equipment: Trane, Carrier, Lennox, Rheem, or approved equal.
- B. Equipment to be ENERGY STAR certified and meet the following efficiency levels:
 - 1. Cooling: ≥18 SEER / 12.8 EER
 - 2. Heating: ≥80 AFUE furnace or

END OF SECTION 23 00 00

SECTION 23 10 00

NATURAL GAS PIPING

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 DESCRIPTION

- A. Natural gas piping at pressure up to 15 psig.

1.3 QUALITY ASSURANCE

- A. Regulatory Requirements: Comply with requirements in following order of precedence:
 - 1. Codes, laws, ordinances, rules, regulations, or orders of any public authority having jurisdiction over installation, inspection, and testing, including local codes. . Where no local code exists, comply with IRC 2009 or later and local ordinances and codes in accordance with authorities having jurisdiction.
 - 2. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Owner as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection certificates and approvals.

PART 2 – PRODUCTS

2.1 MATERIALS

A. General:

- 1. All changes in size and direction shall be made with fittings.
- 2. Miter fittings, face or flush bushings, close nipples and street elbows are not acceptable.
- 3. All branch connections shall be made with tees.

B. Underground Piping

- 1. Pipe: Polyethylene (PE) pressure pipe and tubing, and piping fittings, PE 2306.
- 2. Fittings: Butt fusion joints. All elbows long radius. Joints between transition

- fittings, compression couplings.
3. Valves: Plug valve 150# cast steel, lubricated, gland type, flanged ANSI B16.5, wrench operated. Nordstrom Fig. 1925 or equal.
 4. Provide copper tracer wire.
- C. Above Ground Piping
1. 2 in. and smaller.
 - a. Pipe: Schedule 40, carbon steel, ASTM A53, Grade B seamless or electric resistance welded ends threaded and coupled.
- D. Miscellaneous: Provide all gaskets, bolts, etc. required for testing and cleaning procedures under this Section and conform to standards specified for adjacent materials.

PART 3 – EXECUTION

3.1 INSTALLATION

- A. General: All openings in the piping system shall be plugged to prevent the entry of foreign material when work is not being performed on the system. All concealed gas piping shall be sleeved and vented to the outside.
- B. Installation: Install per NFPA No. 54, ANSI B31.3.0.
- C. All yard service gas lines must be installed with a minimum of 12 inches of ground cover.
- D. Threaded Connections
1. Threads shall be cleaned out with no stripping or burrs.
 2. Immediately before erection, remove all foreign matter from both male and female threads.
 3. Coat the entire male thread surface with TFE thread tape.
 4. Make up each joint sufficiently for the threads to seize.
- E. Connections to Equipment
1. All piping shall be arranged to facilitate maintenance and/or removal of equipment.
 2. Provide flanges or unions at connections to equipment.
 3. Install piping to equipment at full size indicated on the Drawings with any necessary reductions made at the equipment.
- F. Valve Installation: Install valves with their stems aligned either horizontally or vertically upward unless specifically shown otherwise.

3.1 COMPLETED WORK

A. Testing

1. General

- a. Remove all equipment and materials which could be damaged by the specified test from the system.
 - b. If pressure losses occur during tests, use suitable procedures to discover leaks, correct and retest. Repeat until system is tight.
 - c. Natural Gas lines shall be pneumatically tested using nitrogen at a minimum leak pressure of 150 psig for eight (8) hours.
2. Safety: Since the risk of failure, with the attendant possibility of injury, is appreciably greater during testing, take all safety measures required by codes or ordinances or reasonably applicable to the situation.

END OF SECTION 23 10 00

SECTION 26 00 00

ELECTRICAL WORK

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 REFERENCE DOCUMENTS

- A. Work includes proper routing of wire and cable, outlet boxes, motors, underground service, grounding, panel boards, fuses, wiring to and hook-up of devices and equipment in accord with the total provisions of the specifications.

1.2 WORK INCLUDED

- A. Furnish all labor, materials, equipment, tools and services in connection with, or properly incidental to the furnishing of equipment, install equipment and the construction of electrical systems as described in this Division of the Specifications and shown on the Drawings.
- B. Furnish all additional details or special construction as required for work indicated or specified in the division or work specified in other divisions. Furnish and install all materials and equipment usually furnished with systems or required to complete and make operative the installation, whether specifically mentioned or not.

1.3 REGULATIONS, PERMITS AND APPROVALS

- A. The installation including all materials and equipment shall conform to NFPA 70-2011; the applicable requirements of the utility companies supplying energy, communications and other services to the project; the laws of the City pertaining to electrical installation; and with all national, state and local codes and laws relating to construction, building and public safety and IRC 2009 or later in accordance and local ordinances and codes in accordance with authorities having jurisdiction.
- B. Obtain all permits and arrange for all inspections and approvals for the work including construction document review and site observations by the authorities having jurisdiction. Obtain certificates of inspection and acceptance and transmit these to the Owner as a condition of acceptance. Assume and pay all fees and other costs involved in obtaining the permits, inspection certificates and approvals.

1.4 STANDARDS FOR ELECTRICAL MATERIALS

- A. Materials shall be new and free from defects and shall conform to the standards of the Underwriters' Laboratories, Inc., in every case where such standards have been established. Evidence of such conformance shall be the UL label or "listing" by Underwriters' Laboratories, Inc. under Re-examination Service.

PART 2 – MATERIALS

(NOT USED)

PART 3 – EXECUTION

3.1 ELECTRICAL DEVICES AND INSTALLATION

- A. Breaker box installation must comply with Texas Government Code 2306.514 provided that 2306.514 does not conflict with local code for breaker box installation. If such conflict exists then local code shall prevail.
- B. Plans must be considered as recommended layout, however, IRC 2009 or later in accordance with the authorities having jurisdiction, must be the rules in all instances.
- C. All wiring must be in wall cavities. Any surface mounted wiring must be in smooth EMT conduit or wire mold securely mounted.
- D. Smoke and CO Detector – 110 volt U.L. listed smoke alarm unit installed according to State of Texas property code, IRC 2009 or later in accordance with authorities having jurisdiction and manufacturer's recommendation at location(s) indicated in project design standards. Also at least one carbon monoxide detector must be installed if natural gas or other combustible is used as fuel source.
- E. Bath Exhaust Fan must be U.L. approved and installed to meet all applicable local codes.
- F. Newly installed Range Hood must be U.L. listed and vented through the roof.
- G. Service Entrance must be a minimum 100 amp, 120/240v service as per drawings and specifications.
- H. GFCI's shall be installed at any outlet that is within six feet of a water source measured at the shortest distance, such devices shall be properly grounded and tested for proper function.
- I. Receptacles shall be tamper-proof where required by code.
- J. Circuit breakers shall be Arc Fault type where required by code.

3.2 COORDINATION

- A. Coordinate work with that of other trades to make proper connections at appropriate locations and times.

3.3 TESTS

- A. On completion of the work, make voltage, resistance and ground tests of all wiring installed.
- B. Any defect found shall be repaired.

END OF SECTION 26 00 00

SECTION 31 10 00

SITE CLEARING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.02 SUMMARY

- A. This Section includes the following:
 - 1. Topsoil stripping
 - 2. Clearing and grubbing

1.3 EXISTING SERVICES

- A. General: Determine exact locations of existing services before commencing Work.
- B. Arrange and pay for disconnecting, removing, capping, and plugging utility services. Notify affected utility companies in advance and obtain approval before starting this Work.
- C. Place markers to indicate location of disconnected services. Identify service lines and capping locations on Site Plan.

PART 2 - PRODUCTS (Not Applicable) PART 3 – EXECUTION

SITE CLEARING

- A. General: Remove plants, trees & vegetation, as required, to permit installation of new construction. Communicate with sub recipient and owner site clearing scope.
- B. Topsoil: Topsoil is defined as friable clay loam surface soil found in a depth of not less than 4 inches. Satisfactory topsoil is reasonably free of subsoil, clay lumps, stones, and other objects over 2 inches in diameter, and without weeds, roots, and other objectionable material.
 - 1. Strip topsoil where required to accommodate new construction to whatever depths encountered in a manner to prevent intermingling with underlying subsoil or other objectionable material. Remove heavy growths of grass from areas before stripping.
 - 2. Stockpile topsoil in storage piles in areas indicated or directed. Construct storage piles to provide free drainage of surface water.
 - 3. Site must be leveled and cleaned so as to prevent ponding of water.

END OF SECTION 31 10 00

SECTION 31 22 00
GRADING

PART 1 – GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines

1.2 SUMMARY

- A. Furnish all labor, materials, and equipment necessary and proper to complete the finish grading work shown on the drawings and specified herein. In general, site grading work shall include but not necessarily be limited to:
 - 1. Placement of topsoil
 - 2. Finish grading
 - 3. Cleanup

PART 2 – PRODUCTS

2.1 TOPSOIL

- A. Soil from local region, free from sub-soil mixture, lumps, clay, toxic substance, roots, trash, debris, rocks, vegetation, and containing no salt or alkali.

PART 3 – EXECUTION

3.1 TOPSOIL PLACEMENT

- A. Place topsoil on prepared sub-grades where shown on plan in lawn and planting areas and rake smooth to elevations and slopes as indicated.

3.2 FINISH GRADING

- A. Fine grade all areas not covered by building, paving and other construction to achieve final positive drainage away from the building.
- B. Backfill and fine grade all areas adjacent to curbing, sidewalks, and flatwork to achieve final positive drainage away from the structures.
- C. Repair settled eroded or rutted areas.

3.3 CLEAN UP

- A. Cleanup all debris caused by the work of this section and remove from the job site all excess topsoil material not used. Sweep clean all drive, sidewalks, porches, etc.

END OF SECTION 31 22 00

SECTION 31 23 00

EXCAVATION AND FILL

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Preparing and grading subgrades for slabs-on-grade, walk and pavements.
 - 2. Excavating and backfilling for buildings and structures.
 - 3. Sub base course for walks and pavements.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Provide approved soil materials from off-site when sufficient approved soil materials are not available from excavations. Imported fill material must conform to ASTM D 2487 soil classification and be free of rock or gravel larger than 2in. in any dimension.
- B. All on-site fill material must be soil or rock mixture which is free of organic matter or other deleterious substances. It must contain no lumps over 6 in. in greatest dimension, and not more than 15% must be larger than 2-1/2 in. in greatest dimension.
- C. Fill must have a plasticity index (PI) of 12 or better unless placed under a foundation in which case the PI shall be 2.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, and other hazards created by earthwork operations.
- B. Protect sub grades and foundation soils against freezing temperatures or frost. Provide protective insulating materials as necessary.
- C. Provide erosion control measures to prevent erosion or displacement of soils and discharge of soil-bearing water runoff or airborne dust to adjacent properties and walkways.
- D. Prevent surface water and subsurface or ground water from entering excavations, from ponding on prepared sub grades, and from flooding Project site and surrounding area.

- E. Protect sub grades and foundation soils from softening and damage by rain or water accumulation.
- F. Foundation Drainage – When existing grades or excavations allow water to accumulate under the structure, a drainage ditch must be dug so water drains away from the house. Open ditches which constitute a tripping hazard must be replaced with French drains. French drain will be constructed of 6 in. perforated PVC drain field line and installed in a ditch at least 12 in. in depth and 8 in. wide. The ditch will be back filled with pea gravel and the drain line protected with fabric mesh. The drain line must be placed at least 2 in. above the bottom of the ditch and centered to allow gravel to surround it. Discharge must be a minimum of ten feet from the closest edge of the structure and at least 10 in. below the grade level of the structure. Whenever possible, foundation drainage problems shall be corrected through grading, filling, compacting and planting of surrounding area.

3.2 EXCAVATIONS

- A. Comply with local codes, ordinances, and requirements of authorities having jurisdiction to maintain stable excavations.
- B. Excavate to indicate elevations and dimensions specified in the drawings within a tolerance of plus or minus 1.2 inches. Where excavations are not shown in drawings, excavate as required to form installation. Depressions resulting from removal of site obstructions must be filled as necessary to level site to original or specified grade.

3.3 STORAGE OF SOIL MATERIALS

- A. Stockpile excavated materials acceptable for backfill and fill soil materials, including acceptable borrow materials. Stockpile soil materials without intermixing. Place, grade, and shape stockpiles to drain surface water. Cover to prevent wind-blown dust.

3.4 BACKFILL

- A. Backfill excavations promptly, but not before completing the following:
 1. Acceptance of construction below finish grade including, where applicable, damp proofing, waterproofing, and perimeter insulation.
 2. Surveying locations of underground utilities for record documents.
 3. Testing, inspecting, and approval of underground utilities.
 4. Concrete formwork removal.
 5. Removal of trash and debris from excavation.
 6. Removal of temporary shoring and bracing, and sheeting.
 7. Installing permanent or temporary horizontal bracing on horizontally supported walls.

3.5 SUBGRADE

- A. Preparation: Remove vegetation, topsoil, debris, wet, and unsatisfactory soil materials, obstructions, and deleterious materials from ground surface prior to placing fill.
 1. Plow strip, or break up sloped surfaces steeper than 1 vertical to 4 horizontal so fill material will bond with existing surface.
- B. When sub grade or existing ground surface to receive fill has a density less than that required for fill, break up ground surface to depth required, pulverize, moisture-condition or aerate soil and re-compact to required density.

3.6 MOISTURE CONTROL

- A. Uniformly moisten or aerate sub grade and each subsequent fill or backfill layer before compaction to within 2 percent of optimum moisture content.
 - 1. Do not place backfill or fill material on surfaces that are muddy, frozen, or contain frost or ice.
 - 2. Remove and replace, or scarify and air-dry satisfactory soil material that is too wet to compact to specified density. Stockpile or spread and dry removed wet satisfactory soil material.

3.7 FILL AND COMPACTION

- A. Place backfill and fill materials in layers not more than 8 inches (200 mm) in loose depth for material compacted by heavy compaction equipment, and not more than 4 inches (100 mm) in loose depth for material compacted by hand-operated tampers.
- B. Place backfill and fill materials evenly on all sides of structures to required elevations. Place backfill and fill uniformly along the full length of each structure.
- C. Percentage of Maximum Dry Density Requirements: Compact soil to not less than the following percentages of maximum dry density according to ASTM D 1557:
 - 1. Structural fill must be compacted to 95 percent density.
 - 2. Paved areas must have a minimum of 6 in. fill compacted to 90 percent density.

3.8 GRADING

- A. General: Uniformly grade areas to a smooth surface, free from irregular surface changes. Comply with compaction requirements and grade to cross sections, lines, and elevations indicated.
 - 1. Provide a smooth transition between existing adjacent grades and new grades.
 - 2. Cut out soft spots, fill low spots, and trim high spots to conform to required surface tolerances.
- B. Site Grading: Slope grades to direct water away from buildings and to prevent ponding. Finish sub grades to required elevations within the following tolerances:
 - 1. Unpaved Areas: Plus or minus 1.2 inches.
 - 2. Walks: Plus or minus 1.2 inches.
 - 3. Pavements: Plus or minus 1/2 inch.

3.9 PROTECTION

- A. Protecting Graded Areas: Protect newly graded areas from traffic, freezing, and erosion. Keep free of trash and debris.
- B. Repair and re-establish grades to specified tolerances where completed or partially completed surfaces become eroded, rutted, settled, or lose compaction due to subsequent construction operations or weather conditions.
- C. Settling: Where settling occurs during the Project correction period, remove finished surfacing, backfill with additional approved material, compact, and reconstruct surfacing.

3.10 DISPOSAL OF SURPLUS AND WASTE MATERIALS

- A. Disposal: Remove surplus satisfactory soil and waste material, including unsatisfactory soil, trash, and debris, and legally dispose of it off the Owner's property.

END OF SECTION 31 23 00

SECTION 32 13 13

CONCRETE PAVING

PART 1 - GENERAL

1.1 RELATED DOCUMENT

- A. Hurricanes Ike and Dolly Round 2 Minimum Design Standards.
- B. State of Texas Disaster Recovery Program Ike and Dolly Round 2 Community Development Block Grant Disaster Recovery Housing Program Guidelines.

1.2 DESCRIPTION OF WORK

- A. This Section includes exterior Portland cement paving for the following:
 - 1. Driveways
 - 2. Curbs and Gutters
 - 3. Walkways and Ramps

PART 2 – PRODUCTS

2.1 MATERIALS

- A. FORMS
 - 1. Steel, wood or other suitable material of size and strength to resist movement during concrete placement and to retain horizontal and vertical alignment until removal. Use straight forms, free of distortion and defects.
 - 2. Use 1/4 in. plywood to form radius bend as required.
- B. REINFORCING BARS - Deformed steel bars, ASTM A615, Grade 60.
- C. WELDED STEEL WIRE FABRIC: ASTM A185
 - 1. Furnish in flat sheets, not rolls.
- D. JOINT DOWEL BARS - Plain steel bars, ASTM A 615, Grade 40. Cut bars true to length with ends square and free of burrs.
- E. CONCRETE MATERIALS
 - 1. Portland Cement - ASTM C150, Type 1 (Use one brand of cement throughout Project for site, walks, ramps, and curbs/gutters.
 - 2. Aggregates - ASTM C33, sized according to ACI 318 with maximum 1-1/2 in. aggregate size
 - 3. Sand - Clean, hard, sharp sand, well graded
 - 4. Water - Clean, fresh water suitable for drinking
- F. CONSTRUCTION (CONTROL) JOINT - Equal to Burke Keyed Kold Joint Form with accessories.
- G. EXPANSION JOINT FILLER - 1/2 in. premolded fiberboard impregnated with 35 percent to 50percent asphalt by weight.
- H. EXPANSION JOINT SEALANT - 2 part "traffic grade" polyurethane sealant equal to Tremco.
- I. Provide metal accessories, including spacers, chairs, ties, bolsters, and other devices necessary for properly assembling, placing, spacing, and supporting reinforcement in place.
- J. MEMBRANE-FORMING CURING COMPOUND - ASTM C309, Type I.

2.2 CONCRETE MIX

- A. Design mix to produce a standard-weight concrete consisting of Portland cement, aggregate, air-entraining admixture and water to produce following properties:
 - 1. Compressive Strength (unless otherwise noted on structural drawings) 2500 psi, minimum at 28 days for all concrete with a maximum slump of 6 in.
- B. Measure, mix and deliver concrete in accordance with ASTM C94.

PART 3 – EXECUTION

3.1 SURFACE PREPARATION

- A. Proof-roll prepared sub-base surface to check for unstable areas and verify need for additional compaction. Do not begin paving work until such conditions have been corrected and are ready to receive paving.
- B. Remove loose material from compacted sub-base surface immediately before placing concrete.

3.2 FORM CONSTRUCTION

- A. Set forms to required grades and lines, rigidly braced and secured. Install sufficient quantity of forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork for grade and alignment to following tolerances:
 - 1. Top of Forms - Not more than 1/8 in. in 10 ft.
 - 2. Vertical Face on Longitudinal Axis - Not more than 1/4 in. in 10 ft.

3.3 REINFORCEMENT

- A. Form reinforcement accurately to dimensions shown. Bend bars cold and straighten in a manner which will not injure materials.
- B. FABRICATED BAR MATS - Keep mats clean and free from excessive rust, and handle units to keep them flat and free of distortions. Set mats for a minimum 2 in. to adjacent mats. Support mats with approved chairs, bolsters and other devices as required to hold mats at proper height.

3.4 CONCRETE PLACEMENT

- A. Do not place concrete until subgrade and forms have been checked for line and grade. Moisten subgrade if required to provide a uniform dampened condition at time concrete is placed.
- B. Place concrete using methods which prevent segregation of mix. Consolidate concrete along face of forms and adjacent to transverse joints with internal vibrator. Keep vibrator away from joint assemblies, reinforcement, and side forms.

3.5 JOINTS

- A. Construct expansion and construction joints true-to-line with face perpendicular to surface of concrete. Construct transverse joints at right angles to the centerline, unless otherwise indicated.
- B. When joining existing structures, place transverse joints to align with previously placed joints, unless otherwise indicated.
- C. Extend joint fillers full-width and depth of joint, and not less than 1/2 in. or more than 1 in. below finished surface, and fill this top area with joint sealant.

- D. Furnish joint fillers in one-piece lengths for full width being placed, wherever possible. Where more than one length is required, lace or clip joint filler sections together.
- E. Protect top edge of joint filler during concrete placement with a metal cap or other temporary material. Remove protection after concrete has been placed on both sides of joint.
- F. FILLERS AND SEALANTS - Comply with material manufacturer's printed instructions and recommendations for preparation of joints, materials, installation, and performance.

3.6 CONCRETE FINISHING

- A. After striking-off and consolidating concrete, smooth surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust floating to compact surface and produce uniform texture.
- B. After floating, test surface for trueness to 3/16 in. in 10 ft. with a 10 ft. straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous smooth finish.
- C. Work edges of slabs, back top edge of curb, and formed joints with an edging tool, and round to 1/2 in. radius, unless otherwise indicated. Eliminate tool marks on concrete surface.
- D. After completion of floating and when excess moisture or surface sheen has disappeared, complete surface finishing, as follows:
 - 1. TEXTURE NO. 1: MEDIUM-TO-FINE TEXTURED BROOM FINISH:
Draw a soft bristle broom across concrete surface perpendicular to line of traffic to provide a uniform fine line texture finish.
 - 2. TEXTURE NO. 2: MEDIUM-TO-COARSE TEXTURED BRROM FINISH:
Provide a coarse finish by striating surface 1/16 in. to 1/8 in. deep, with a stiffed-bristled broom, perpendicular to line of traffic.
- E. Final Tooling: Tool edges of paving, gutters, curbs, and joints formed in fresh concrete with a jointing tool to the following radius. Repeat tooling of edges and joints after applying surface finishes.
- F. Do not remove forms for 24 hours after concrete has been placed. After form removal, clean ends of joints and point-up any minor honeycombed areas. Remove and replace areas or sections with major defects.

3.7 CONCRETE WALKS, STEPS AND RAMPS

- A. Walks must be poured monolithic to expansion joints. Reinforcing must be 6 in. x 6 in., number 10 welded wire fabric. Width must be a minimum of 36 in. wide with a broom finish. Control joints must be spaced the width of the walk. Expansion joints must be spaced at a maximum of 20 ft., at all radius points, elevation changes (i.e. steps, porches, etc.) and at back of curb. Expansion joint material can be 1/2 in. asphalt impregnated material or 1/2 in. redwood. Slab thickness must be a minimum of 4 in.

3.8 CONCRETE DRIVEWAYS

- A. Driveways must be monolithic poured slab with a broom finish and a minimum thickness of 4 in.
- B. Reinforcing must be 6 in. x 6 in. number 10 welded wire fabric. Expansion joints will be spaced at a maximum of 20 linear feet not to exceed 20 sq. yards in one block. Expansion joints will be used at all radius points, sidewalk intersections and house slab tie-ins. Expansion joint materials can be 1/2 in. asphalt impregnated material or 1/2 in. redwood.

3.9 CURING AND PROTECTION

- A. Protect freshly placed concrete from elements and from defacement due to construction operations.
- B. As soon as the concrete has hardened sufficiently to prevent damage, spray coat with an approved curing compound as required.

3.10 REPAIRS AND PROTECTIONS

- A. Repair or replace broken or defective concrete.
- B. Protect concrete from damage until acceptance of work. Exclude traffic from pavement for at least 14 days after placement. When construction traffic is permitted, maintain pavement as clean as possible by preventing surface stains and spillage of materials and removing them if they occur.
- C. Sweep concrete pavement and wash free of stains, discolorations, dirt, and other foreign material just prior to final inspection.

END OF SECTION 32 13 13

ATTACHMENT I

SUMMARY OF HUD LEAD-BASED PAINT (LBP) REQUIREMENTS

SUMMARY OF HUD LEAD-BASED PAINT (LBP) REQUIREMENTS

Sub-part	Type of Program	Construction Period	Requirements ^{1, 2, 3}
A	Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards	Pre-1978	<ul style="list-style-type: none"> See www.hud.gov/offices/lead for Lead Disclosure Rule requirements for sale or lease of residential property.
B	General Lead-Based Paint Requirements and Definitions	Pre-1978	<ul style="list-style-type: none"> All properties covered by the Lead Safe Housing Rule.⁴
C	Disposition by Federal Agency Other Than HUD	Pre-1960	<ul style="list-style-type: none"> LBP inspection and risk assessment. Abatement of LBP hazards. Notice to occupants.
		1960-1977	<ul style="list-style-type: none"> LBP inspection and risk assessment. Notice to occupants of results.
D	Project-Based Assistance by Federal Agency Other Than HUD	Pre-1978	<ul style="list-style-type: none"> Provision of pamphlet. Risk assessment. Interim controls. Notice to occupants. Response to child with EIBLL.⁵
F	HUD-Owned Single Family Sold With a HUD-Insured Mortgage	Pre-1978	<ul style="list-style-type: none"> Visual assessment. Paint stabilization. Notice to occupants of clearance.
G	Multifamily Mortgage Insurance:		
	1. For properties that are currently residential	Pre-1960	<ul style="list-style-type: none"> Provision of pamphlet. Risk assessment. Interim controls. Notice to occupants. Ongoing LBP maintenance.
		1960-1977	<ul style="list-style-type: none"> Provision of pamphlet. Ongoing LBP maintenance.
2. For conversions and major renovations.	Pre-1978	<ul style="list-style-type: none"> Provision of pamphlet. LBP inspection. Abatement of LBP. Notice to occupants. 	
H	Project-Based Assistance by HUD		
	For all properties	Pre-1978	<ul style="list-style-type: none"> Provision of pamphlet. Notice to occupants. Ongoing LBP maintenance and reevaluation. Response to child with EIBLL.⁵
	1. Multifamily property receiving more than \$5,000 per unit per year	Pre-1978	<ul style="list-style-type: none"> Risk assessment. Interim controls.
	2. Multifamily property receiving less than or equal to \$5,000 per unit per year, and single family properties	Pre-1978	<ul style="list-style-type: none"> Visual assessment. Paint stabilization.
I	HUD-Owned Multifamily Property	Pre-1978	<ul style="list-style-type: none"> Provision of pamphlet. LBP inspection and risk assessment. Interim controls. Notice to occupants. Ongoing LBP maintenance and reevaluation. Response to child with EIBLL.⁵

SUMMARY OF HUD LEAD-BASED PAINT (LBP) REQUIREMENTS (continued)

Sub-part	Type of Program	Construction Period	Requirements ^{1, 2, 3}
J	Rehabilitation Assistance: For all Properties	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Paint testing of surfaces to be disturbed, or presume LBP. • Notice to occupants. • Ongoing LBP maintenance if HOME rental.
	1. Property receiving less than or equal to \$5,000 per unit	Pre-1978	<ul style="list-style-type: none"> • Safe work practices in rehab. • Repair disturbed paint. • Clearance of the worksite.
	2. Property receiving more than \$5,000 and up to \$25,000	Pre-1978	<ul style="list-style-type: none"> • Risk assessment. • Interim controls.
	3. Property receiving more than \$25,000 per unit	Pre-1978	<ul style="list-style-type: none"> • Risk assessment. • Abatement of LBP hazards. • Interim controls allowed for exterior.
K	Acquisition, Leasing, Support Services, or Operation	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Visual assessment. • Paint stabilization. • Notice to occupants. • Ongoing LBP maintenance for ongoing assistance.
L	Public Housing	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • LBP inspection. • Risk assessment if LBP not yet abated. • Interim controls if LBP not yet abated. • Abatement of LBP during modernization. • Notice to occupants. • Ongoing LBP maintenance and reevaluation. • Response to child with EIBLL.⁵
M	Tenant-Based Rental Assistance for units to be occupied by children under 6 years of age	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Visual assessment. • Paint stabilization. • Notice to occupants. • Ongoing LBP maintenance. • Response to child with EIBLL.⁵

1. Safe work practices and occupant protection are always required. Clearance is required after abatement, interim controls, paint stabilization, or standard treatments, except when the amount of deteriorated paint is below the de minimis levels specified in Subpart R of the rule.
2. Notice to occupants must include results of evaluations (paint testing, inspection, and risk assessment) and clearance, where applicable.
3. Training requirements (see www.hud.gov/offices/lead for information; see www.epa.gov/lead about certification):
 Evaluation: Visual assessment: Web-based HUD visual assessment course, or risk assessment certification.
 Inspection: LBP inspection certification.
 Risk assessment, or re-evaluation: Risk assessment certification.
 Clearance: LBP inspection or risk assessment certification, or sampling technician course.
 Hazard Control (except for small (“de minimis”) amounts of paint disturbance; see 24 CFR 35.1350(d)):
 Repair of paint, paint stabilization, or interim control: Lead-safe work practices course.
 Abatement: Abatement certification.
4. See 24 CFR 35.115 for exemptions.
5. Environmental intervention blood lead level: At least 20 micrograms of lead per deciliter (µg/dL) for a single test, or 15-19 µg/dL in two tests taken at least 3 months apart.

SUMMARY OF LEAD-BASED PAINT REQUIREMENTS (09/10)

Activity (Regulation Subpart)	Rehabilitation (Subpart J)		TBRA (Subpart M)	A,L,SS,O* (Subpart K)
	<\$5,000	\$5,001 - \$25,000		
Condition			Children 5 and under	
Strategy Level	1. Do no harm	3. Assess risk and control lead hazards	2. Identify and stabilize deteriorated paint	2. Identify and stabilize deteriorated paint
Disclosure & Pamphlet	Yes	Yes	Yes	Yes
Hazard Evaluation	EPA & HUD Paint testing of disturbed surfaces EPA wet chemical	HUD Paint Testing and Risk Assessment	Visual Assessment /HQS	Visual Assessment/ Prepurchase Insp.
Notice	Yes	Yes	No	No
Lead Hazard Reduction	Repair paint disturbed during rehabilitation	Interim Controls	Paint Stabilization	Paint Stabilization
Worker Requirement	EPA RRP Supervised construction workers	HUD Trained or supervised workers	HUD Supervised or trained workers	HUD Supervised or trained workers
Work Practices	Safe work practices HUD Worksite clearance Notice	Safe work practices Worksite clearance Notice	Safe work practices Worksite Clearance Notice	Safe work practices Worksite Clearance Notice
Ongoing Maintenance	No	No	Yes	Yes (if ongoing relationship)
EIBLL	No	(HOME funded rentals only)	Yes	No
Documentation	Testing Report Clearance Report	Work Write-up Risk Assessment Clearance Report	HQS Clearance Report Maintenance	HQS Clearance Report Maintenance
Options	Presume lead-based paint Use safe work practices on all surfaces to be disturbed	Presume lead-based hazards and paint. Standard Treatments on soil, dust, paint, friction, impact and mouthable.	Test deteriorated paint. Use safe work practices only on lead-based paint.	Test deteriorated paint. Use safe work practices only on lead-based paint surfaces.

* Special Needs Housing may be subject to the requirements of Subpart J,M or K depending on the nature of the activity undertaken. Most special needs housing involves acquisition, leasing, support services and operations, therefore, it has been placed in this column.

ATTACHMENT II

NUMBER OF UNITS TO BE TESTED IN MULTIFAMILY DEVELOPMENTS

Table 7.3: Number of Units to be Tested in Multifamily Developments

Number of Similar Units, Similar Common Areas or Exterior Sites in a Building or Development	Pre-1960 or Unknown-Age Building or Development: Number to Test	1960-1977 Building or Development: Number to Test
1-9	All	All
10-13	All	10
14	All	11
15	All	12
16-17	All	13
18	All	14
19	All	15
20	All	16
21-26	20	16
27	21	17
28	22	18
29	23	18
30	23	19
31	24	19
32	25	19
33-34	26	19
35	27	19
36	28	19
37	29	19
38-39	30	20
40-48	31	21
49-50	31	22
51	32	22
52-53	33	22
54	34	22
55-56	35	22

Number of Similar Units, Similar Common Areas or Exterior Sites in a Building or Development	Pre-1960 or Unknown-Age Building or Development: Number to Test	1960-1977 Building or Development: Number to Test
57-58	36	22
59	37	23
60-69	38	23
70-73	38	24
74-75	39	24
76-77	40	24
78-79	41	24
80-88	42	24
89-95	42	25
96-97	43	25
98-99	44	25
100-109	45	25
110-117	45	26
118-119	46	26
120-138	47	26
139-157	48	26
158-159	49	26
160-177	49	27
178-197	50	27
198-218	51	27
219-258	52	27
259-279	53	27
280-299	53	28
300-279	54	28
380-499	55	28
500-776	56	28
777-939	57	28

Number of Similar Units, Similar Common Areas or Exterior Sites in a Building or Development	Pre-1960 or Unknown-Age Building or Development: Number to Test	1960-1977 Building or Development: Number to Test
940-1004	57	29
1005-1022	58	29
1023-1032	59	29
1033-1039	59	30
1500	87	44
2000	116	58
2500	145	73
3000	174	87
3500	203	102
4000	232	116

ATTACHMENT III

24 CFR PART 35

SUBPART A

24 CFR Part 35

Subpart A—Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards Upon Sale or Lease of Residential Property

Source: 61 FR 9082, Mar. 6, 1996, unless otherwise noted. Re-designated at 64 FR 50201, Sept. 15, 1999.

§ 35.80 Purpose.

This subpart implements the provisions of 42 U.S.C. 4852d, which impose certain requirements on the sale or lease of target housing. Under this subpart, a seller or lessor of target housing shall disclose to the purchaser or lessee the presence of any known lead-based paint and/or lead-based paint hazards; provide available records and reports; provide the purchaser or lessee with a lead hazard information pamphlet; give purchasers a 10-day opportunity to conduct a risk assessment or inspection; and attach specific disclosure and warning language to the sales or leasing contract before the purchaser or lessee is obligated under a contract to purchase or lease target housing.

§ 35.82 Scope and applicability.

This subpart applies to all transactions to sell or lease target housing, including subleases, with the exception of the following:

(a) Sales of target housing at foreclosure.

(b) Leases of target housing that have been found to be lead-based paint free by an inspector certified under the Federal certification program or under a federally accredited State or tribal certification program. Until a Federal certification program or federally accredited State certification program is in place within the State, inspectors shall be considered qualified to conduct an inspection for this purpose if they have received certification under any existing State or tribal inspector certification program. The lessor has the option of using the results of additional test(s) by a certified inspector to confirm or refute a prior finding.

(c) Short-term leases of 100 days or less, where no lease renewal or extension can occur.

(d) Renewals of existing leases in target housing in which the lessor has previously disclosed all information required under §35.88 and where no new information described in §35.88 has come into the possession of the lessor. For the purposes of this paragraph, renewal shall include both renegotiation of existing lease terms and/or ratification of a new lease.

§ 35.84 Effective dates.

The requirements in this subpart take effect in the following manner:

(a) For owners of more than four residential dwellings, the requirements shall take effect on September 6, 1996.

(b) For owners of one to four residential dwellings, the requirements shall take effect on December 6, 1996.

§ 35.86 Definitions.

The following definitions apply to this subpart.

The Act means the Residential Lead-Based Paint Hazard Reduction Act of 1992, 42 U.S.C. 4852d.

Agent means any party who enters into a contract with a seller or lessor, including any party who enters into a contract with a representative of the seller or lessor, for the purpose of selling or leasing target housing. This term does not apply to purchasers or any purchaser's representative who receives all compensation from the purchaser.

Available means in the possession of or reasonably obtainable by the seller or lessor at the time of the disclosure.

Common area means a portion of a building generally accessible to all residents/users including, but not limited to, hallways, stairways, laundry and recreational rooms, playgrounds, community centers, and boundary fences.

Contract for the purchase and sale of residential real property means any contract or agreement in which one party agrees to purchase an interest in real property on which there is situated one or more residential dwellings used or occupied, or intended to be used or occupied, in whole or in part, as the home or residence of one or more persons.

EPA means the Environmental Protection Agency.

Evaluation means a risk assessment and/or inspection.

Foreclosure means any of the various methods, statutory or otherwise, known in different jurisdictions, of enforcing payment of a debt, by the taking and selling of real property.

Housing for the elderly means retirement communities or similar types of housing reserved for households composed of one or more persons 62 years of age or more at the time of initial occupancy.

Inspection means:

(1) A surface-by-surface investigation to determine the presence of lead-based paint as provided in section 302(c) of the Lead-Based Paint Poisoning and Prevention Act [42 U.S.C. 4822], and

(2) The provision of a report explaining the results of the investigation.

Lead-based paint means paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight.

Lead-based paint free housing means target housing that has been found to be free of paint or other surface coatings that contain lead equal to or in excess of 1.0 milligram per square centimeter or 0.5 percent by weight.

Lead-based paint hazard means any condition that causes exposure to lead from lead-contaminated dust, lead-contaminated soil, or lead-contaminated paint that is deteriorated or present in accessible surfaces, friction surfaces, or impact surfaces that would result in adverse human health effects as established by the appropriate Federal agency.

Lessee means any entity that enters into an agreement to lease, rent, or sublease target housing, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations.

Lessor means any entity that offers target housing for lease, rent, or sublease, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations.

Owner means any entity that has legal title to target housing, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations, except where a mortgagee holds legal title to property serving as collateral for a mortgage loan, in which case the owner would be the mortgagor.

Purchaser means an entity that enters into an agreement to purchase an interest in target housing, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations.

Reduction means measures designed to reduce or eliminate human exposure to lead-based paint hazards through methods including interim controls and abatement.

Residential dwelling means:

- (1) A single-family dwelling, including attached structures such as porches and stoops; or
- (2) A single-family dwelling unit in a structure that contains more than one separate residential dwelling unit, and in which each such unit is used or occupied, or intended to be used or occupied, in whole or in part, as the residence of one or more persons.

Risk assessment means an on-site investigation to determine and report the existence, nature, severity, and location of lead-based paint hazards in residential dwellings, including:

- (1) Information gathering regarding the age and history of the housing and occupancy by children under age 6;
- (2) Visual inspection;
- (3) Limited wipe sampling or other environmental sampling techniques;
- (4) Other activity as may be appropriate; and
- (5) Provision of a report explaining the results of the investigation.

Seller means any entity that transfers legal title to target housing, in whole or in part, in return for consideration, including but not limited to individuals, partnerships, corporations, trusts, government agencies, housing agencies, Indian tribes, and nonprofit organizations. The term "seller" also includes:

- (1) An entity that transfers shares in a cooperatively owned project, in return for consideration; and

(2) An entity that transfers its interest in a leasehold, in jurisdictions or circumstances where it is legally permissible to separate the fee title from the title to the improvement, in return for consideration.

Target housing means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless any child who is less than 6 years of age resides or is expected to reside in such housing) or any 0-bedroom dwelling.

TSCA means the Toxic Substances Control Act, 15 U.S.C. 2601.

0-bedroom dwelling means any residential dwelling in which the living area is not separated from the sleeping area. The term includes efficiencies, studio apartments, dormitory housing, military barracks, and rentals of individual rooms in residential dwellings.

§ 35.88 Disclosure requirements for sellers and lessors.

(a) The following activities shall be completed before the purchaser or lessee is obligated under any contract to purchase or lease target housing that is not otherwise an exempt transaction pursuant to §35.82. Nothing in this section implies a positive obligation on the seller or lessor to conduct any evaluation or reduction activities.

(1) The seller or lessor shall provide the purchaser or lessee with an EPA-approved lead hazard information pamphlet. Such pamphlets include the EPA document entitled *Protect Your Family From Lead in Your Home* (EPA -747-K-94-001) or an equivalent pamphlet that has been approved for use in that State by EPA.

(2) The seller or lessor shall disclose to the purchaser or lessee the presence of any known lead-based paint and/or lead-based paint hazards in the target housing being sold or leased. The seller or lessor shall also disclose any additional information available concerning the known lead-based paint and/or lead-based paint hazards, such as the basis for the determination that lead-based paint and/or lead-based paint hazards exist, the location of the lead-based paint and/or lead-based paint hazards, and the condition of the painted surfaces.

(3) The seller or lessor shall disclose to each agent the presence of any known lead-based paint and/or lead-based paint hazards in the target housing being sold or leased and the existence of any available records or reports pertaining to lead-based paint and/or lead-based paint hazards. The seller or lessor shall also disclose any additional information available concerning the known lead-based paint and/or lead-based paint hazards, such as the basis for the determination that lead-based paint and/or lead-based paint hazards exist, the location of the lead-based paint and/or lead-based paint hazards, and the condition of the painted surfaces.

(4) The seller or lessor shall provide the purchaser or lessee with any records or reports available to the seller or lessor pertaining to lead-based paint and/or lead-based paint hazards in the target housing being sold or leased. This requirement includes records and reports regarding common areas. This requirement also includes records and reports regarding other residential dwellings in multifamily target housing, provided that such information is part of an evaluation or reduction of lead-based paint and/or lead-based paint hazards in the target housing as a whole.

(b) If any of the disclosure activities identified in paragraph (a) of this section occurs after the purchaser or lessee has provided an offer to purchase or lease the housing, the seller or lessor shall complete the required disclosure activities prior to accepting the purchaser's or lessee's offer and allow the purchaser or lessee an opportunity to review the information and possibly amend the offer.

(Approved by the Office of Management and Budget under control number 2070-0151)

[61 FR 9082, Mar. 6, 1996, as amended at 64 FR 14382, Mar. 25, 1999]

§ 35.90 Opportunity to conduct an evaluation.

(a) Before a purchaser is obligated under any contract to purchase target housing, the seller shall permit the purchaser a 10-day period (unless the parties mutually agree, in writing, upon a different period of time) to conduct a risk assessment or inspection for the presence of lead-based paint and/or lead-based paint hazards.

(b) Notwithstanding paragraph (a) of this section, a purchaser may waive the opportunity to conduct the risk assessment or inspection by so indicating in writing.

(Approved by the Office of Management and Budget under control number 2070-0151)

[61 FR 9082, Mar. 6, 1996, as amended at 64 FR 14382, Mar. 25, 1999]

§ 35.92 Certification and acknowledgment of disclosure.

(a) *Seller requirements.* Each contract to sell target housing shall include an attachment containing the following elements, in the language of the contract (e.g., English, Spanish):

(1) A Lead Warning Statement consisting of the following language:

Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-based paint hazards is recommended prior to purchase.

(2) A statement by the seller disclosing the presence of known lead-based paint and/or lead-based paint hazards in the target housing being sold or indicating no knowledge of the presence of lead-based paint and/or lead-based paint hazards. The seller shall also provide any additional information available concerning the known lead-based paint and/or lead-based paint hazards, such as the basis for the determination that lead-based paint and/or lead-based paint hazards exist, the location of the lead-based paint and/or lead-based paint hazards, and the condition of the painted surfaces.

(3) A list of any records or reports available to the seller pertaining to lead-based paint and/or lead-based paint hazards in the housing that have been provided to the purchaser. If no such records or reports are available, the seller shall so indicate.

(4) A statement by the purchaser affirming receipt of the information set out in paragraphs (a)(2) and (a)(3) of this section and the lead hazard information pamphlet required under section 15 U.S.C. 2696.

(5) A statement by the purchaser that he/she has either:

(i) Received the opportunity to conduct the risk assessment or inspection required by §35.90(a); or

(ii) Waived the opportunity.

(6) When any agent is involved in the transaction to sell target housing on behalf of the seller, a statement that:

(i) The agent has informed the seller of the seller's obligations under 42 U.S.C. 4852d; and

(ii) The agent is aware of his/her duty to ensure compliance with the requirements of this subpart.

(7) The signatures of the sellers, agents, and purchasers, certifying to the accuracy of their statements, to the best of their knowledge, along with the dates of signature.

(b) *Lessor requirements.* Each contract to lease target housing shall include, as an attachment or within the contract, the following elements, in the language of the contract (e.g., English, Spanish):

(1) A Lead Warning Statement with the following language:

Housing built before 1978 may contain lead-based paint. Lead from paint, paint chips, and dust can pose health hazards if not managed properly. Lead exposure is especially harmful to young children and pregnant women. Before renting pre-1978 housing, lessors must disclose the presence of lead-based paint and/or lead-based paint hazards in the dwelling. Lessees must also receive a federally approved pamphlet on lead poisoning prevention.

(2) A statement by the lessor disclosing the presence of known lead-based paint and/or lead-based paint hazards in the target housing being leased or indicating no knowledge of the presence of lead-based paint and/or lead-based paint hazards. The lessor shall also disclose any additional information available concerning the known lead-based paint and/or lead-based paint hazards, such as the basis for the determination that lead-based paint and/or lead-based paint hazards exist in the housing, the location of the lead-based paint and/or lead-based paint hazards, and the condition of the painted surfaces.

(3) A list of any records or reports available to the lessor pertaining to lead-based paint and/or lead-based paint hazards in the housing that have been provided to the lessee. If no such records or reports are available, the lessor shall so indicate.

(4) A statement by the lessee affirming receipt of the information set out in paragraphs (b)(2) and (b)(3) of this section and the lead hazard information pamphlet required under 15 U.S.C. 2696.

(5) When any agent is involved in the transaction to lease target housing on behalf of the lessor, a statement that:

(i) The agent has informed the lessor of the lessor's obligations under 42 U.S.C. 4852d; and

(ii) The agent is aware of his/her duty to ensure compliance with the requirements of this subpart.

(6) The signatures of the lessors, agents, and lessees certifying to the accuracy of their statements to the best of their knowledge, along with the dates of signature.

(c) *Retention of certification and acknowledgment information.* (1) The seller, and any agent, shall retain a copy of the completed attachment required under paragraph (a) of this section for no less than 3 years from the completion date of the sale. The lessor, and any agent, shall retain a copy of the completed attachment or lease contract containing the information required under paragraph (b) of this section for no less than 3 years from the commencement of the leasing period.

(2) This recordkeeping requirement is not intended to place any limitations on civil suits under the Act, or to otherwise affect a lessee's or purchaser's rights under the civil penalty provisions of 42 U.S.C. 4852d(b)(3).

(d) The seller, lessor, or agent shall not be responsible for the failure of a purchaser's or lessee's legal representative (where such representative receives all compensation from the purchaser or lessee) to transmit disclosure materials to the purchaser or lessee, provided that all required parties have completed and signed the necessary certification and acknowledgment language required under paragraphs (a) and (b) of this section.

(Approved by the Office of Management and Budget under control number 2070-0151)

[61 FR 9082, Mar. 6, 1996, as amended at 64 FR 14382, Mar. 25, 1999]

§ 35.94 Agent responsibilities.

(a) Each agent shall ensure compliance with all requirements of this subpart. To ensure compliance, the agent shall:

(1) Inform the seller or lessor of his/her obligations under §§35.88, 35.90, and 35.92.

(2) Ensure that the seller or lessor has performed all activities required under §§35.88, 35.90, and 35.92, or personally ensure compliance with the requirements of §§35.88, 35.90, and 35.92.

(b) If the agent has complied with paragraph (a)(1) of this section, the agent shall not be liable for the failure to disclose to a purchaser or lessee the presence of lead-based paint and/or lead-based paint hazards known by a seller or lessor but not disclosed to the agent.

(Approved by the Office of Management and Budget under control number 2070-0151)

[61 FR 9082, Mar. 6, 1996, as amended at 64 FR 14382, Mar. 25, 1999]

§ 35.96 Enforcement.

(a) Any person who knowingly fails to comply with any provision of this subpart shall be subject to civil monetary penalties in accordance with the provisions of 42 U.S.C. 3545 and 24 CFR part 30.

(b) The Secretary is authorized to take such action as may be necessary to enjoin any violation of this subpart in the appropriate Federal district court.

(c) Any person who knowingly violates the provisions of this subpart shall be jointly and severally liable to the purchaser or lessee in an amount equal to 3 times the amount of damages incurred by such individual.

(d) In any civil action brought for damages pursuant to 42 U.S.C. 4852d(b)(3), the appropriate court may award court costs to the party commencing such action, together with reasonable attorney fees and any expert witness fees, if that party prevails.

(e) Failure or refusal to comply with §§35.88 (disclosure requirements for sellers and lessors), §35.90 (opportunity to conduct an evaluation), §35.92 (certification and acknowledgment of disclosure), or §35.94 (agent responsibilities) is a violation of 42 U.S.C. 4852d(b)(5) and of TSCA section 409 (15 U.S.C. 2689).

(f) Violators may be subject to civil and criminal sanctions pursuant to TSCA section 16 (15 U.S.C. 2615) for each violation. For purposes of enforcing this subpart, the penalty for each violation applicable under 15 U.S.C. 2615 shall be not more than \$10,000.

§ 35.98 Impact on State and local requirements.

Nothing in this subpart shall relieve a seller, lessor, or agent from any responsibility for compliance with State or local laws, ordinances, codes, or regulations governing notice or disclosure of known lead-based paint and/or lead-based paint hazards. Neither HUD nor EPA assumes any responsibility for ensuring compliance with such State or local requirements.

ATTACHMENT IV

24 CFR PART 35

LEAD-BASED PAINT POISONING PREVENTION IN CERTAIN RESIDENTIAL STRUCTURES

HUD Lead Safe Housing Rule, 24 CFR 35, subparts B through R, reflecting changes made by the technical amendment issued June 21, 2004 (69 Federal Register 34262-34276).

TITLE 24--HOUSING AND URBAN DEVELOPMENT

PART 35_LEAD-BASED PAINT POISONING PREVENTION IN CERTAIN RESIDENTIAL STRUCTURES

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Authority: 42 U.S.C. 3535(d), 4821, and 4851.

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Subpart B_General Lead-Based Paint Requirements and Definitions for All Programs.

Source: 64 FR 50202, Sept. 15, 1999, unless otherwise noted.

Sec. 35.100 Purpose and applicability.

(a) Purpose. The requirements of subparts B through R of this part are promulgated to implement the Lead-Based Paint Poisoning Prevention Act, as amended (42 U.S.C. 4821 et seq.), and the Residential Lead-Based Paint Hazard Reduction Act of 1992 (42 U.S.C. 4851 et seq.).

(b) Applicability--

(1) This subpart. This subpart applies to all target housing that is federally owned and target housing receiving Federal assistance to which subparts C, D, F through M, and R of this part apply, except where indicated.

(2) Other subparts--

(i) General. Subparts C, D, and F through M of this part each set forth requirements for a specific type of Federal housing activity or assistance, such as multifamily mortgage insurance, project-based rental assistance, rehabilitation, or tenant-based rental assistance. Subpart R of this part provides standards and methods for activities required in subparts B, C, D, and F through M of this part.

(ii) Application to programs. Most HUD housing programs are covered by only one subpart of this part, but some programs can be used for more than one type of assistance and therefore are covered by more than one subpart of this part. A current list of programs covered by each subpart of this part is available on the internet at www.hud.gov, or by

mail from the National Lead Information Center at 1-800-424-LEAD. Examples of flexible programs that can provide more than one type of assistance are the HOME Investment Partnerships program, the Community Development Block Grant program, and the Indian Housing Block Grant Program. Grantees, participating jurisdictions, Indian tribes and other entities administering such flexible programs must decide which subpart applies to the type of assistance being provided to a particular dwelling unit or residential property.

(iii) Application to dwelling units. In some cases, more than one type of assistance may be provided to the same dwelling unit. In such cases, the subpart or section with the most protective initial hazard reduction requirements applies. Paragraph (c) of this section provides a table that lists the subparts and sections of this part in order from the most protective to the least protective. (This list is based only on the requirements for initial hazard reduction. The summary of requirements on this list is not a complete list of requirements. It is necessary to refer to the applicable subparts and sections to determine all applicable requirements.)

(iv) Example. A multifamily building has 100 dwelling units and was built in 1965. The property is financed with HUD multifamily mortgage insurance. This building is covered by subpart G of this part (see Sec. 35.625--Multifamily mortgage insurance for properties constructed after 1959), which is at protectiveness level 5 in the table set forth in paragraph (c) of this section. In the same building, however, 50 of the 100 dwelling units are receiving project-based assistance, and the average annual assistance per assisted unit is \$5,500. Those 50 units, and common areas servicing those units, are covered by the requirements of subpart H of this part (see Sec. 35.715--Project-based assistance for multifamily properties receiving more than \$5,000 per unit), which are at protectiveness level 3. Therefore, because level 3 is a higher level of protectiveness than level 5, the units receiving project-based assistance, and common areas servicing those units, must comply at level 3, while the rest of the building can be operated at level 5. The owner may choose to operate the entire building at level 3 for simplicity.

(c) Table One. The following table lists the subparts and sections of this part applying to HUD programs in order from most protective to least protective hazard reduction requirements. The summary of hazard reduction requirements in this table is not complete. Readers must refer to relevant subpart for complete requirements.

Level of protection	Subpart, section, and type of assistance	Hazard reduction requirements
1.....	Subpart L, Public housing. Subpart G, Sec. 35.630, Multifamily mortgage insurance for conversions and major rehabilitations.	Full abatement of lead-based paint.
2.....	Subpart J, Sec. 35.930(d), Properties receiving	Abatement of lead-based

	more than \$25,000 per unit in rehabilitation assistance.	paint hazards.
3.....	Subpart G, Sec. 35.620, Multifamily mortgage insurance for properties constructed before 1960, other than conversions and major rehabilitations. Subpart H, Sec. 35.715, Project-based assistance for multifamily properties receiving more than \$5,000 per unit. Subpart I, HUD-owned multifamily property. Subpart J, Sec. 35.930(c), Properties receiving more than \$5,000 and up to \$25,000 per unit in rehabilitation assistance.	Interim controls.
4.....	Subpart F, HUD-owned single family properties. Subpart H, Sec. 35.720, Project-based rental assistance for multifamily properties receiving up to \$5,000 per unit and single family properties. Subpart K, Acquisition, leasing, support services, or operation. Subpart M, Tenant-based rental assistance.	Paint stabilization.
5.....	Subpart G, Sec. 35.625, Multifamily mortgage insurance for properties constructed after 1959.	Ongoing lead-based paint maintenance.
6.....	Subpart J, Sec. 35.930(b), Properties receiving up to and including \$5,000 in rehabilitation assistance.	Safe work practices during rehabilitation.

Sec. 35.105 Effective dates.

The effective date for subparts B through R of this part is September 15, 2000, except that the effective date for prohibited methods of paint removal, described in Sec. 35.140, is November 15, 1999. Subparts F through M of this part provide further information on the application of the effective date to specific programs. Before September 15, 2000, a designated party has the option of following the procedures in subparts B through R of this part, or complying with current HUD lead-based paint regulations.

Sec. 35.106 Information collection requirements.

The information collection requirements contained in this part have been approved by the Office of Management and Budget (OMB) in accordance with the requirements of the Paperwork Reduction Act of 1995 (44 U.S.C. 2501-3520), and have been assigned OMB control number 2539-0009. An agency may not conduct or sponsor, and a person is not required to respond to, a collection of information unless the collection displays a valid control number.

Sec. 35.110 Definitions.

Abatement means any set of measures designed to permanently eliminate lead-based paint or lead-based paint hazards (see definition of "permanent"). Abatement includes:

- (1) The removal of lead-based paint and dust-lead hazards, the permanent enclosure or encapsulation of lead-based paint, the replacement of components or fixtures painted with lead-based paint, and the removal or permanent covering of soil-lead hazards; and

(2) All preparation, cleanup, disposal, and post abatement clearance testing activities associated with such measures.

Act means the Lead-Based Paint Poisoning Prevention Act, as amended, 42 U.S.C. 4822 et seq.

Bare soil means soil or sand not covered by grass, sod, other live ground covers, wood chips, gravel, artificial turf, or similar covering.

Certified means licensed or certified to perform such activities as risk assessment, lead-based paint inspection, or abatement supervision, either by a State or Indian tribe with a lead-based paint certification program authorized by the Environmental Protection Agency (EPA), or by the EPA, in accordance with 40 CFR part 745, subparts L or Q.

Chewable surface means an interior or exterior surface painted with lead-based paint that a young child can mouth or chew. A chewable surface is the same as an "accessible surface" as defined in 42 U.S.C. 4851b(2)). Hard metal substrates and other materials that cannot be dented by the bite of a young child are not considered chewable.

Clearance examination means an activity conducted following lead-based paint hazard reduction activities to determine that the hazard reduction activities are complete and that no soil-lead hazards or settled dust-lead hazards, as defined in this part, exist in the dwelling unit or worksite. The clearance process includes a visual assessment and collection and analysis of environmental samples. Dust-lead standards for clearance are found at Sec. 35.1320.

CILP recipient means an owner of a multifamily property which is undergoing rehabilitation funded by the Flexible Subsidy-Capital Improvement Loan Program (CILP).

Common area means a portion of a residential property that is available for use by occupants of more than one dwelling unit. Such an area may include, but is not limited to, hallways, stairways, laundry and recreational rooms, playgrounds, community centers, on-site day care facilities, garages and boundary fences.

Component means an architectural element of a dwelling unit or common area identified by type and location, such as a bedroom wall, an exterior window sill, a baseboard in a living room, a kitchen floor, an interior window sill in a bathroom, a porch floor, stair treads in a common stairwell, or an exterior wall.

Composite sample means a collection of more than one sample of the same medium (e.g., dust, soil or paint) from the same type of surface (e.g., floor, interior window sill, or window trough), such that multiple samples can be analyzed as a single sample.

Containment means the physical measures taken to ensure that dust and debris created or released during lead-based paint hazard reduction are not spread, blown or tracked from inside to outside of the worksite.

Designated party means a Federal agency, grantee, subrecipient, participating jurisdiction, housing agency, Indian Tribe, tribally designated housing entity (TDHE), sponsor, or property owner responsible for complying with applicable requirements.

Deteriorated paint means any interior or exterior paint or other coating that is peeling, chipping, chalking or cracking, or any paint or coating located on an interior or exterior surface or fixture that is otherwise damaged or separated from the substrate.

Dry sanding means sanding without moisture and includes both hand and machine sanding.

Dust-lead hazard means surface dust that contains a dust-lead loading (area concentration of lead) equal to or exceeding the levels promulgated by the EPA at 40 CFR 745.65 or, if such levels are not in effect, the standards for dust-lead hazards in Sec. 35.1320.

Dwelling unit means a:

- (1) Single-family dwelling, including attached structures such as porches and stoops; or
- (2) Housing unit in a structure that contains more than 1 separate housing unit, and in which each such unit is used or occupied, or intended to be used or occupied, in whole or in part, as the home or separate living quarters of 1 or more persons.

Encapsulation means the application of a covering or coating that acts as a barrier between the lead-based paint and the environment and that relies for its durability on adhesion between the encapsulant and the painted surface, and on the integrity of the existing bonds between paint layers and between the paint and the substrate. Encapsulation may be used as a method of abatement if it is designed and performed so as to be permanent (see definition of "permanent").

Enclosure means the use of rigid, durable construction materials that are mechanically fastened to the substrate in order to act as a barrier between lead-based paint and the environment. Enclosure may be used as a

method of abatement if it is designed to be permanent (see definition of "permanent").

Environmental intervention blood lead level means a confirmed concentration of lead in whole blood equal to or greater than 20 µg/dL (micrograms of lead per deciliter) for a single test or 15-19 µg/dL in two tests taken at least 3 months apart.

Evaluation means a risk assessment, a lead hazard screen, a lead-based paint inspection, paint testing, or a combination of these to determine the presence of lead-based paint hazards or lead-based paint.

Expected to reside means there is actual knowledge that a child will reside in a dwelling unit reserved for the elderly or designated exclusively for persons with disabilities. If a resident woman is known to be pregnant, there is actual knowledge that a child will reside in the dwelling unit.

Federal agency means the United States or any executive department, independent establishment, administrative agency and instrumentality of the United States, including a corporation in which all or a substantial amount of the stock is beneficially owned by the United States or by any of these entities. The term "Federal agency" includes, but is not limited to, Rural Housing Service (formerly Rural Housing and Community Development Service that was formerly Farmer's Home Administration), Resolution Trust Corporation, General Services Administration, Department of Defense, Department of Veterans Affairs, Department of the Interior, and Department of Transportation.

Federally owned property means residential property owned or managed by a Federal agency, or for which a Federal agency is a trustee or conservator.

Firm commitment means a valid commitment issued by HUD or the Federal Housing Commissioner setting forth the terms and conditions upon which a mortgage will be insured or guaranteed.

Friction surface means an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.

g means gram, mg means milligram (thousandth of a gram), and µg means microgram (millionth of a gram).

Grantee means any state or local government, Indian Tribe, IHBG recipient, insular area or nonprofit organization that has been designated

by HUD to administer Federal housing assistance under a program covered by subparts J and K of this part, except the HOME program.

Hard costs of rehabilitation means:

(1) Costs to correct substandard conditions or to meet applicable local rehabilitation standards;

(2) Costs to make essential improvements, including energy-related repairs, and those necessary to permit use by persons with disabilities; and costs to repair or replace major housing systems in danger of failure; and

(3) Costs of non-essential improvements, including additions and alterations to an existing structure; but

(4) Hard costs do not include administrative costs (e.g., overhead for administering a rehabilitation program, processing fees, etc.).

Hazard reduction means measures designed to reduce or eliminate human exposure to lead-based paint hazards through methods including interim controls or abatement or a combination of the two.

HEPA vacuum means a vacuum cleaner device with an included high-efficiency particulate air (HEPA) filter through which the contaminated air flows, operated in accordance with the instructions of its manufacturer. A HEPA filter is one that captures at least 99.97 percent of airborne particles of at least 0.3 micrometers in diameter.

Housing for the elderly means retirement communities or similar types of housing reserved for households composed of one or more persons 62 years of age or more, or other age if recognized as elderly by a specific Federal housing assistance program.

Housing receiving Federal assistance means housing which is covered by an application for HUD mortgage insurance, receives housing assistance payments under a program administered by HUD, or otherwise receives more than \$5,000 in project-based assistance under a Federal housing program administered by an agency other than HUD.

HUD means the United States Department of Housing and Urban Development.

HUD-owned property means residential property owned or managed by HUD, or for which HUD is a trustee or conservator.

Impact surface means an interior or exterior surface that is subject to damage by repeated sudden force, such as certain parts of door frames.

Indian Housing Block Grant (IHBG) recipient means a tribe or a tribally designated housing entity (TDHE) receiving IHBG funds.

Indian tribe means a tribe as defined in the Native American Housing Assistance and Self-Determination Act of 1996 (25 U.S.C. 4101 et seq.)

Inspection (See Lead-based paint inspection).

Insular areas means Guam, the Northern Mariana Islands, the United States Virgin Islands and American Samoa.

Interim controls means a set of measures designed to reduce temporarily human exposure or likely exposure to lead-based paint hazards. Interim controls include, but are not limited to, repairs, painting, temporary containment, specialized cleaning, clearance, ongoing lead-based paint maintenance activities, and the establishment and operation of management and resident education programs.

Interior window sill means the portion of the horizontal window ledge that protrudes into the interior of the room, adjacent to the window sash when the window is closed. The interior window sill is sometimes referred to as the window stool.

Lead-based paint means paint or other surface coatings that contain lead equal to or exceeding 1.0 milligram per square centimeter or 0.5 percent by weight or 5,000 parts per million (ppm) by weight.

Lead-based paint hazard means any condition that causes exposure to lead from dust-lead hazards, soil-lead hazards, or lead-based paint that is deteriorated or present in chewable surfaces, friction surfaces, or impact surfaces, and that would result in adverse human health effects.

Lead-based paint inspection means a surface-by-surface investigation to determine the presence of lead-based paint and the provision of a report explaining the results of the investigation.

Lead hazard screen means a limited risk assessment activity that involves paint testing and dust sampling and analysis as described in 40 CFR 745.227(c) and soil sampling and analysis as described in 40 CFR 745.227(d).

Mortgagee means a lender of a mortgage loan.

Mortgagor means a borrower of a mortgage loan.

Multifamily property means a residential property containing five or more dwelling units.

Occupant means a person who inhabits a dwelling unit.

Owner means a person, firm, corporation, nonprofit organization, partnership, government, guardian, conservator, receiver, trustee, executor, or other judicial officer, or other entity which, alone or with others, owns, holds, or controls the freehold or leasehold title or part of the title to property, with or without actually possessing it. The definition includes a vendee who possesses the title, but does not include a mortgagee or an owner of a reversionary interest under a ground rent lease.

Paint stabilization means repairing any physical defect in the substrate of a painted surface that is causing paint deterioration, removing loose paint and other material from the surface to be treated, and applying a new protective coating or paint.

Paint testing means the process of determining, by a certified lead-based paint inspector or risk assessor, the presence or the absence of lead-based paint on deteriorated paint surfaces or painted surfaces to be disturbed or replaced.

Paint removal means a method of abatement that permanently eliminates lead-based paint from surfaces.

Painted surface to be disturbed means a paint surface that is to be scraped, sanded, cut, penetrated or otherwise affected by rehabilitation work in a manner that could potentially create a lead-based paint hazard by generating dust, fumes, or paint chips.

Participating jurisdiction means any State or local government that has been designated by HUD to administer a HOME program grant.

Permanent means an expected design life of at least 20 years.

Play area means an area of frequent soil contact by children of less than 6 years of age, as indicated by the presence of play equipment (e.g. sandboxes, swing sets, sliding boards, etc.) or toys or other children's possessions, observations of play patterns, or information provided by parents, residents or property owners.

Project-based rental assistance means Federal rental assistance that is tied to a residential property with a specific location and remains with that particular location throughout the term of the assistance.

Public health department means a State, tribal, county or municipal public health department or the Indian Health Service.

Public housing development means a residential property assisted under the United States Housing Act of 1937 (42 U.S.C. 1437 et seq.), but not including housing assisted under section 8 of the 1937 Act.

Reevaluation means a visual assessment of painted surfaces and limited dust and soil sampling conducted periodically following lead-based paint hazard reduction where lead-based paint is still present.

Rehabilitation means the improvement of an existing structure through alterations, incidental additions or enhancements. Rehabilitation includes repairs necessary to correct the results of deferred maintenance, the replacement of principal fixtures and components, improvements to increase the efficient use of energy, and installation of security devices.

Replacement means a strategy of abatement that entails the removal of building components that have surfaces coated with lead-based paint and the installation of new components free of lead-based paint.

Residential property means a dwelling unit, common areas, building exterior surfaces, and any surrounding land, including outbuildings, fences and play equipment affixed to the land, belonging to an owner and available for use by residents, but not including land used for agricultural, commercial, industrial or other non-residential purposes, and not including paint on the pavement of parking lots, garages, or roadways.

Risk assessment means:

(1) An on-site investigation to determine the existence, nature, severity, and location of lead-based paint hazards; and

(2) The provision of a report by the individual or firm conducting the risk assessment explaining the results of the investigation and options for reducing lead-based paint hazards.

Single family property means a residential property containing one through four dwelling units.

Single room occupancy (SRO) housing means housing consisting of zero-bedroom dwelling units that may contain food preparation or sanitary facilities or both (see Zero-bedroom dwelling).

Soil-lead hazard means bare soil on residential property that contains lead equal to or exceeding levels promulgated by the EPA at 40 CFR 745.65 or, if such levels are not in effect, the standards for soil-lead hazards in Sec. 35.1320.

Sponsor means mortgagor (borrower).

Subrecipient means any nonprofit organization selected by the grantee or participating jurisdiction to administer all or a portion of the Federal rehabilitation assistance or other non-rehabilitation assistance, or any such organization selected by a subrecipient of the grantee or participating jurisdiction. An owner or developer receiving Federal rehabilitation assistance or other assistance for a residential property is not considered a subrecipient for the purposes of carrying out that project.

Standard treatments means a series of hazard reduction measures designed to reduce all lead-based paint hazards in a dwelling unit without the benefit of a risk assessment or other evaluation.

Substrate means the material directly beneath the painted surface out of which the components are constructed, including wood, drywall, plaster, concrete, brick or metal.

Target housing means any housing constructed prior to 1978, except housing for the elderly or persons with disabilities (unless a child of less than 6 years of age resides or is expected to reside in such housing for the elderly or persons with disabilities) or any zero-bedroom dwelling. In the case of jurisdictions which banned the sale or use of lead-based paint prior to 1978, HUD may designate an earlier date.

Tenant means the individual named as the lessee in a lease, rental agreement or occupancy agreement for a dwelling unit.

A visual assessment alone is not considered an evaluation for the purposes of this part. Visual assessment means looking for, as applicable:

- (1) Deteriorated paint;
- (2) Visible surface dust, debris and residue as part of a risk assessment or clearance examination; or
- (3) The completion or failure of a hazard reduction measure.

Wet sanding or wet scraping means a process of removing loose paint in which the painted surface to be sanded or scraped is kept wet to minimize the dispersal of paint chips and airborne dust.

Window trough means the area between the interior window sill (stool) and the storm window frame. If there is no storm window, the window trough is the area that receives both the upper and lower window sashes when they are both lowered.

Worksite means an interior or exterior area where lead-based paint hazard reduction activity takes place. There may be more than one worksite in a dwelling unit or at a residential property.

Zero-bedroom dwelling means any residential dwelling in which the living areas are not separated from the sleeping area. The term includes efficiencies, studio apartments, dormitory or single room occupancy housing, military barracks, and rentals of individual rooms in residential dwellings (see Single room occupancy (SRO)).

Sec. 35.115 Exemptions.

(a) Subparts B through R of this part do not apply to the following:

(1) A residential property for which construction was completed on or after January 1, 1978, or, in the case of jurisdictions which banned the sale or residential use of lead-containing paint prior to 1978, an earlier date as HUD may designate (see Sec. 35.160).

(2) A zero-bedroom dwelling unit, including a single room occupancy (SRO) dwelling unit.

(3) Housing for the elderly, or a residential property designated exclusively for persons with disabilities; except this exemption shall not apply if a child less than age 6 resides or is expected to reside in the dwelling unit (see definitions of "housing for the elderly" and "expected to reside" in Sec. 35.110).

(4) Residential property found not to have lead-based paint by a lead-based paint inspection conducted in accordance with Sec. 35.1320(a) (for more information regarding inspection procedures consult the 1997 edition of Chapter 7 of the HUD Guidelines). Results of additional test(s) by a certified lead-based paint inspector may be used to confirm or refute a prior finding.

(5) Residential property in which all lead-based paint has been identified, removed, and clearance has been achieved in accordance with 40 CFR 745.227(b)(e) before September 15, 2000, or in accordance with Secs. 35.1320, 35.1325 and 35.1340 on or after September 15, 2000. This exemption does not apply to residential property where enclosure or encapsulation has been used as a method of abatement.

(6) An unoccupied dwelling unit or residential property that is to be demolished, provided the dwelling unit or property will remain unoccupied until demolition.

(7) A property or part of a property that is not used and will not be used for human residential habitation, except that spaces such as entryways, hallways, corridors, passageways or stairways serving both residential and nonresidential uses in a mixed-use property shall not be exempt.

(8) Any rehabilitation that does not disturb a painted surface.

(9) For emergency actions immediately necessary to safeguard against imminent danger to human life, health or safety, or to protect property from further structural damage (such as when a property has been damaged by a natural disaster, fire, or structural collapse), occupants shall be protected from exposure to lead in dust and debris generated by such emergency actions to the extent practicable, and the requirements of subparts B through R of this part shall not apply. This exemption applies only to repairs necessary to respond to the emergency. The requirements of subparts B through R of this part shall apply to any work undertaken subsequent to, or above and beyond, such emergency actions.

(10) If a Federal law enforcement agency has seized a residential property and owns the property for less than 270 days, Secs. 35.210 and 35.215 shall not apply to the property.

(11) The requirements of subpart K of this part do not apply if the assistance being provided is emergency rental assistance or foreclosure prevention assistance, provided that this exemption shall expire for a dwelling unit no later than 100 days after the initial payment or assistance.

(12) Performance of an evaluation or lead-based paint hazard reduction or lead-based paint abatement on an exterior painted surface as required under this part may be delayed for a reasonable time during a period when weather conditions are unsuitable for conventional construction activities.

(13) Where abatement of lead-based paint hazards or lead-based paint is required by this part and the property is listed or has been determined to be eligible for listing in the National Register of Historic Places or contributing to a National Register Historic District, the designated party may, if requested by the State Historic Preservation Office, conduct interim controls in accordance with Sec. 35.1330 instead of abatement. If interim controls are conducted, ongoing lead-based paint

maintenance and reevaluation shall be conducted as required by the applicable subpart of this part in accordance with Sec. 35.1355.

(b) For the purposes of subpart C of this part, each Federal agency other than HUD will determine whether appropriations are sufficient to implement this rule. If appropriations are not sufficient, subpart C of this part shall not apply to that Federal agency. If appropriations are sufficient, subpart C of this part shall apply.

Sec. 35.120 Options.

(a) Standard treatments. Where interim controls are required by this part, the designated party has the option to presume that lead-based paint or lead-based paint hazards or both are present throughout the residential property. In such a case, evaluation is not required. Standard treatments shall then be conducted in accordance with Sec. 35.1335 on all applicable surfaces, including soil. Standard treatments are completed only when clearance is achieved in accordance with Sec. 35.1340.

(b) Abatement. Where abatement is required by this part, the designated party may presume that lead-based paint or lead-based paint hazards or both are present throughout the residential property. In such a case, evaluation is not required. Abatement shall then be conducted on all applicable surfaces, including soil, in accordance with Sec. 35.1325, and completed when clearance is achieved in accordance with Sec. 35.1340. This option is not available in public housing, where inspection is required.

(c) Lead hazard screen. Where a risk assessment is required, the designated party may choose first to conduct a lead hazard screen in accordance with Sec. 35.1320(b). If the results of the lead hazard screen indicate the need for a full risk assessment (e.g., if the environmental measurements exceed levels established for lead hazard screens in Sec. 35.1320(b)(2)), a complete risk assessment shall be conducted. Environmental samples collected for the lead hazard screen may be used in the risk assessment. If the results of the lead hazard screen do not indicate the need for a follow-up risk assessment, a risk assessment is not required.

(d) Paint testing. Where paint stabilization or interim controls of deteriorated paint surfaces are required by this rule, the designated party has the option to conduct paint testing of all surfaces with non-intact paint. If paint testing indicates the absence of lead-based paint on a specific surface, paint stabilization or interim controls are not required on that surface.

Sec. 35.125 Notice of evaluation and hazard reduction activities.

The following activities shall be conducted if notice is required by subparts D and F through M of this part.

(a) Notice of evaluation or presumption. When evaluation is undertaken and lead-based paint or lead-based paint hazards are found to be present, or if a presumption is made that lead-based paint or lead-based paint hazards are present in accordance with the options described in Sec. 35.120, the designated party shall provide a notice to occupants within 15 calendar days of the date when the designated party receives the report or makes the presumption. A visual assessment alone is not considered an evaluation for the purposes of this part. If only a visual assessment alone is required by this part, and no evaluation is performed, a notice of evaluation or presumption is not required.

(1) The notice of the evaluation shall include:

(i) A summary of the nature, dates, scope and results of the evaluation;

(ii) A contact name, address and telephone number for more information, and to obtain access to the actual evaluation report; and

(iii) The date of the notice.

(2) The notice of presumption shall include:

(i) The nature and scope of the presumption;

(ii) A contact name, address and telephone number for more information; and

(iii) The date of the notice.

(b) Notice of hazard reduction activity. When hazard reduction activities are undertaken, each designated party shall:

(1) Provide a notice to occupants no more than 15 calendar days after the hazard reduction activities (including paint stabilization) have been completed. Notice of hazard reduction shall include, but not be limited to:

(i) A summary of the nature, dates, scope and results (including clearance), of the hazard reduction activities.

(ii) A contact name, address, and telephone number for more information;

(iii) Available information on the location of any remaining lead-based paint in the rooms, spaces or areas where hazard reduction activities were conducted, on a surface-by-surface basis; and

(iv) The date of the notice.

(2) Update the notice, based on reevaluation of the residential property and as any additional hazard reduction work is conducted.

(3) Provision of a notice of hazard reduction is not required if a clearance examination is not required.

(c) Availability of notices of evaluation, presumption, and hazard reduction activities.

(1) The notices of evaluation, presumption, and hazard reduction shall be of a size and type that is easily read by occupants.

(2) To the extent practicable, each notice shall be made available, upon request, in a format accessible to persons with disabilities (e.g., Braille, large type, computer disk, audio tape).

(3) Each notice shall be provided in the occupants' primary language or in the language of the occupants' contract or lease.

(4) The designated party shall provide each notice to the occupants by:

(i) Posting and maintaining it in centrally located common areas and distributing it to any dwelling unit if necessary because the head of household is a person with a known disability; or

(ii) Distributing it to each occupied dwelling unit affected by the evaluation, presumption, or hazard reduction activity or serviced by common areas in which an evaluation, presumption or hazard reduction has taken place.

Sec. 35.130 Lead hazard information pamphlet.

If provision of a lead hazard information pamphlet is required in subparts D and F through M of this part, the designated party shall provide to each occupied dwelling unit to which subparts D and F through M of this part apply, the lead hazard information pamphlet developed by EPA, HUD and the Consumer Product Safety Commission pursuant to section 406 of the Toxic Substances Control Act (15 U.S.C. 2686), or an EPA-approved alternative; except that the designated party need not provide a lead hazard information pamphlet if the designated party can demonstrate that

the pamphlet has already been provided in accordance with the lead-based paint notification and disclosure requirements at Sec. 35.88(a)(1), or 40 CFR 745.107(a)(1) or in accordance with the requirements for hazard education before renovation at 40 CFR part 745, subpart E.

Sec. 35.135 Use of paint containing lead.

(a) New use prohibition. The use of paint containing more than 0.06 percent dry weight of lead on any interior or exterior surface in federally owned housing or housing receiving Federal assistance is prohibited. As appropriate, each Federal agency shall include the prohibition in contracts, grants, cooperative agreements, insurance agreements, guaranty agreements, trust agreements, or other similar documents.

(b) Pre-1978 prohibition. In the case of a jurisdiction which banned the sale or residential use of lead-containing paint before 1978, HUD may designate an earlier date for certain provisions of subparts D and F through M of this part.

Sec. 35.140 Prohibited methods of paint removal.

The following methods shall not be used to remove paint that is, or may be, lead-based paint:

(a) Open flame burning or torching.

(b) Machine sanding or grinding without a high-efficiency particulate air (HEPA) local exhaust control.

(c) Abrasive blasting or sandblasting without HEPA local exhaust control.

(d) Heat guns operating above 1100 degrees Fahrenheit or charring the paint.

(e) Dry sanding or dry scraping, except dry scraping in conjunction with heat guns or within 1.0 ft. (0.30 m.) of electrical outlets, or when treating defective paint spots totaling no more than 2 sq. ft. (0.2 sq. m.) in any one interior room or space, or totaling no more than 20 sq. ft. (2.0 sq. m.) on exterior surfaces.

(f) Paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance in accordance with regulations of the Consumer Product Safety Commission at 16 CFR 1500.3, and/or a hazardous chemical in accordance with the Occupational Safety and Health

Administration regulations at 29 CFR 1910.1200 or 1926.59, as applicable to the work.

Sec. 35.145 Compliance with Federal laws and authorities.

All lead-based paint activities, including waste disposal, performed under this part shall be performed in accordance with applicable Federal laws and authorities. For example, such activities are subject to the applicable environmental review requirements of the National Environmental Policy Act of 1969 (42 U.S.C. 4321 et seq.), the Toxic Substances Control Act, Title IV (15 U.S.C. 2860 et seq.), and other environmental laws and authorities (see, e.g., laws and authorities listed in Sec. 50.4 of this title).

Sec. 35.150 Compliance with other State, tribal, and local laws.

(a) HUD responsibility. If HUD determines that a State, tribal or local law, ordinance, code or regulation provides for evaluation or hazard reduction in a manner that provides a comparable level of protection from the hazards of lead-based paint poisoning to that provided by the requirements of subparts B, C, D, F through M and R of this part and that adherence to the requirements of subparts B, C, D, F through M, and R of this part, would be duplicative or otherwise cause inefficiencies, HUD may modify or waive some or all of the requirements of the subparts in a manner that will promote efficiency while ensuring a comparable level of protection.

(b) Participant responsibility. Nothing in this part is intended to relieve any participant in a program covered by this subpart of any responsibility for compliance with State, tribal or local laws, ordinances, codes or regulations governing evaluation and hazard reduction. If a State, tribal or local law, ordinance, code or regulation defines lead-based paint differently than the Federal definition, the more protective definition (i.e., the lower level) shall be followed in that State, tribal or local jurisdiction.

Sec. 35.155 Minimum requirements.

(a) Nothing in subparts B, C, D, F through M, and R of this part is intended to preclude a designated party or occupant from conducting additional evaluation or hazard reduction measures beyond the minimum requirements established for each program in this regulation. For example, if the applicable subpart requires visual assessment, the designated party may choose to perform a risk assessment in accordance with Sec. 35.1320. Similarly, if the applicable subpart requires interim controls, a designated party or occupant may choose to implement abatement in accordance with Sec. 35.1325.

(b) To the extent that assistance from any of the programs covered by subparts B, C, D, and F through M of this part is used in conjunction with other HUD program assistance, the most protective requirements prevail.

Sec. 35.160 Waivers.

In accordance with Sec. 5.110 of this title, on a case-by-case basis and upon determination of good cause, HUD may, subject to statutory limitations, waive any provision of subparts B, C, D, F through M, and R of this part.

Sec. 35.165 Prior evaluation or hazard reduction.

If an evaluation or hazard reduction was conducted at a residential property or dwelling unit before the property or dwelling unit became subject to the requirements of subparts B, C, D, F through M, and R of this part, such an evaluation, hazard reduction or abatement meets the requirements of subparts B, C, D, F through M, and R of this part and need not be repeated under the following conditions:

(a) Lead-based paint inspection.

(1) A lead-based paint inspection conducted before March 1, 2000, meets the requirements of this part if:

(i) At the time of the inspection the lead-based paint inspector was approved by a State or Indian tribe to perform lead-based paint inspections. It is not necessary that the State or tribal approval program had EPA authorization at the time of the inspection.

(ii) Notwithstanding paragraph (a)(1)(i) of this section, the inspection was conducted and accepted as valid by a housing agency in fulfillment of the lead-based paint inspection requirement of the public and Indian housing program.

(2) A lead-based paint inspection conducted on or after March 1, 2000, must have been conducted by a certified lead-based paint inspector.

(b) Risk assessment.

(1) A risk assessment must be no more than 12 months old to be considered current.

(2) A risk assessment conducted before March 1, 2000, meets the requirements of this part if, at the time of the risk assessment, the risk assessor was approved by a state or Indian Tribe to perform risk

assessments. It is not necessary that the state or tribal approval program had EPA authorization at the time of the risk assessment.

(3) A risk assessment conducted on or after March 1, 2000, must have been conducted by a certified risk assessor.

(4) Paragraph (b) of this section does not apply in a case where a risk assessment is required in response to the identification of a child with an environmental intervention blood lead level. In such a case, the requirements in the applicable subpart for responding to a child with an environmental intervention blood lead level shall apply.

(c) Interim controls. If a residential property is under a program of interim controls and ongoing lead-based paint maintenance and reevaluation activities established pursuant to a risk assessment conducted in accordance with paragraph (b) of this section, the interim controls that have been conducted meet the requirements of this part if clearance was achieved after such controls were implemented. In such a case, the program of interim controls and ongoing activities shall be continued in accordance with the requirements of this part.

(d) Abatement.

(1) An abatement conducted before March 1, 2000, meets the requirements of this part if:

(i) At the time of the abatement the abatement supervisor was approved by a State or Indian tribe to perform lead-based paint abatement. It is not necessary that the State or tribal approval program had EPA authorization at the time of the abatement.

(ii) Notwithstanding paragraph (d)(1)(i) of this section, it was conducted and accepted by a housing agency in fulfillment of the lead-based paint abatement requirement of the public housing program or by an Indian housing authority (as formerly defined under the U.S. Housing Act of 1937) in fulfillment of the lead-based paint requirement of the Indian housing program formerly funded under the U.S. Housing Act of 1937.

(2) An abatement conducted on or after March 1, 2000, must have been conducted under the supervision of a certified lead-based paint abatement supervisor.

[64 FR 50208, Sept. 15, 1999; 65 FR 3387, Jan. 21, 2000]

Sec. 35.170 Noncompliance with the requirements of subparts B through R of this part.

(a) Monitoring and enforcement. A designated party who fails to comply with any requirement of subparts B, C, D, F through M, and R of this part shall be subject to the sanctions available under the relevant Federal housing assistance or ownership program and may be subject to other penalties authorized by law.

(b) A property owner who informs a potential purchaser or occupant of lead-based paint or possible lead-based paint hazards in a residential property or dwelling unit, in accordance with subpart A of this part, is not relieved of the requirements to evaluate and reduce lead-based paint hazards in accordance with subparts B through R of this part as applicable.

Sec. 35.175 Records.

The designated party, as specified in subparts C, D, and F through M of this part, shall keep a copy of each notice, evaluation, and clearance or abatement report required by subparts C, D, and F through M of this part for at least three years. Those records applicable to a portion of a residential property for which ongoing lead-based paint maintenance and/or reevaluation activities are required shall be kept and made available for the Department's review, until at least three years after such activities are no longer required.

Subpart C Disposition of Residential Property Owned by a Federal Agency Other Than HUD

Source: 64 FR 50208, Sept. 15, 1999, unless otherwise noted.

Sec. 35.200 Purpose and applicability.

The purpose of this subpart C is to establish procedures to eliminate as far as practicable lead-based paint hazards prior to the sale of a residential property that is owned by a Federal agency other than HUD. The requirements of this subpart apply to any residential property offered for sale on or after September 15, 2000.

Sec. 35.205 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.210 Disposition of residential property constructed before 1960.

(a) Evaluation. The Federal agency shall conduct a risk assessment and a lead-based paint inspection in accordance with 40 CFR 745.227 before the closing of the sale.

(b) Abatement of lead-based paint hazards. The risk assessment used for the identification of hazards to be abated shall have been performed no more than 12 months before the beginning of the abatement. The Federal agency shall abate all identified lead-based paint hazards in accordance with 40 CFR 745.227. Abatement is completed when clearance is achieved in accordance with 40 CFR 745.227. Where abatement of lead-based paint hazards is not completed before the closing of the sale, the Federal agency shall be responsible for assuring that abatement is carried out by the purchaser before occupancy of the property as target housing and in accordance with 40 CFR 745.227.

Sec. 35.215 Disposition of residential property constructed after 1959 and before 1978.

The Federal agency shall conduct a risk assessment and a lead-based paint inspection in accordance with 40 CFR 745.227. Evaluation shall be completed before closing of the sale according to a schedule determined by the Federal agency. The results of the risk assessment and lead-based paint inspection shall be made available to prospective purchasers as required in subpart A of this part.

Subpart D Project-Based Assistance Provided by a Federal Agency Other Than HUD

Source: 64 FR 50209, Sept. 15, 1999, unless otherwise noted.

Sec. 35.300 Purpose and applicability.

The purpose of this subpart D is to establish procedures to eliminate as far as practicable lead-based paint hazards in a residential property that receives more than \$5,000 annually per project in project-based assistance on or after September 15, 2000, under a program administered by a Federal agency other than HUD.

Sec. 35.305 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.310 Notices and pamphlet.

(a) Notice. A notice of evaluation or hazard reduction shall be provided to the occupants in accordance with Sec. 35.125.

(b) Lead hazard information pamphlet. The owner shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.315 Risk assessment.

Each owner shall complete a risk assessment in accordance with 40 CFR 745.227(d). Each risk assessment shall be completed in accordance with the schedule established by the Federal agency.

Sec. 35.320 Hazard reduction.

Each owner shall conduct interim controls consistent with the findings of the risk assessment report. Hazard reduction shall be conducted in accordance with subpart R of this part.

Sec. 35.325 Child with an environmental intervention blood lead level.

If a child less than 6 years of age living in a federally assisted dwelling unit has an environmental intervention blood lead level, the owner shall immediately conduct a risk assessment in accordance with 40 CFR 745.227(d). Interim controls of identified lead-based paint hazards shall be conducted in accordance with Sec. 35.1330. Interim controls are complete when clearance is achieved in accordance with Sec. 35.1340. The Federal agency shall establish a timetable for completing risk assessments and hazard reduction when an environmental intervention blood lead level child is identified.

Subpart E [Reserved]

Subpart F_HUD-Owned Single Family Property

Source: 64 FR 50209, Sept. 15, 1999, unless otherwise noted.

Sec. 35.500 Purpose and applicability.

The purpose of this subpart F is to establish procedures to eliminate as far as practicable lead-based paint hazards in HUD-owned single family properties that have been built before 1978 and are sold with mortgages insured under a program administered by HUD. The requirements of this subpart apply to any such residential properties offered for sale on or after September 15, 2000. Sec. 35.505 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.510 Required procedures.

(a) The following activities shall be conducted for all properties to which this subpart is applicable:

(1) A visual assessment of all painted surfaces in order to identify deteriorated paint;

(2) Paint stabilization of all deteriorated paint in accordance with Sec. 35.1330(a) and (b); and

(3) Clearance in accordance with Sec. 35.1340.

(b) Occupancy shall not be permitted until all required paint stabilization is complete and clearance is achieved.

(c) If paint stabilization and clearance are not completed before the closing of the sale, the Department shall assure that paint stabilization and clearance are carried out pursuant to subpart R of this part by the purchaser before occupancy.

Subpart G_Multifamily Mortgage Insurance

Source: 64 FR 50209, Sept. 15, 1999, unless otherwise noted.

Sec. 35.600 Purpose and applicability.

The purpose of this subpart G is to establish procedures to eliminate as far as practicable lead-based paint hazards in a multifamily residential property for which HUD is the owner of the mortgage or the owner receives mortgage insurance, under a program administered by HUD.

Sec. 35.605 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.610 Exemption.

An application for insurance in connection with a refinancing transaction where an appraisal is not required under the applicable procedures established by HUD is excluded from the coverage of this subpart.

Sec. 35.615 Notices and pamphlet.

(a) Notice. If evaluation or hazard reduction is undertaken, the sponsor shall provide a notice to occupants in accordance with Sec. 35.125. A visual assessment alone is not considered an evaluation for the purposes of this part.

(b) Lead hazard information pamphlet. The sponsor shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.620 Multifamily insured property constructed before 1960.

Except as provided in Sec. 35.630, the following requirements apply to multifamily insured property constructed before 1960:

(a) Risk assessment. Before the issuance of a firm commitment the sponsor shall conduct a risk assessment in accordance with Sec. 35.1320(b).

(b) Interim controls.

(1) The sponsor shall conduct interim controls in accordance with Sec. 35.1330 to treat the lead-based paint hazards identified in the risk assessment. Interim controls are considered completed when clearance is achieved in accordance with Sec. 35.1340.

(2) The sponsor shall complete interim controls before the issuance of the firm commitment or interim controls may be made a condition of the Federal Housing Administration (FHA) firm commitment, with sufficient repair or rehabilitation funds escrowed at initial endorsement of the FHA insured loan.

(c) Ongoing lead-based paint maintenance activities. Before the issuance of the firm commitment, the sponsor shall agree to incorporate ongoing lead-based paint maintenance into regular building operations and maintenance activities in accordance with Sec. 35.1355(a).

Sec. 35.625 Multifamily insured property constructed after 1959 and before 1978.

Except as provided in Sec. 35.630, before the issuance of the firm commitment, the sponsor shall agree to incorporate ongoing lead-based paint maintenance practices into regular building operations, in accordance with Sec. 35.1355(a). Sec. 35.630 Conversions and major rehabilitations.

The procedures and requirements of this section apply when a nonresidential property constructed before 1978 is to be converted to residential use, or a residential property constructed before 1978 is to

undergo rehabilitation that is estimated to cost more than 50 percent of the estimated replacement cost after rehabilitation.

(a) Lead-based paint inspection. Before issuance of a firm FHA commitment, the sponsor shall conduct a lead-based paint inspection in accordance with Sec. 35.1320(a).

(b) Abatement. Prior to occupancy, the sponsor shall conduct abatement of all lead-based paint on the property in accordance with Sec. 35.1325. Whenever practicable, abatement shall be achieved through the methods of paint removal or component replacement. If paint removal or component replacement are not practicable, that is if such methods would damage substrate material considered architecturally significant, permanent encapsulation or enclosure may be used as methods of abatement. Abatement is considered complete when clearance is achieved in accordance with Sec. 35.1340. If encapsulation or enclosure is used, the sponsor shall incorporate ongoing lead-based paint maintenance into regular building operations maintenance activities in accordance with Sec. 35.1355.

(c) Historic properties. Section 35.115(a)(13) applies to this section.

Subpart H--Project-Based Assistance

Source: 64 FR 50210, Sept. 15, 1999, unless otherwise noted.

Sec. 35.700 Purpose and applicability.

(a) This subpart H establishes procedures to eliminate as far as practicable lead-based paint hazards in residential properties receiving project-based assistance under a HUD program. The requirements of this subpart apply only to the assisted dwelling units in a covered property and any common areas servicing those dwelling units. This subpart does not apply to housing receiving rehabilitation assistance or to public housing, which are covered by subparts J and M of this part, respectively.

(b) For the purposes of competitively awarded grants under the Housing Opportunities for Persons with AIDS Program (HOPWA), the Supportive Housing Program (42 U.S.C. 11381-11389) and the Shelter Plus Care Program project-based rental assistance and sponsor-based rental assistance components (42 U.S.C. 11402-11407), the requirements of this subpart shall apply to grants awarded pursuant to Notices of Funding Availability published on or after October 1, 1999. For the purposes of formula grants awarded under the Housing Opportunities for Persons with AIDS Program (HOPWA) (42 U.S.C. 12901 et seq.), the requirements of this

subpart shall apply to activities for which program funds are first obligated on or after September 15, 2000.

Sec. 35.705 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.710 Notices and pamphlet.

(a) Notice. If evaluation or hazard reduction is undertaken, each owner shall provide a notice to occupants in accordance with Sec. 35.125. A visual assessment alone is not considered an evaluation for the purposes of this part.

(b) Lead hazard information pamphlet. The owner shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.715 Multifamily properties receiving more than \$5,000 per unit.

The requirements of this section shall apply to a multifamily residential property that is receiving an average of more than \$5,000 per assisted dwelling unit annually in project-based assistance.

(a) Risk assessment. Each owner shall complete a risk assessment in accordance with Sec. 35.1320(b). A risk assessment is considered complete when the owner receives the risk assessment report. Until the owner conducts a risk assessment as required by this section, the requirements of paragraph (d) of this section shall apply. After the risk assessment has been conducted the requirements of paragraphs (b) and (c) of this section shall apply. Each risk assessment shall be completed no later than the following schedule or a schedule otherwise determined by HUD:

(1) Risk assessments shall be completed on or before September 17, 2001, in a multifamily residential property constructed before 1960.

(2) Risk assessments shall be completed on or before September 15, 2003, in a multifamily residential property constructed after 1959 and before 1978.

(b) Interim controls. Each owner shall conduct interim controls in accordance with Sec. 35.1330 to treat the lead-based paint hazards identified in the risk assessment. Interim controls are considered completed when clearance is achieved in accordance with Sec. 35.1340. Interim controls shall be completed no later than the following schedule:

(1) In units occupied by families with children of less than 6 years of age and in common areas servicing those units, interim controls shall be completed no later than 90 days after the completion of the risk assessment. In units in which a child of less than 6 years of age moves in after the completion of the risk assessment, interim controls shall be completed no later than 90 days after the move-in.

(2) In all other dwelling units, common areas, and the remaining portions of the residential property, interim controls shall be completed no later than 12 months after completion of the risk assessment for those units.

(c) Ongoing lead-based paint maintenance and reevaluation activities. Effective immediately after completion of the risk assessment required in Sec. 35.715(a), the owner shall incorporate ongoing lead-based paint maintenance and reevaluation into the regular building operations in accordance with Sec. 35.1355, unless all lead-based paint has been removed. If the reevaluation identifies new lead-based paint hazards, the owner shall conduct interim controls in accordance with Sec. 35.1330.

(d) Transitional requirements--

(1) Effective date. The requirements of this paragraph shall apply effective September 15, 2000, and continuing until the applicable date specified in Sec. 35.715(a)(1) or (2) or until the owner conducts a risk assessment, whichever is first.

(2) Definitions and other general requirements that apply to this paragraph are found in subpart B of this part.

(3) Ongoing lead-based paint maintenance. The owner shall incorporate ongoing lead-based paint maintenance activities into regular building operations, in accordance with Sec. 35.1355(a), except that clearance is not required.

(4) Child with an environmental intervention blood lead level. If a child of less than 6 years of age living in a dwelling unit covered by this paragraph has an environmental intervention blood lead level, the owner shall comply with the requirements of Sec. 35.730.

Sec. 35.720 Multifamily properties receiving up to \$5,000 per unit, and single family properties.

Effective September 15, 2000, the requirements of this section shall apply to a multifamily residential property that is receiving an average of up to and including \$5,000 per assisted dwelling unit annually in project-based assistance and to a single family residential property that

is receiving project-based assistance through the Section 8 Moderate Rehabilitation program, the Project-Based Certificate program, or any other HUD program providing project-based assistance.

(a) Activities at initial and periodic inspection.--

(1) Visual assessment. During the initial and periodic inspections, an inspector trained in visual assessment for deteriorated paint surfaces in accordance with procedures established by HUD shall conduct a visual assessment of all painted surfaces in order to identify any deteriorated paint.

(2) Paint stabilization. The owner shall stabilize each deteriorated paint surface in accordance with Sec. 35.1330(a) and Sec. 35.1330(b) before occupancy of a vacant dwelling unit or, where a unit is occupied, within 30 days of notification of the results of the visual assessment. Paint stabilization is considered complete when clearance is achieved in accordance with Sec. 35.1340.

(3) Notice. The owner shall provide a notice to occupants in accordance with Secs. 35.125(b)(1) and (c) describing the results of the clearance examination.

(b) Ongoing lead-based paint maintenance activities. The owner shall incorporate ongoing lead-based paint maintenance activities into regular building operations in accordance with Sec. 35.1355(a), unless all lead-based paint has been removed.

(c) Child with an environmental intervention blood lead level. If a child of less than 6 years of age living in a dwelling unit covered by this section has an environmental intervention blood lead level, the owner shall comply with the requirements of Sec. 35.730.

Sec. 35.725 Section 8 Rent adjustments.

HUD may, subject to the availability of appropriations for Section 8 contract amendments, on a project by project basis for projects receiving Section 8 project-based assistance, provide adjustments to the maximum monthly rents to cover the costs of evaluation for and reduction of lead-based paint hazards, as defined in section 1004 of the Residential Lead-Based Paint Hazard Reduction Act of 1992.

Sec. 35.730 Child with an environmental intervention blood lead level.

(a) Risk assessment. Within 15 days after being notified by a public health department or other medical health care provider that a child of less than 6 years of age living in a dwelling unit to which this subpart

applies has been identified as having an environmental intervention blood lead level, the owner shall complete a risk assessment of the dwelling unit in which the child lived at the time the blood was last sampled and of common areas servicing the dwelling unit. The risk assessment shall be conducted in accordance with 35.1320(b) and is considered complete when the owner receives the risk assessment report. The requirements of this paragraph apply regardless of whether the child is or is not still living in the unit when the owner receives the notification of the environmental intervention blood lead level. The requirements of this paragraph (a) shall not apply if the owner conducted a risk assessment of the unit and common areas servicing the unit between the date the child's blood was last sampled and the date when the owner received the notification of the environmental intervention blood lead level. If a public health department has already conducted an evaluation of the dwelling unit, the requirements of this paragraph shall not apply.

(b) Verification. After receiving information from a person who is not a medical health care provider that a child of less than 6 years of age living in a dwelling unit covered by this subpart may have an environmental intervention blood lead level, the owner shall immediately verify the information with the public health department or other medical health care provider. If that department or provider verifies that the child has an environmental intervention blood lead level, such verification shall constitute notification, and the owner shall take the action required in paragraphs (a) and (c) of this section.

(c) Hazard reduction. Within 30 days after receiving the report of the risk assessment conducted pursuant to paragraph (a) of this section or the evaluation from the public health department, the owner shall complete the reduction of identified lead-based paint hazards in accordance with Sec. 35.1325 or Sec. 35.1330. Hazard reduction is considered complete when clearance is achieved in accordance with Sec. 35.1340 and the clearance report states that all lead-based paint hazards identified in the risk assessment have been treated with interim controls or abatement or the public health department certifies that the lead-based paint hazard reduction is complete. The requirements of this paragraph do not apply if the owner, between the date the child's blood was last sampled and the date the owner received the notification of the environmental intervention blood lead level, already conducted a risk assessment of the unit and common areas servicing the unit and completed reduction of identified lead-based paint hazards.

(d) Notice. If evaluation or hazard reduction is undertaken, each owner shall provide a notice to occupants in accordance with Sec. 35.125.

(e) Reporting requirement. The owner shall report the name and address of a child identified as having an environmental intervention

blood lead level to the public health department within 5 working days of being so notified by any other medical health care professional.

Subpart I_HUD-Owned and Mortgagee-in-Possession Multifamily Property

Source: 64 FR 50211, Sept. 15, 1999, unless otherwise noted.

Sec. 35.800 Purpose and applicability.

The purpose of this subpart I is to establish procedures to eliminate as far as practicable lead-based paint hazards in a HUD-owned multifamily residential property or a multifamily residential property for which HUD is identified as mortgagee-in-possession. The requirements of this subpart apply to any such property that is offered for sale or held or managed on or after September 15, 2000.

Sec. 35.805 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.810 Notices and pamphlet.

(a) Notices. When evaluation or hazard reduction is undertaken, the Department shall provide a notice to occupants in accordance with Sec. 35.125. A visual assessment alone is not considered an evaluation for the purposes of this part.

(b) Lead hazard information pamphlet. HUD shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.815 Evaluation.

HUD shall conduct a risk assessment and a lead-based paint inspection in accordance with Sec. 35.1320(a) and (b). For properties to which this subpart applies on September 15, 2000, the lead-based paint inspection and risk assessment shall be conducted no later than December 15, 2000, or before publicly advertising the property for sale, whichever is sooner. For properties to which this subpart becomes applicable after September 15, 2000, the lead-based paint inspection and risk assessment shall be conducted no later than 90 days after this subpart becomes applicable or before publicly advertising the property for sale, whichever is sooner.

Sec. 35.820 Interim controls.

HUD shall conduct interim controls in accordance with Sec. 35.1330 to treat the lead-based paint hazards identified in the evaluation conducted

in accordance with Sec. 35.815. Interim controls are considered completed when clearance is achieved in accordance with Sec. 35.1340. Interim controls of all lead-based paint hazards shall be completed no later than the following schedule:

(a) In units occupied by families with children of less than 6 years of age and in common areas servicing those units, interim controls shall be completed no later than 90 days after the completion of the risk assessment. In units in which a child of less than 6 years of age moves in after the completion of the risk assessment, interim controls shall be completed no later than 90 days after the move-in.

(b) In all other dwelling units, common areas, and the remaining portions of the residential property, interim controls shall be completed no later than 12 months after completion of the risk assessment for those units.

(c) If conveyance of the title by HUD at a sale of a HUD-owned property or a foreclosure sale caused by HUD when HUD is mortgagee-in-possession occurs before the schedule in paragraphs (a) and (b) of this section, HUD shall complete interim controls before conveyance or foreclosure, or HUD shall be responsible for assuring that interim controls are carried out by the purchaser. If interim controls are made a condition of sale, such controls shall be completed according to the following schedule:

(1) In units occupied by families with children of less than 6 years of age and in common areas servicing those units, interim controls shall be completed no later than 90 days after the date of the closing of the sale. In units in which a child of less than 6 years of age moves in after the closing of the sale, interim controls shall be completed no later than 90 days after the move-in.

(2) In all other dwelling units, in common areas servicing those units, and in the remaining portions of the residential property, interim controls shall be completed no later than 180 days after the closing of the sale. Sec. 35.825 Ongoing lead-based paint maintenance and reevaluation.

HUD shall incorporate ongoing lead-based paint maintenance and reevaluation, in accordance with Sec. 35.1355, into regular building operations if HUD retains ownership of the residential property for more than 12 months.

Sec. 35.830 Child with an environmental intervention blood lead level.

(a) Risk assessment. Within 15 days after being notified by a public health department or other medical health care provider that a child of less than 6 years of age living in a multifamily dwelling unit owned by HUD (or where HUD is mortgagee-in-possession) has been identified as having an environmental intervention blood lead level, HUD shall complete a risk assessment of the dwelling unit in which the child lived at the time the blood was last sampled and of common areas servicing the dwelling unit. The risk assessment shall be conducted in accordance with Sec. 35.1320(b) and is considered complete when HUD receives the risk assessment report. The requirements of this paragraph apply regardless of whether the child is or is not still living in the unit when HUD receives the notification of the environmental intervention blood lead level. The requirements of this paragraph do not apply if HUD conducted a risk assessment of the unit and common areas servicing the unit between the date the child's blood was last sampled and the date when HUD received the notification of the environmental intervention blood lead level. If a public health department has already conducted an evaluation of the dwelling unit, the requirements of this paragraph shall not apply.

(b) Verification. After receiving information from a person who is not a medical health care provider that a child of less than 6 years of age living in a multifamily dwelling unit owned by HUD (or where HUD is mortgagee-in-possession) may have an environmental intervention blood lead level, HUD shall immediately verify the information with the public health department or other medical health care provider. If that department or provider verifies that the child has an environmental intervention blood lead level, such verification shall constitute notification, and HUD shall take the action required in paragraphs (a) and (c) of this section.

(c) Hazard reduction. Within 30 days after receiving the report of the risk assessment conducted pursuant to paragraph (a) of this section or the evaluation from the public health department, HUD shall complete the reduction of lead-based paint hazards identified in the risk assessment in accordance with Sec. 35.1325 or Sec. 35.1330. Hazard reduction is considered complete when clearance is achieved in accordance with Sec. 35.1340 and the clearance report states that all lead-based paint hazards identified in the risk assessment have been treated with interim controls or abatement or the public health department certifies that the lead-based paint hazard reduction is complete. The requirements of this paragraph do not apply if HUD, between the date the child's blood was last sampled and the date HUD received the notification of the environmental intervention blood lead level, conducted a risk assessment of the unit and common areas servicing the unit and completed reduction of identified lead-based paint hazards.

(d) Reporting requirement. HUD shall report the name and address of a child identified as having an environmental intervention blood lead level

to the public health department within 5 working days of being so notified by any other health professional.

(e) Closing. If the closing of a sale is scheduled during the period when HUD is responding to a case of a child with an environmental intervention blood lead level, HUD may arrange for the completion of the procedures required by Sec. 35.830(a)-(d) by the purchaser within a reasonable period of time.

(f) Extensions. The Assistant Secretary for Housing-Federal Housing Commissioner or designee may consider and approve a request for an extension of deadlines established by this section for a lead-based paint inspection, risk assessment, hazard reduction, and reporting. Such a request may be considered, however, only during the first six months during which HUD is owner or mortgagee-in-possession of a multifamily property.

Subpart J_Rehabilitation

Source: 64 FR 50212, Sept. 15, 1999, unless otherwise noted.

Sec. 35.900 Purpose and applicability.

(a) Purpose and applicability.

(1) The purpose of this subpart J is to establish procedures to eliminate as far as practicable lead-based paint hazards in a residential property that receives Federal rehabilitation assistance under a program administered by HUD. Rehabilitation assistance does not include project-based rental assistance, rehabilitation mortgage insurance or assistance to public housing.

(2) The requirements of this subpart shall not apply to HOME funds which are committed to a specific project in accordance with Sec. 92.2 of this title before September 15, 2000. Such projects shall be subject to the requirements of Sec. 92.355 of this title that were in effect at the time of project commitment or the requirements of this subpart.

(3) For the purposes of the Indian Housing Block Grant program and the CDBG Entitlement program, the requirements of this subpart shall apply to all residential rehabilitation activities (except those otherwise exempted) for which funds are first obligated on or after September 15, 2000. For the purposes of the State, HUD-Administered Small Cities, and Insular Areas CDBG programs, the requirements of this subpart shall apply to all covered activities (except those otherwise exempted) for which grant funding is awarded to the unit of local government by the State or

HUD, as applicable, on or after September 15, 2000. For the purposes of the Emergency Shelter Grant Program (42 U.S.C. 11371-11378) and the formula grants awarded under the Housing Opportunities for Persons with AIDS Program (HOPWA) (42 U.S.C. 12901 et. seq.), the requirements of this subpart shall apply to activities for which program funds are first obligated on or after September 15, 2000.

(4) For the purposes of competitively awarded grants under the HOPWA Program and the Supportive Housing Program (42 U.S.C. 11481-11389), the requirements of this subpart shall apply to grants awarded under Notices of Funding Availability published on or after September 15, 2000.

(5) For the purposes of the Indian CDBG program (Sec. 1003.607 of this title), the requirements of this subpart shall not apply to funds whose notice of funding availability is announced or funding letter is sent before September 15, 2000. Such project grantees shall be subject to the regulations in effect at the time of announcement or funding letter.

(b) The grantee or participating jurisdiction may assign to a subrecipient or other entity the responsibilities set forth in this subpart.

Sec. 35.905 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.910 Notices and pamphlet.

(a) Notices. In cases where evaluation or hazard reduction or both are undertaken as part of federally funded rehabilitation, the grantee or participating jurisdiction shall provide a notice to occupants in accordance with Sec. 35.125. A visual assessment alone is not considered an evaluation for the purposes of this part.

(b) Lead hazard information pamphlet. The grantee or participating jurisdiction shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.915 Calculating rehabilitation costs, except for the CILP Program.

(a) Applicability. This section applies to recipients of Federal rehabilitation assistance.

(b) Rehabilitation assistance.

(1) Lead-based paint requirements for rehabilitation fall into three categories that depend on the amount of rehabilitation assistance provided. The three categories are:

- (i) Assistance of up to and including \$5,000 per unit;
- (ii) Assistance of more than \$5,000 per unit up to and including \$25,000 per unit; and
- (iii) Assistance of more than \$25,000 per unit.

(2) For purposes of implementing Secs. 35.930 and 35.935, the amount of rehabilitation assistance is the lesser of two amounts: the average Federal assistance per assisted dwelling unit and the average per unit hard costs of rehabilitation. Federal assistance includes all Federal funds assisting the project, regardless of the use of the funds. Federal funds being used for acquisition of the property are to be included as well as funds for construction, permits, fees, and other project costs. The hard costs of rehabilitation include all hard costs, regardless of source, except that the costs of lead-based paint hazard evaluation and hazard reduction activities are not to be included. Costs of site preparation, occupant protection, relocation, interim controls, abatement, clearance, and waste handling attributable to compliance with the requirements of this part are not to be included in the hard costs of rehabilitation. All other hard costs are to be included, regardless of whether the source of funds is Federal or non-Federal, public or private.

(c) Calculating rehabilitation assistance in properties with both assisted and unassisted dwelling units. For a residential property that includes both federally assisted and non-assisted units, the rehabilitation costs and Federal assistance associated with non-assisted units are not included in the calculations of the average per unit hard costs of rehabilitation and the average Federal assistance per unit.

(1) The average per unit hard costs of rehabilitation for the assisted units is calculated using the following formula:

$$\text{Per Unit Hard Costs of Rehabilitation } \$ = (a/c) + (b/d)$$

Where:

a = Rehabilitation hard costs for all assisted units (not including common areas and exterior surfaces)

b = Rehabilitation hard costs for common areas and exterior painted surfaces

c = Number of federally assisted units

d = Total number of units

(2) The average Federal assistance per assisted dwelling unit is calculated using the following formula:

Per unit Federal assistance = e/c

Where:

e = Total Federal assistance for the project

c = Number of federally assisted units

Sec. 35.925 Examples of determining applicable requirements.

The following examples illustrate how to determine whether the requirements of Secs. 35.930(b), (c), or (d) apply to a dwelling unit receiving Federal rehabilitation assistance (dollar amounts are on a per unit basis):

(a) If the total amount of Federal assistance for a dwelling is \$2,000, and the hard costs of rehabilitation are \$10,000, the lead-based paint requirements would be those described in Sec. 35.930(b), because Federal rehabilitation assistance is up to and including \$5,000.

(b) If the total amount of Federal assistance for a dwelling unit is \$6,000, and the hard costs of rehabilitation are \$2,000, the lead-based paint requirements would be those described in Sec. 35.930(b). Although the total amount of Federal dollars is more than \$5,000, only the \$2,000 of that total can be applied to rehabilitation. Therefore, the Federal rehabilitation assistance is \$2,000 which is not more than \$5,000.

(c) If the total amount of Federal assistance for a unit is \$6,000, and the hard costs of rehabilitation are \$6,000, the lead-based paint requirements are those described in Sec. 35.930(c), because the amount of Federal rehabilitation assistance is more than \$5,000 but not more than \$25,000.

(d) If eight dwelling units in a residential property receive Federal rehabilitation assistance [symbol c in Sec. 35.915(c)(2)] out of a total of 10 dwelling units [d], the total Federal assistance for the rehabilitation project is \$300,000 [e], the total hard costs of rehabilitation for the dwelling units are \$160,000 [a], and the total hard costs of rehabilitation for the common areas and exterior surfaces are \$20,000 [b], then the lead-based paint requirements would be those described in Sec. 35.930(c), because the level of Federal rehabilitation assistance is \$22,000, which is not greater than \$25,000. This is calculated as follows: The total Federal assistance per assisted unit is

\$37,500 (e/c = \$300,000/8), the per unit hard costs of rehabilitation is \$22,000 (a/ c + b/d = \$160,000/8 + \$20,000/10), and the level of Federal rehabilitation assistance is the lesser of \$37,500 and \$22,000.

Sec. 35.930 Evaluation and hazard reduction requirements.

(a) Paint testing. The grantee or participating jurisdiction shall either perform paint testing on the painted surfaces to be disturbed or replaced during rehabilitation activities, or presume that all these painted surfaces are coated with lead-based paint.

(b) Residential property receiving an average of up to and including \$5,000 per unit in Federal rehabilitation assistance. Each grantee or participating jurisdiction shall:

(1) Conduct paint testing or presume the presence of lead-based paint, in accordance with paragraph (a) of this section. If paint testing indicates that the painted surfaces are not coated with lead-based paint, safe work practices and clearance are not required.

(2) Implement safe work practices during rehabilitation work in accordance with Sec. 35.1350 and repair any paint that is disturbed.

(3) After completion of any rehabilitation disturbing painted surfaces, perform a clearance examination of the worksite(s) in accordance with Sec. 35.1340. Clearance is not required if rehabilitation did not disturb painted surfaces of a total area more than that set forth in Sec. 35.1350(d).

(c) Residential property receiving an average of more than \$5,000 and up to and including \$25,000 per unit in Federal rehabilitation assistance. Each grantee or participating jurisdiction shall:

(1) Conduct paint testing or presume the presence of lead-based paint, in accordance with paragraph (a) of this section.

(2) Perform a risk assessment in the dwelling units receiving Federal assistance, in common areas servicing those units, and exterior painted surfaces, in accordance with Sec. 35.1320(b), before rehabilitation begins.

(3) Perform interim controls in accordance with Sec. 35.1330 of all lead-based paint hazards identified pursuant to paragraphs (c)(1) and (c)(2) of this section.

(4) Implement safe work practices during rehabilitation work in accordance with Sec. 35.1350 and repair any paint that is disturbed and is known or presumed to be lead-based paint.

(d) Residential property receiving an average of more than \$25,000 per unit in Federal rehabilitation assistance. Each grantee or participating jurisdiction shall:

(1) Conduct paint testing or presume the presence of lead-based paint in accordance with paragraph (a) of this section.

(2) Perform a risk assessment in the dwelling units receiving Federal assistance and in associated common areas and exterior painted surfaces in accordance with Sec. 35.1320(b) before rehabilitation begins.

(3) Abate all lead-based paint hazards identified by the paint testing or risk assessment conducted pursuant to paragraphs (d)(1) and (d)(2) of this section, in accordance with Sec. 35.1325, except that interim controls are acceptable on exterior surfaces that are not disturbed by rehabilitation and on paint-lead hazards that have an area smaller than the de minimis limits of Sec. 35.1350(d). If abatement of a paint-lead hazard is required, it is necessary to abate only the surface area with hazardous conditions.

(4) Implement safe work practices during rehabilitation work in accordance with Sec. 35.1350 and repair any paint that is disturbed and is known or presumed to be lead-based paint.

[64 FR 50214, Sept. 15, 1999; 65 FR 3387, Jan. 21, 2000]

Sec. 35.935 Ongoing lead-based paint maintenance activities.

In the case of a rental property receiving Federal rehabilitation assistance under the HOME program, the grantee or participating jurisdiction shall require the property owner to incorporate ongoing lead-based paint maintenance activities in regular building operations, in accordance with Sec. 35.1355(a).

Sec. 35.940 Special requirements for insular areas.

If a dwelling unit receiving Federal assistance under a program covered by this subpart is located in an insular area, the requirements of this section shall apply and the requirements of Sec. 35.930 shall not apply. All other sections of this subpart J shall apply. The insular area shall conduct the following activities for the dwelling unit, common areas

servicing the dwelling unit, and the exterior surfaces of the building in which the dwelling unit is located:

(a) Residential property receiving an average of up to and including \$5,000 per unit in Federal rehabilitation assistance.

(1) Implement safe work practices during rehabilitation work in accordance with Sec. 35.1350 and repair any paint that is disturbed by rehabilitation.

(2) After completion of any rehabilitation disturbing painted surfaces, perform a clearance examination of the worksite(s) in accordance with Sec. 35.1340. Clearance shall be achieved before residents are allowed to occupy the worksite(s). Clearance is not required if rehabilitation did not disturb painted surfaces of a total area more than that set forth in Sec. 35.1350(b).

(b) Residential property receiving an average of more than \$5,000 per unit in Federal rehabilitation assistance.

(1) Before beginning rehabilitation, perform a visual assessment of all painted surfaces in order to identify deteriorated paint.

(2) Perform paint stabilization of each deteriorated paint surface and each painted surface being disturbed by rehabilitation, in accordance with Secs. 35.1330(a) and (b).

(3) After completion of all paint stabilization, perform a clearance examination of the affected dwelling units and common areas in accordance with Sec. 35.1340. Clearance shall be achieved before residents are allowed to occupy rooms or spaces in which paint stabilization has been performed.

Subpart K_Acquisition, Leasing, Support Services, or Operation

Source: 64 FR 50214, Sept. 15, 1999, unless otherwise noted.

Sec. 35.1000 Purpose and applicability.

(a) The purpose of this subpart K is to establish procedures to eliminate as far as practicable lead-based paint hazards in a residential property that receives Federal assistance under certain HUD programs for acquisition, leasing, support services, or operation. Acquisition, leasing, support services, and operation do not include mortgage insurance, sale of federally-owned housing, project-based or tenant-based rental assistance, rehabilitation assistance, or assistance to public

housing. For requirements pertaining to those activities or types of assistance, see the applicable subpart of this part.

(b) The grantee or participating jurisdiction may assign to a subrecipient or other entity the responsibilities set forth in this subpart.

(c) (1) The requirements of this subpart shall not apply to HOME funds which are committed to a specific project in accordance with Sec. 92.2 of this title before September 15, 2000. Such projects shall be subject to the requirements of Sec. 92.355 of this title that were in effect at the time of project commitment, or the requirements of this subpart.

(2) For purposes of the CDBG Entitlement program and the Indian Housing Block Grant program, the requirements of this subpart shall apply to activities (except those otherwise exempted) for which funds are first obligated on or after September 15, 2000. For the purposes of the State, HUD-Administered Small Cities, and Insular Areas CDBG programs, the requirements of this subpart shall apply to all covered activities (except those otherwise exempted) for which grant funding is awarded to the unit of local government by the State or HUD, as applicable, on or after September 15, 2000. For the purposes of the Emergency Shelter Grant Program (42 U.S.C. 11371-11378) and the formula grants awarded under the Housing Opportunities for Persons with AIDS Program (HOPWA) (42 U.S.C. 12901 et. seq.), the requirements of this subpart shall apply to activities for which program funds are first obligated on or after September 15, 2000.

(3) For the purposes of competitively awarded grants under the HOPWA Program and the Supportive Housing Program (42 U.S.C. 11481-11389), the requirements of this subpart shall apply to grants awarded under Notices of Funding Availability published on or after September 15, 2000.

(4) For the purposes of the Indian CDBG program (Sec. 1003.607 of this title), the requirements of this subpart shall not apply to funds whose notice of funding availability is announced or funding letter is sent before September 15, 2000. Such project grantees shall be subject to the regulations in effect at the time of announcement or funding letter.

[64 FR 50213, Sept. 15, 1999; 65 FR 3387, Jan. 21, 2000]

Sec. 35.1005 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.1010 Notices and pamphlet.

(a) Notice. In cases where evaluation or hazard reduction, including paint stabilization, is undertaken, each grantee or participating jurisdiction shall provide a notice to residents in accordance with Sec. 35.125. A visual assessment is not considered an evaluation for purposes of this part.

(b) Lead hazard information pamphlet. The grantee or participating jurisdiction shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.1015 Visual assessment, paint stabilization, and maintenance.

If a dwelling unit receives Federal assistance under a program covered by this subpart, each grantee or participating jurisdiction shall conduct the following activities for the dwelling unit, common areas servicing the dwelling unit, and the exterior surfaces of the building in which the dwelling unit is located:

(a) A visual assessment of all painted surfaces in order to identify deteriorated paint;

(b) Paint stabilization of each deteriorated paint surface, and clearance, in accordance with Secs. 35.1330(a) and (b), before occupancy of a vacant dwelling unit or, where a unit is occupied, immediately after receipt of Federal assistance; and

(c) The grantee or participating jurisdiction shall require the incorporation of ongoing lead-based paint maintenance activities into regular building operations, in accordance with Sec. 35.1355(a), if the dwelling unit has a continuing, active financial relationship with a Federal housing assistance program, except that mortgage insurance or loan guarantees are not considered to constitute an active programmatic relationship for the purposes of this part.

(d) The grantee or participating jurisdiction shall provide a notice to occupants in accordance with Secs. 35.125(b)(1) and (c), describing the results of the clearance examination.

Sec. 35.1020 Funding for evaluation and hazard reduction.

The grantee or participating jurisdiction shall determine whether the cost of evaluation and hazard reduction is to be borne by the owner/developer, the grantee or a combination of the owner/developer and the grantee, based on program requirements and local program design.

Subpart L Public Housing Programs

Source: 64 FR 50215, Sept. 15, 1999, unless otherwise noted.

Sec. 35.1100 Purpose and applicability.

The purpose of this subpart L is to establish procedures to eliminate as far as practicable lead-based paint hazards in residential property assisted under the U.S. Housing Act of 1937 (42 U.S.C. 1437 et seq.) but not including housing assisted under section 8 of the 1937 Act.

Sec. 35.1105 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.1110 Notices and pamphlet.

(a) Notice. In cases where evaluation or hazard reduction is undertaken, each public housing agency (PHA) shall provide a notice to residents in accordance with Sec. 35.125. A visual assessment alone is not considered an evaluation for purposes of this part.

(b) Lead hazard information pamphlet. The PHA shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.1115 Evaluation.

(a) A lead-based paint inspection shall be conducted in all public housing unless a lead-based paint inspection that meets the conditions of Sec. 35.165(a) has already been completed. If a lead-based paint inspection was conducted by a lead-based paint inspector who was not certified, the PHA shall review the quality of the inspection, in accordance with quality control procedures established by HUD, to determine whether the lead-based paint inspection has been properly performed and the results are reliable. Lead-based paint inspections of all housing to which this subpart applies shall be completed no later than September 15, 2000. Revisions or augmentations of prior inspections found to be of insufficient quality shall be completed no later than September 17, 2001.

(b) If a lead-based paint inspection has found the presence of lead-based paint, or if no lead-based paint inspection has been conducted, the PHA shall conduct a risk assessment according to the following schedule, unless a risk assessment that meets the conditions of Sec. 35.165(b) has already been completed:

(1) Risk assessments shall be completed on or before March 15, 2001, in a multifamily residential property constructed before 1960.

(2) Risk assessments shall be completed on or before March 15, 2002, in a multifamily residential property constructed after 1959 and before 1978.

(c) A PHA that advertises a construction contract (including architecture/engineering contracts) for bid or award or plans to start force account work shall not execute such contract until a lead-based paint inspection and, if required, a risk assessment, has taken place and any necessary abatement is included in the modernization budget, except for contracts solely for emergency work in accordance with Sec. 35.115(a)(9).

(d) The five-year funding request plan for CIAP and CGP shall be amended to include the schedule and funding for lead-based paint activities.

Sec. 35.1120 Hazard reduction.

(a) Each PHA shall, in accordance with Sec. 35.1325, abate all lead-based paint and lead-based paint hazards identified in the evaluations conducted pursuant to Sec. 35.1115. The PHA shall abate lead-based paint and lead-based paint hazards in accordance with Sec. 35.1325 during the course of physical improvements conducted under the modernization.

(b) In all housing where abatement of all lead-based paint and lead-based paint hazards required in paragraph (a) of this section has not yet occurred, each PHA shall conduct interim controls, in accordance with Sec. 35.1330, of the lead-based paint hazards identified in the most recent risk assessment.

(1) Interim controls of dwelling units in which any child who is less than 6 years of age resides and common areas servicing those dwelling units shall be completed within 90 days of the evaluation under Sec. 35.1330. If a unit becomes newly occupied by a family with a child of less than 6 years of age or such child moves into a unit, interim controls shall be completed within 90 days after the new occupancy or move-in if they have not already been completed.

(2) Interim controls in dwelling units not occupied by families with one or more children of less than 6 years of age, common areas servicing those units, and the remaining portions of the residential property shall be completed no later than 12 months after completion of the evaluation conducted under Sec. 35.1115.

(c) The PHA shall incorporate ongoing lead-based paint maintenance and reevaluation activities into regular building operations in accordance with Sec. 35.1355. In accordance with Sec. 35.115(a) (6) and (7), this requirement does not apply to a development or part thereof if it is to be demolished or disposed of in accordance with disposition requirements in part 970 of this title, provided the dwelling unit will remain unoccupied until demolition, or if it is not used and will not be used for human habitation.

Sec. 35.1125 Evaluation and hazard reduction before acquisition and development.

(a) For each residential property constructed before 1978 and proposed to be acquired for a family project (whether or not it will need rehabilitation) a lead-based paint inspection and risk assessment for lead-based paint hazards shall be conducted in accordance with Sec. 35.1320.

(b) If lead-based paint is found in a residential property to be acquired, the cost of evaluation and abatement shall be considered when making the cost comparison to justify new construction, as well as when meeting maximum total development cost limitations.

(c) If lead-based paint is found, compliance with this subpart is required, and abatement of lead-based paint and lead-based paint hazards shall be completed in accordance with Sec. 35.1325 before occupancy.

Sec. 35.1130 Child with an environmental intervention blood lead level.

(a) Risk assessment. Within 15 days after being notified by a public health department or other medical health care provider that a child of less than 6 years of age living in a public housing development has been identified as having an environmental intervention blood lead level, the PHA shall complete a risk assessment of the dwelling unit in which the child lived at the time the blood was last sampled and of common areas servicing the dwelling unit, the provisions of Sec. 35.1115(b) notwithstanding. The risk assessment shall be conducted in accordance with Sec. 35.1320(b) and is considered complete when the PHA receives the risk assessment report. The requirements of this paragraph apply regardless of whether the child is or is not still living in the unit when the PHA receives the notification of the environmental intervention blood lead level. The requirements of this paragraph shall not apply if the PHA conducted a risk assessment of the unit and common areas servicing the unit between the date the child's blood was last sampled and the date when the PHA received the notification of the environmental intervention blood lead level. If the public health department has already conducted an

evaluation of the dwelling unit, the requirements of this paragraph shall not apply.

(b) Verification. After receiving information from a person who is not a medical health care provider that a child of less than 6 years of age living in a public housing development may have an environmental intervention blood lead level, the PHA shall immediately verify the information with the public health department or other medical health care provider. If that department or provider verifies that the child has an environmental intervention blood lead level, such verification shall constitute notification, and the housing agency shall take the action required in paragraphs (a) and (c) of this section.

(c) Hazard reduction. Within 30 days after receiving the report of the risk assessment conducted pursuant to paragraph (a) of this section or the evaluation from the public health department, the PHA shall complete the reduction of lead-based paint hazards identified in the risk assessment in accordance with Sec. 35.1325 or Sec. 35.1330. Hazard reduction is considered complete when clearance is achieved in accordance with Sec. 35.1340 and the clearance report states that all lead-based paint hazards identified in the risk assessment have been treated with interim controls or abatement or the local or State health department certifies that lead-based paint hazard reduction is complete. The requirements of this paragraph do not apply if the PHA, between the date the child's blood was last sampled and the date the owner received the notification of the environmental intervention blood lead level, already conducted a risk assessment of the unit and common areas servicing the unit and completed reduction of identified lead-based paint hazards.

(d) Notice of evaluation and hazard reduction. The PHA shall notify building residents of any evaluation or hazard reduction activities in accordance with Sec. 35.125.

(e) Reporting requirement. The PHA shall report the name and address of a child identified as having an environmental intervention blood lead level to the public health department within 5 working days of being so notified by any other medical health care professional. The PHA shall also report each known case of a child with an environmental intervention blood lead level to the HUD field office.

(f) Other units in building. If the risk assessment conducted pursuant to paragraph (a) of this section identifies lead-based paint hazards and previous evaluations of the building conducted pursuant to Sec. 35.1320 did not identify lead-based paint or lead-based paint hazards, the PHA shall conduct a risk assessment of other units of the building in accordance with Sec. 35.1320(b) and shall conduct interim

controls of identified hazards in accordance with the schedule provided in Sec. 35.1120(c).

Sec. 35.1135 Eligible costs.

A PHA may use financial assistance received under the modernization program (CIAP or CGP) for the notice, evaluation and reduction of lead-based paint hazards in accordance with Sec. 968.112 of this title. Eligible costs include:

(a) Evaluation and insurance costs. Evaluation and hazard reduction activities, and costs for insurance coverage associated with these activities.

(b) Planning costs. Planning costs are costs that are incurred before HUD approval of the CGP or CIAP application and that are related to developing the CIAP application or carrying out eligible modernization planning, such as planning for abatement, detailed design work, preparation of solicitations, and evaluation. Planning costs may be funded as a single work item. Planning costs shall not exceed 5 percent of the CIAP funds available to a HUD Field Office in a particular fiscal year.

(c) Architectural/engineering and consultant fees. Eligible costs include fees for planning, identification of needs, detailed design work, preparation of construction and bid documents and other required documents, evaluation, planning and design for abatement, and inspection of work in progress.

(d) Environmental intervention blood lead level response costs. The PHA may use its operating reserves and, when necessary, may request reimbursement from the current fiscal year CIAP funds, or request the reprogramming of previously approved CIAP funds to cover the costs of evaluation and hazard reduction.

Sec. 35.1140 Insurance coverage.

For the requirements concerning the obligation of a PHA to obtain reasonable insurance coverage with respect to the hazards associated with evaluation and hazard reduction activities, see Sec. 965.215 of this title.

Subpart M_Tenant-Based Rental Assistance

Source: 64 FR 50216, Sept. 15, 1999, unless otherwise noted.

Sec. 35.1200 Purpose and applicability.

(a) Purpose. The purpose of this subpart M is to establish procedures to eliminate as far as practicable lead-based paint hazards in housing occupied by families receiving tenant-based rental assistance. Such assistance includes tenant-based rental assistance under the Section 8 certificate program, the Section 8 voucher program, the HOME program, the Shelter Plus Care program, the Housing Opportunities for Persons With AIDS (HOPWA) program, and the Indian Housing Block Grant program. Tenant-based rental assistance means rental assistance that is not attached to the structure.

(b) Applicability.

(1) This subpart applies only to dwelling units occupied or to be occupied by families or households that have one or more children of less than 6 years of age, common areas servicing such dwelling units, and exterior painted surfaces associated with such dwelling units or common areas. Common areas servicing a dwelling unit include those areas through which residents pass to gain access to the unit and other areas frequented by resident children of less than 6 years of age, including on-site play areas and child care facilities.

(2) For the purposes of the Section 8 tenant-based certificate program and the Section 8 voucher program:

(i) The requirements of this subpart are applicable where an initial or periodic inspection occurs on or after September 15, 2000; and

(ii) The PHA shall be the designated party.

(3) For the purposes of formula grants awarded under the Housing Opportunities for Persons with AIDS Program (HOPWA) (42 U.S.C. 12901 et seq.):

(i) The requirements of this subpart shall apply to activities for which program funds are first obligated on or after September 15, 2000; and

(ii) The grantee shall be the designated party.

(4) For the purposes of competitively awarded grants under the HOPWA Program and the Shelter Plus Care program (42 U.S.C. 11402-11407) tenant-based rental assistance component:

(i) The requirements of this subpart shall apply to grants awarded pursuant to Notices of Funding Availability published on or after September 15, 2000; and

(ii) The grantee shall be the designated party.

(5) For the purposes of the HOME program:

(i) The requirements of this subpart shall not apply to funds which are committed in accordance with Sec. 92.2 of this title before September 15, 2000; and

(ii) The participating jurisdiction shall be the designated party.

(6) For the purposes of the Indian Housing Block Grant program:

(i) The requirements of this subpart shall apply to activities for which funds are first obligated on or after September 15, 2000; and

(ii) The IHBG recipient shall be the designated party.

(7) The housing agency, grantee, participating jurisdiction, or IHBG recipient may assign to a subrecipient or other entity the responsibilities of the designated party in this subpart.

[64 FR 50216, Sept. 15, 1999; 65 FR 3387, Jan. 21, 2000]

Sec. 35.1205 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.1210 Notices and pamphlet.

(a) Notice. In cases where evaluation or paint stabilization is undertaken, the owner shall provide a notice to residents in accordance with Sec. 35.125. A visual assessment alone is not considered an evaluation for purposes of this part.

(b) Lead hazard information pamphlet. The owner shall provide the lead hazard information pamphlet in accordance with Sec. 35.130.

Sec. 35.1215 Activities at initial and periodic inspection.

(a) (1) During the initial and periodic inspections, an inspector acting on behalf of the designated party and trained in visual assessment for deteriorated paint surfaces in accordance with procedures established

by HUD shall conduct a visual assessment of all painted surfaces in order to identify any deteriorated paint.

(2) For tenant-based rental assistance provided under the HOME program, visual assessment shall be conducted as part of the initial and periodic inspections required under Sec. 92.209(i) of this title.

(b) The owner shall stabilize each deteriorated paint surface in accordance with Sec. 35.1330(a) and (b) before commencement of assisted occupancy. If assisted occupancy has commenced prior to a periodic inspection, such paint stabilization must be completed within 30 days of notification of the owner of the results of the visual assessment. Paint stabilization is considered complete when clearance is achieved in accordance with Sec. 35.1340. If the owner does not complete the hazard reduction required by this section, the dwelling unit is in violation of Housing Quality Standards (HQS) until the hazard reduction is completed or the unit is no longer covered by this subpart because the unit is no longer under a housing assistance payment (HAP) contract with the housing agency.

(c) The owner shall provide a notice to occupants in accordance with Sec. 35.125(b)(1) and (c) describing the results of the clearance examination.

(d) The designated party may grant the owner an extension of time to complete paint stabilization and clearance for reasonable cause, but such an extension shall not extend beyond 90 days after the date of notification to the owner of the results of the visual assessment.

Sec. 35.1220 Ongoing lead-based paint maintenance activities.

Notwithstanding the designation of the PHA, grantee, participating jurisdiction, or Indian Housing Block Grant (IHBG) recipient as the designated party for this subpart, the owner shall incorporate ongoing lead-based paint maintenance activities into regular building operations in accordance with Sec. 35.1355(a).

Sec. 35.1225 Child with an environmental intervention blood lead level.

(a) Within 15 days after being notified by a public health department or other medical health care provider that a child of less than 6 years of age living in an assisted dwelling unit has been identified as having an environmental intervention blood lead level, the designated party shall complete a risk assessment of the dwelling unit in which the child lived at the time the blood was last sampled and of the common areas servicing the dwelling unit. The risk assessment shall be conducted in accordance with Sec. 35.1320(b). When the risk assessment is complete, the designated

party shall immediately provide the report of the risk assessment to the owner of the dwelling unit. If the child identified as having an environmental intervention blood lead level is no longer living in the unit when the designated party receives notification from the public health department or other medical health care provider, but another household receiving tenant-based rental assistance is living in the unit or is planning to live there, the requirements of this section apply just as they do if the child still lives in the unit. If a public health department has already conducted an evaluation of the dwelling unit, or the designated party conducted a risk assessment of the unit and common areas servicing the unit between the date the child's blood was last sampled and the date when the designated party received the notification of the environmental intervention blood lead level, the requirements of this paragraph shall not apply.

(b) Verification. After receiving information from a source other than a public health department or other medical health care provider that a child of less than 6 years of age living in an assisted dwelling unit may have an environmental intervention blood lead level, the designated party shall immediately verify the information with a public health department or other medical health care provider. If that department or provider verifies that the child has an environmental intervention blood lead level, such verification shall constitute notification to the designated party as provided in paragraph (a) of this section, and the designated party shall take the action required in paragraphs (a) and (c) of this section.

(c) Hazard reduction. Within 30 days after receiving the risk assessment report from the designated party or the evaluation from the public health department, the owner shall complete the reduction of identified lead-based paint hazards in accordance with Sec. 35.1325 or Sec. 35.1330. Hazard reduction is considered complete when clearance is achieved in accordance with Sec. 35.1340 and the clearance report states that all lead-based paint hazards identified in the risk assessment have been treated with interim controls or abatement or when the public health department certifies that the lead-based paint hazard reduction is complete. If the owner does not complete the hazard reduction required by this section, the dwelling unit is in violation of Housing Quality Standards (HQS).

(d) Notice of evaluation and hazard reduction. The owner shall notify building residents of any evaluation or hazard reduction activities in accordance with Sec. 35.125.

(e) Reporting requirement. The designated party shall report the name and address of a child identified as having an environmental intervention

blood lead level to the public health department within 5 working days of being so notified by any other medical health care professional.

(f) Data collection and record keeping responsibilities. At least quarterly, the designated party shall attempt to obtain from the public health department(s) with area(s) of jurisdiction similar to that of the designated party the names and/or addresses of children of less than 6 years of age with an identified environmental intervention blood lead level. At least quarterly, the designated party shall also report an updated list of the addresses of units receiving assistance under a tenant-based rental assistance program to the same public health department(s), except that the report(s) to the public health department(s) is not required if the health department states that it does not wish to receive such report. If it obtains names and addresses of environmental intervention blood lead level children from the public health department(s), the designated party shall match information on cases of environmental intervention blood lead levels with the names and addresses of families receiving tenant-based rental assistance, unless the public health department performs such a matching procedure. If a match occurs, the designated party shall carry out the requirements of this section.

Subparts N-Q [Reserved]

Subpart R Methods and Standards for Lead-Paint Hazard Evaluation and Hazard Reduction Activities

Source: 64 FR 50218, Sept. 15, 1999, unless otherwise noted.

Sec. 35.1300 Purpose and applicability.

The purpose of this subpart R is to provide standards and methods for evaluation and hazard reduction activities required in subparts B, C, D, and F through M of this part.

Sec. 35.1305 Definitions and other general requirements.

Definitions and other general requirements that apply to this subpart are found in subpart B of this part.

Sec. 35.1310 References.

Further guidance information regarding evaluation and hazard reduction activities described in this subpart is found in the following:

(a) The HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (Guidelines);

(b) The EPA Guidance on Residential Lead-Based Paint, Lead-Contaminated Dust, and Lead Contaminated Soil;

(c) Guidance, methods or protocols issued by States and Indian tribes that have been authorized by EPA under 40 CFR 745.324 to administer and enforce lead-based paint programs.

Sec. 35.1315 Collection and laboratory analysis of samples.

All paint chip, dust, or soil samples shall be collected and analyzed in accordance with standards established either by a State or Indian tribe under a program authorized by EPA in accordance with 40 CFR part 745, subpart Q, or by the EPA in accordance with 40 CFR 745.227, and as further provided in this subpart.

Sec. 35.1320 Lead-based paint inspections and risk assessments.

(a) Lead-based paint inspections and paint testing. Lead-based paint inspections shall be performed in accordance with methods and standards established either by a State or Tribal program authorized by the EPA under 40 CFR 745.324, or by the EPA at 40 CFR 745.227(b) and (h). Paint testing to determine the presence or absence of lead-based paint on deteriorated paint surfaces or surfaces to be disturbed or replaced shall be performed by a certified lead-based paint inspector or risk assessor.

(b) Risk assessments, lead-hazard screens and reevaluations.

(1) Risk assessments and lead-hazard screens shall be performed in accordance with methods and standards established either by a state or tribal program authorized by the EPA, or by the EPA at 40 CFR 745.227(c), (d), and (h) and paragraph (b)(2) of this section. Reevaluations shall be performed by a certified risk assessor in accordance with Sec. 35.1355(b) and paragraph (b)(2) of this section.

(2) Risk assessors shall use standards for determining dust-lead hazards and soil-lead hazards that are at least as protective as those promulgated by the EPA at 40 CFR 745.227(h) or, if such standards are not in effect, the following levels for dust or soil:

(i) Dust. A dust-lead hazard is surface dust that contains a mass- per-area concentration (loading) of lead, based on wipe samples, equal to or exceeding the applicable level in the following table:

Dust Lead Standards

Surface

Evaluation method	Floors, $\mu\text{g}/\text{ft}^2$ (mg/m^2)	Interior window sills, $\mu\text{g}/\text{ft}^2$ (mg/m^2)	Window troughs, $\mu\text{g}/\text{ft}^2$ ($\mu\text{g}/\text{m}^2$)
Risk Assessment.....	40 (0.43)	250 (2.7)	Not Applicable.
Lead Hazard Screen.....	25 (0.27)	125 (1.4)	Not Applicable.
Reevaluation.....	40 (0.43)	250 (2.7)	Not Applicable.
Clearance.....	40 (0.43)	250 (2.7)	400 (4.3).

Note 1: "Floors" includes carpeted and uncarpeted interior floors.

Note 2: A dust-lead hazard is present or clearance fails when the weighted arithmetic mean lead loading for all single-surface or composite samples is equal to or greater than the applicable standard. For composite samples of two to four subsamples, the standard is determined by dividing the standard in the table by one half the number of subsamples. See EPA regulations at 40 CFR 745.63 and 745.227(h) (3) (i).

(ii) Soil.

(A) A soil-lead hazard for play areas frequented by children under six years of age is bare soil with lead equal to or exceeding 400 parts per million (micrograms per gram).

(B) For the rest of the yard, a soil-lead hazard is bare soil that totals more than 9 square feet (0.8 square meters) per property with lead equal to or exceeding an average of 1,200 parts per million (micrograms per gram).

(3) Lead-hazard screens shall be performed in accordance with the methods and standards established either by a state or Tribal program authorized by the EPA, or by the EPA at 40 CFR 745.227(c), and paragraphs (b) (1) and (b) (2) of this section. If the lead-hazard screen indicates the need for a follow-up risk assessment (e.g., if dust-lead measurements exceed the levels established for lead-hazard screens in paragraph (b) (2) (i) of this section), a risk assessment shall be conducted in accordance with paragraphs (b) (1) and (b) (2) of this section. Dust, soil, and paint samples collected for the lead-hazard screen may be used in the risk assessment. If the lead hazard screen does not indicate the need for a follow-up risk assessment, no further risk assessment is required.

(c) It is strongly recommended, but not required, that lead-based paint inspectors, risk assessors, and sampling technicians provide a plain-language summary of the results suitable for posting or distribution to occupants in compliance with Sec. 35.125.

Sec. 35.1325 Abatement.

Abatement shall be performed in accordance with methods and standards established either by a State or Indian tribe under a program authorized by EPA, or by EPA at 40 CFR 745.227(e), and shall be completed by achieving clearance in accordance with Sec. 35.1340. If encapsulation or enclosure is used as a method of abatement, ongoing lead-based paint maintenance activities shall be performed as required by the applicable subpart of this part in accordance with Sec. 35.1355. Abatement of an intact, factory-applied prime coating on metal surfaces is not required unless the surface is a friction surface.

Sec. 35.1330 Interim controls.

Interim controls of lead-based paint hazards identified in a risk assessment shall be conducted in accordance with the provisions of this section. Interim control measures include paint stabilization of deteriorated paint, treatments for friction and impact surfaces where levels of lead dust are above the levels specified in Sec. 35.1320, dust control, and lead-contaminated soil control. As provided by Sec. 35.155, interim controls may be performed in combination with, or be replaced by, abatement methods.

(a) General requirements.

(1) Only those interim control methods identified as acceptable methods in a current risk assessment report shall be used to control identified hazards, except that, if only paint stabilization is required in accordance with subparts F, H, K or M of this part, it shall not be necessary to have conducted a risk assessment.

(2) Occupants of dwelling units where interim controls are being performed shall be protected during the course of the work in accordance with Sec. 35.1345.

(3) Clearance testing shall be performed at the conclusion of interim control activities in accordance with Sec. 35.1340.

(4) A person performing interim controls must be trained in accordance with the hazard communication standard for the construction industry issued by the Occupational Safety and Health Administration of the U.S. Department of Labor at 29 CFR 1926.59, and either be supervised by an individual certified as a lead-based paint abatement supervisor or have completed successfully one of the following lead-safe work practices courses, except that this supervision or lead-safe work practices training

requirement does not apply to work that disturbs painted surfaces less than the de minimis limits of Sec. 35.1350(d):

(i) A lead-based paint abatement supervisor course accredited in accordance with 40 CFR 745.225;

(ii) A lead-based paint abatement worker course accredited in accordance with 40 CFR 745.225; or

(iii) Another course approved by HUD for this purpose after consultation with the EPA. A current list of approved courses is available on the Internet at <http://www.hud.gov/offices/lead>, or by mail or fax from the HUD Office of Healthy Homes and Lead Hazard Control at (202) 755-1785, extension 104 (this is not a toll-free number). Persons with hearing or speech impediments may access the above telephone number via phone or TTY by calling the toll-free Federal Information Relay Service at (800) 877-8339.

(b) Paint stabilization.

(1) Interim control treatments used to stabilize deteriorated lead-based paint shall be performed in accordance with the requirements of this section. Interim control treatments of intact, factory applied prime coatings on metal surfaces are not required. Finish coatings on such surfaces shall be treated by interim controls if those coatings contain lead-based paint.

(2) Any physical defect in the substrate of a painted surface or component that is causing deterioration of the surface or component shall be repaired before treating the surface or component. Examples of defective substrate conditions include dry-rot, rust, moisture-related defects, crumbling plaster, and missing siding or other components that are not securely fastened.

(3) Before applying new paint, all loose paint and other loose material shall be removed from the surface to be treated. Acceptable methods for preparing the surface to be treated include wet scraping, wet sanding, and power sanding performed in conjunction with a HEPA filtered local exhaust attachment operated according to the manufacturer's instructions.

(4) Dry sanding or dry scraping is permitted only in accordance with Sec. 35.140(e) (i.e., for electrical safety reasons or for specified minor amounts of work).

(5) Paint stabilization shall include the application of a new protective coating or paint. The surface substrate shall be dry and

protected from future moisture damage before applying a new protective coating or paint. All protective coatings and paints shall be applied in accordance with the manufacturer's recommendations.

(6) Paint stabilization shall incorporate the use of safe work practices in accordance with Sec. 35.1350.

(c) Friction and impact surfaces.

(1) Friction surfaces are required to be treated only if:

(i) Lead dust levels on the nearest horizontal surface underneath the friction surface (e.g., the window sill, window trough, or floor) are equal to or greater than the standards specified in 35.1320(b);

(ii) There is evidence that the paint surface is subject to abrasion; and

(iii) Lead-based paint is known or presumed to be present on the friction surface.

(2) Impact surfaces are required to be treated only if:

(i) Paint on an impact surface is damaged or otherwise deteriorated;

(ii) The damaged paint is caused by impact from a related building component (such as a door knob that knocks into a wall, or a door that knocks against its door frame); and

(iii) Lead-based paint is known or presumed to be present on the impact surface.

(3) Examples of building components that may contain friction or impact surfaces include the following:

(i) Window systems;

(ii) Doors;

(iii) Stair treads and risers;

(iv) Baseboards;

(v) Drawers and cabinets; and

(vi) Porches, decks, interior floors, and any other painted surfaces that are abraded, rubbed, or impacted.

(4) Interim control treatments for friction surfaces shall eliminate friction points or treat the friction surface so that paint is not subject to abrasion. Examples of acceptable treatments include rehanging and/or planing doors so that the door does not rub against the door frame, and installing window channel guides that reduce or eliminate abrasion of painted surfaces. Paint on stair treads and floors shall be protected with a durable cover or coating that will prevent abrasion of the painted surfaces. Examples of acceptable materials include carpeting, tile, and sheet flooring.

(5) Interim control treatments for impact surfaces shall protect the paint from impact. Examples of acceptable treatments include treatments that eliminate impact with the paint surface, such as a door stop to prevent a door from striking a wall or baseboard.

(6) Interim control for impact or friction surfaces does not include covering such a surface with a coating or other treatment, such as painting over the surface, that does not protect lead-based paint from impact or abrasion.

(d) Chewable surfaces.

(1) Chewable surfaces are required to be treated only if there is evidence of teeth marks, indicating that a child of less than six years of age has chewed on the painted surface, and lead-based paint is known or presumed to be present on the surface.

(2) Interim control treatments for chewable surfaces shall make the lead-based paint inaccessible for chewing by children of less than 6 years of age. Examples include enclosures or coatings that cannot be penetrated by the teeth of such children.

(e) Dust-lead hazard control.

(1) Interim control treatments used to control dust-lead hazards shall be performed in accordance with the requirements of this section. Additional information on dust removal is found in the HUD Guidelines, particularly Chapter 11 (see Sec. 35.1310).

(2) Dust control shall involve a thorough cleaning of all horizontal surfaces, such as interior window sills, window troughs, floors, and stairs, but excluding ceilings. All horizontal surfaces, such as floors, stairs, window sills and window troughs, that are rough,

pitted, or porous shall be covered with a smooth, cleanable covering or coating, such as metal coil stock, plastic, polyurethane, or linoleum.

(3) Surfaces covered by a rug or carpeting shall be cleaned as follows:

(i) The floor surface under a rug or carpeting shall be cleaned where feasible, including upon removal of the rug or carpeting, with a HEPA vacuum or other method of equivalent efficacy.

(ii) An unattached rug or an attached carpet that is to be removed, and padding associated with such rug or carpet, located in an area of the dwelling unit with dust-lead hazards on the floor, shall be thoroughly vacuumed with a HEPA vacuum or other method of equivalent efficacy. Protective measures shall be used to prevent the spread of dust during removal of a rug, carpet or padding from the dwelling. For example, it shall be misted to reduce dust generation during removal. The item(s) being removed shall be wrapped or otherwise sealed before removal from the worksite.

(iii) An attached carpet located in an area of the dwelling unit with dust-lead hazards on the floor shall be thoroughly vacuumed with a HEPA vacuum or other method of equivalent efficacy if it is not to be removed.

(f) Soil-lead hazards.

(1) Interim control treatments used to control soil-lead hazards shall be performed in accordance with this section.

(2) Soil with a lead concentration equal to or greater than 5,000 $\mu\text{g/g}$ of lead shall be abated in accordance with 40 CFR 745.227(e).

(3) Acceptable interim control methods for soil lead are impermanent surface coverings and land use controls.

(i) Impermanent surface coverings may be used to treat lead-contaminated soil if applied in accordance with the following requirements. Examples of acceptable impermanent coverings include gravel, bark, sod, and artificial turf.

(A) Impermanent surface coverings selected shall be designed to withstand the reasonably-expected traffic. For example, if the area to be treated is heavily traveled, neither grass or sod shall be used.

(B) When loose impermanent surface coverings such as bark or gravel are used, they shall be applied in a thickness not less than six inches deep.

(C) The impermanent surface covering material shall not contain more than 400 µg/g of lead.

(D) Adequate controls to prevent erosion shall be used in conjunction with impermanent surface coverings.

(ii) Land use controls may be used to reduce exposure to soil-lead hazards only if they effectively control access to areas with soil-lead hazards. Examples of land use controls include: fencing, warning signs, and landscaping.

(A) Land use controls shall be implemented only if residents have reasonable alternatives to using the area to be controlled.

(B) If land use controls are used for a soil area that is subject to erosion, measures shall be taken to contain the soil and control dispersion of lead.

Sec. 35.1335 Standard treatments.

Standard treatments shall be conducted in accordance with this section.

(a) Paint stabilization. All deteriorated paint on exterior and interior surfaces located on the residential property shall be stabilized in accordance with Sec. 35.1330(a) (b), or abated in accordance with Sec. 35.1325.

(b) Smooth and cleanable horizontal surfaces. All horizontal surfaces, such as uncarpeted floors, stairs, interior window sills and window troughs, that are rough, pitted, or porous, shall be covered with a smooth, cleanable covering or coating, such as metal coil stock, plastic, polyurethane, or linoleum.

(c) Correcting dust-generating conditions. Conditions causing friction or impact of painted surfaces shall be corrected in accordance with Sec. 35.1330(c) (4) - (6).

(d) Bare residential soil. Bare soil shall be treated in accordance with the requirements of Sec. 35.1330, unless it is found not to be a soil-lead hazard in accordance with Sec. 35.1320(b).

(e) Safe work practices. All standard treatments described in paragraphs (a) through (d) of this section shall incorporate the use of safe work practices in accordance with Sec. 35.1350.

(f) Clearance. A clearance examination shall be performed in accordance with Sec. 35.1340 at the conclusion of any lead hazard reduction activities.

(g) Qualifications. An individual performing standard treatments must meet the training and/or supervision requirements of Sec. 35.1330(a)(4).

Sec. 35.1340 Clearance.

Clearance examinations required under subparts B, C, D, F through M, and R, of this part shall be performed in accordance with the provisions of this section.

(a) Clearance following abatement. Clearance examinations performed following abatement of lead-based paint or lead-based paint hazards shall be performed in accordance with 40 CFR 745.227(e) and paragraphs (c)-(f) of this section. Such clearances shall be performed by a person certified to perform risk assessments or lead-based paint inspections.

(b) Clearance following activities other than abatement. Clearance examinations performed following interim controls, paint stabilization, standard treatments, ongoing lead-based paint maintenance, or rehabilitation shall be performed in accordance with the requirements of this paragraph (b) and paragraphs (c) through (g) of this section. Clearance is not required if the work being cleared does not disturb painted surfaces of a total area more than that set forth in Sec. 35.1350(d).

(1) Qualified personnel. Clearance examinations shall be performed by:

(i) A certified risk assessor;

(ii) A certified lead-based paint inspector;

(iii) A person who has successfully completed a training course for sampling technicians (or a discipline of similar purpose and title) that is developed or accepted by EPA or a State or tribal program authorized by EPA pursuant to 40 CFR part 745, subpart Q, and that is given by a training provider accredited by EPA or a State or Indian Tribe for training in lead-based paint inspection or risk assessment, provided a certified risk assessor or a certified lead-based paint inspector approves

the work of the sampling technician and signs the report of the clearance examination; or

(iv) A technician licensed or certified by EPA or a State or Indian Tribe to perform clearance examinations without the approval of a certified risk assessor or certified lead-based paint inspector, provided that a clearance examination by such a licensed or certified technician shall be performed only for a single-family property or individual dwelling units and associated common areas in a multi-unit property, and provided further that a clearance examination by such a licensed or certified sampling technician shall not be performed using random sampling of dwelling units or common areas in multifamily properties, except that a clearance examination performed by such a licensed or certified sampling technician is acceptable for any residential property if the clearance examination is approved and the report signed by a certified risk assessor or a certified lead-based paint inspector.

(2) Required activities.

(i) Clearance examinations shall include a visual assessment, dust sampling, submission of samples for analysis for lead in dust, interpretation of sampling results, and preparation of a report. Soil sampling is not required. Clearance examinations shall be performed in dwelling units, common areas, and exterior areas in accordance with this section and the steps set forth at 40 CFR 745.227(e)(8). If clearance is being performed after lead-based paint hazard reduction, paint stabilization, maintenance, or rehabilitation that affected exterior surfaces but did not disturb interior painted surfaces or involve elimination of an interior dust-lead hazard, interior clearance is not required if window, door, ventilation, and other openings are sealed during the exterior work. If clearance is being performed for more than 10 dwelling units of similar construction and maintenance, as in a multifamily property, random sampling for the purpose of clearance may be conducted in accordance with 40 CFR 745.227(e)(9).

(ii) The visual assessment shall be performed to determine if deteriorated paint surfaces and/or visible amounts of dust, debris, paint chips or other residue are still present. Both exterior and interior painted surfaces shall be examined for the presence of deteriorated paint. If deteriorated paint or visible dust, debris or residue are present in areas subject to dust sampling, they must be eliminated prior to the continuation of the clearance examination, except elimination of deteriorated paint is not required if it has been determined, through paint testing or a lead-based paint inspection, that the deteriorated paint is not lead-based paint. If exterior painted surfaces have been disturbed by the hazard reduction, maintenance or rehabilitation activity,

the visual assessment shall include an assessment of the ground and any outdoor living areas close to the affected exterior painted surfaces. Visible dust or debris in living areas shall be cleaned up and visible paint chips on the ground shall be removed.

(iii) Dust samples shall be wipe samples and shall be taken on floors and, where practicable, interior window sills and window troughs. Dust samples shall be collected and analyzed in accordance with Sec. 35.1315 of this part.

(iv) Clearance reports shall be prepared in accordance with paragraph (c) of this section.

(c) Clearance report. When clearance is required, the designated party shall ensure that a clearance report is prepared that provides documentation of the hazard reduction or maintenance activity as well as the clearance examination. When abatement is performed, the report shall be an abatement report in accordance with 40 CFR 745.227(e)(10). When another hazard reduction or maintenance activity requiring a clearance report is performed, the report shall include the following information:

(1) The address of the residential property and, if only part of a multifamily property is affected, the specific dwelling units and common areas affected.

(2) The following information on the clearance examination:

(i) The date(s) of the clearance examination;

(ii) The name, address, and signature of each person performing the clearance examination, including certification number;

(iii) The results of the visual assessment for the presence of deteriorated paint and visible dust, debris, residue or paint chips;

(iv) The results of the analysis of dust samples, in $\mu\text{g}/\text{sq. ft.}$, by location of sample; and

(v) The name and address of each laboratory that conducted the analysis of the dust samples, including the identification number for each such laboratory recognized by EPA under section 405(b) of the Toxic Substances Control Act (15 U.S.C. 2685(b)).

(3) The following information on the hazard reduction or maintenance activity for which clearance was performed:

(i) The start and completion dates of the hazard reduction or maintenance activity;

(ii) The name and address of each firm or organization conducting the hazard reduction or maintenance activity and the name of each supervisor assigned;

(iii) A detailed written description of the hazard reduction or maintenance activity, including the methods used, locations of exterior surfaces, interior rooms, common areas, and/or components where the hazard reduction activity occurred, and any suggested monitoring of encapsulants or enclosures; and

(iv) If soil hazards were reduced, a detailed description of the location(s) of the hazard reduction activity and the method(s) used.

(d) Standards. The clearance standards in Sec. 35.1320(b) (2) shall apply. If test results equal or exceed the standards, the dwelling unit, worksite, or common area represented by the sample fails the clearance examination.

(e) Clearance failure. All surfaces represented by a failed clearance sample shall be recleaned or treated by hazard reduction, and retested, until the applicable clearance level in Sec. 35.1320(b) (2) is met.

(f) Independence. Clearance examinations shall be performed by persons or entities independent of those performing hazard reduction or maintenance activities, unless the designated party uses qualified in-house employees to conduct clearance. An in-house employee shall not conduct both a hazard reduction or maintenance activity and its clearance examination.

(g) Worksite clearance. Clearance of only the worksite is permitted after work covered by Secs. 35.930, 35.1330, 35.1335, or 35.1355, when containment is used to ensure that dust and debris generated by the work is kept within the worksite. Otherwise, clearance must be of the entire dwelling unit, common area, or outbuilding, as applicable. When clearance is of an interior worksite that is not an entire dwelling unit, common area, or outbuilding, dust samples shall be taken for paragraph (b) of this section as follows:

(1) Sample, from each of at least four rooms, hallways, stairwells, or common areas within the dust containment area:

(i) The floor (one sample); and

(ii) Windows (one interior sill sample and one trough sample, if present); and

(2) Sample the floor in a room, hallway, stairwell, or common area connected to the dust containment area, within five feet outside the area (one sample).

Sec. 35.1345 Occupant protection and worksite preparation.

This section establishes procedures for protecting dwelling unit occupants and the environment from contamination from lead-contaminated or lead-containing materials during hazard reduction activities.

(a) Occupant protection.

(1) Occupants shall not be permitted to enter the worksite during hazard reduction activities (unless they are employed in the conduct of these activities at the worksite), until after hazard reduction work has been completed and clearance, if required, has been achieved.

(2) Occupants shall be temporarily relocated before and during hazard reduction activities to a suitable, decent, safe, and similarly accessible dwelling unit that does not have lead-based paint hazards, except if:

(i) Treatment will not disturb lead-based paint, dust-lead hazards or soil-lead hazards;

(ii) Only the exterior of the dwelling unit is treated, and windows, doors, ventilation intakes and other openings in or near the worksite are sealed during hazard control work and cleaned afterward, and entry free of dust-lead hazards, soil-lead hazards, and debris is provided;

(iii) Treatment of the interior will be completed within one period of 8-daytime hours, the worksite is contained so as to prevent the release of leaded dust and debris into other areas, and treatment does not create other safety, health or environmental hazards (e.g., exposed live electrical wiring, release of toxic fumes, or on-site disposal of hazardous waste); or

(iv) Treatment of the interior will be completed within 5 calendar days, the worksite is contained so as to prevent the release of leaded dust and debris into other areas, treatment does not create other safety, health or environmental hazards; and, at the end of work on each day, the worksite and the area within at least 10 feet (3 meters) of the containment area is cleaned to remove any visible dust or debris, and

occupants have safe access to sleeping areas, and bathroom and kitchen facilities.

(3) The dwelling unit and the worksite shall be secured against unauthorized entry, and occupants' belongings protected from contamination by dust-lead hazards and debris during hazard reduction activities. Occupants' belongings in the containment area shall be relocated to a safe and secure area outside the containment area, or covered with an impermeable covering with all seams and edges taped or otherwise sealed.

(b) Worksite preparation.

(1) The worksite shall be prepared to prevent the release of leaded dust, and contain lead-based paint chips and other debris from hazard reduction activities within the worksite until they can be safely removed. Practices that minimize the spread of leaded dust, paint chips, soil and debris shall be used during worksite preparation.

(2) A warning sign shall be posted at each entry to a room where hazard reduction activities are conducted when occupants are present; or at each main and secondary entryway to a building from which occupants have been relocated; or, for an exterior hazard reduction activity, where it is easily read 20 feet (6 meters) from the edge of the hazard reduction activity worksite. Each warning sign shall be as described in 29 CFR 1926.62(m), except that it shall be posted irrespective of employees' lead exposure and, to the extent practicable, provided in the occupants' primary language.

Sec. 35.1350 Safe work practices.

(a) Prohibited methods. Methods of paint removal listed in Sec. 35.140 shall not be used.

(b) Occupant protection and worksite preparation. Occupants and their belongings shall be protected, and the worksite prepared, in accordance with Sec. 35.1345. A person performing this work shall be trained on hazards and either be supervised or have completed successfully one of the specified courses, in accordance with Sec. 35.1330(a)(4).

(c) Specialized cleaning. After hazard reduction activities have been completed, the worksite shall be cleaned using cleaning methods, products, and devices that are successful in cleaning up dust-lead hazards, such as a HEPA vacuum or other method of equivalent efficacy, and lead-specific detergents or equivalent.

(d) De minimis levels. Safe work practices are not required when maintenance or hazard reduction activities do not disturb painted surfaces that total more than:

- (1) 20 square feet (2 square meters) on exterior surfaces;
- (2) 2 square feet (0.2 square meters) in any one interior room or space; or
- (3) 10 percent of the total surface area on an interior or exterior type of component with a small surface area. Examples include window sills, baseboards, and trim.

Sec. 35.1355 Ongoing lead-based paint maintenance and reevaluation activities.

(a) Maintenance. Maintenance activities shall be conducted in accordance with paragraphs (a)(2)-(6) of this section, except as provided in paragraph (a)(1) of this section.

(1) Maintenance activities need not be conducted in accordance with this section if a lead-based paint inspection indicates that no lead-based paint is present in the dwelling units, common areas, and on exterior surfaces, or a clearance report prepared in accordance with Sec. 35.1340(a) indicates that all lead-based paint has been removed.

(2) A visual assessment for deteriorated paint, bare soil, and the failure of any hazard reduction measures shall be performed at unit turnover and every twelve months.

(3) (i) Deteriorated paint. All deteriorated paint on interior and exterior surfaces located on the residential property shall be stabilized in accordance with Sec. 35.1330(a)(b), except for any paint that an evaluation has found is not lead-based paint.

(ii) Bare soil. All bare soil shall be treated with standard treatments in accordance with Sec. 35.1335(d) through (g), or interim controls in accordance with Sec. 35.1330(a) and (f); except for any bare soil that a current evaluation has found is not a soil-lead hazard.

(4) Safe work practices, in accordance with sec. 35.1350, shall be used when performing any maintenance or renovation work that disturbs paint that may be lead-based paint.

(5) Any encapsulation or enclosure of lead-based paint or lead-based paint hazards which has failed to maintain its effectiveness shall

be repaired, or abatement or interim controls shall be performed in accordance with Secs. 35.1325 or 35.1330, respectively.

(6) Clearance testing of the worksite shall be performed at the conclusion of repair, abatement or interim controls in accordance with Sec. 35.1340.

(7) Each dwelling unit shall be provided with written notice asking occupants to report deteriorated paint and, if applicable, failure of encapsulation or enclosure, along with the name, address and telephone number of the person whom occupants should contact. The language of the notice shall be in accordance with Sec. 35.125(c)(3). The designated party shall respond to such report and stabilize the deteriorated paint or repair the encapsulation or enclosure within 30 days.

(b) Reevaluation. Reevaluation shall be conducted in accordance with this paragraph (b), and the designated party shall conduct interim controls of lead-based paint hazards found in the reevaluation.

(1) Reevaluation shall be conducted if hazard reduction has been conducted to reduce lead-based paint hazards found in a risk assessment or if standard treatments have been conducted, except that reevaluation is not required if any of the following cases are met:

(i) An initial risk assessment found no lead-based paint hazards;

(ii) A lead-based paint inspection found no lead-based paint; or

(iii) All lead-based paint was abated in accordance with Sec. 35.1325, provided that no failures of encapsulations or enclosures have been found during visual assessments conducted in accordance with Sec. 35.1355(a)(2) or during other observations by maintenance and repair workers in accordance with Sec. 35.1355(a)(5) since the encapsulations or enclosures were performed.

(2) Reevaluation shall be conducted to identify:

(i) Deteriorated paint surfaces with known or suspected lead-based paint;

(ii) Deteriorated or failed interim controls of lead-based paint hazards or encapsulation or enclosure treatments;

(iii) Dust-lead hazards; and

(iv) Soil that is newly bare with lead levels equal to or above the standards in Sec. 35.1320(b)(2).

(3) Each reevaluation shall be performed by a certified risk assessor.

(4) Each reevaluation shall be conducted in accordance with the following schedule if a risk assessment or other evaluation has found deteriorated lead-based paint in the residential property, a soil-lead hazard, or a dust-lead hazard on a floor or interior window sill. (Window troughs are not sampled during reevaluation). The first reevaluation shall be conducted no later than two years from completion of hazard reduction. Subsequent reevaluation shall be conducted at intervals of two years, plus or minus 60 days. To be exempt from additional reevaluation, at least two consecutive reevaluations conducted at such two-year intervals must be conducted without finding lead-based paint hazards or a failure of an encapsulation or enclosure. If, however, a reevaluation finds lead-based paint hazards or a failure, at least two more consecutive reevaluations conducted at such two year intervals must be conducted without finding lead-based paint hazards or a failure.

(5) Each reevaluation shall be performed as follows:

(i) Dwelling units and common areas shall be selected and reevaluated in accordance with Sec. 35.1320(b).

(ii) The worksites of previous hazard reduction activities that are similar on the basis of their original lead-based paint hazard and type of treatment shall be grouped. Worksites within such groups shall be selected and reevaluated in accordance with Sec. 35.1320(b).

(6) Each reevaluation shall include reviewing available information, conducting selected visual assessment, recommending responses to hazard reduction omissions or failures, performing selected evaluation of paint, soil and dust, and recommending response to newly-found lead-based paint hazards.

(i) Review of available information. The risk assessor shall review any available past evaluation, hazard reduction and clearance reports, and any other available information describing hazard reduction measures, ongoing maintenance activities, and relevant building operations.

(ii) Visual assessment. The risk assessor shall:

(A) Visually evaluate all lead-based paint hazard reduction treatments, any known or suspected lead-based paint, any

deteriorated paint, and each exterior site, and shall identify any new areas of bare soil;

(B) Determine acceptable options for controlling the hazard; and

(C) Await the correction of any hazard reduction omission or failure and the reduction of any lead-based paint hazard before sampling any dust or soil the risk assessor determines may reasonably be associated with such hazard.

(iii) Reaction to hazard reduction omission or failure. If any hazard reduction control has not been implemented or is failing (e.g., an encapsulant is peeling away from the wall, a paint-stabilized surface is no longer intact, or gravel covering an area of bare soil has worn away), or deteriorated lead-based paint is present, the risk assessor shall:

(A) Determine acceptable options for controlling the hazard; and

(B) Await the correction of any hazard reduction omission or failure and the reduction of any lead-based paint hazard before sampling any dust or soil the risk assessor determines may reasonably be associated with such hazard.

(iv) Selected paint, soil and dust evaluation. (A) The risk assessor shall sample deteriorated paint surfaces identified during the visual assessment and have the samples analyzed, in accordance with 40 CFR 745.227(b) (3) (4), but only if reliable information about lead content is unavailable.

(B) The risk assessor shall evaluate new areas of bare soil identified during the visual assessment. Soil samples shall be collected and analyzed in accordance with 40 CFR 745.227(d) (8)-(11), but only if the soil lead levels have not been previously measured.

(C) The risk assessor shall take selected dust samples and have them analyzed. Dust samples shall be collected and analyzed in accordance with Sec. 35.1320(b). At least two composite samples, one from floors and the other from interior window sills, shall be taken in each dwelling unit and common area selected. Each composite sample shall consist of four individual samples, each collected from a different room or area. If the dwelling unit contains both carpeted and uncarpeted living areas, separate floor samples are required from the carpeted and uncarpeted areas. Equivalent single-surface sampling may be used instead of composite sampling.

(7) The risk assessor shall provide the designated party with a written report documenting the presence or absence of lead-based paint hazards, the current status of any hazard reduction and standard treatment measures used previously and any newly-conducted evaluation and hazard reduction activities. The report shall include the information in 40 CFR 745.227(d) (11), and shall:

(i) Identify any lead-based paint hazards previously detected and discuss the effectiveness of any hazard reduction or standard treatment measures used, and list those for which no measures have been used.

(ii) Describe any new hazards found and present the owner with acceptable control options and their accompanying reevaluation schedules.

(iii) Identify when the next reevaluation, if any, must occur, in accordance with the requirements of paragraph (b) (4) of this section.

(c) Response to the reevaluation.

(1) Hazard reduction omission or failure found by a reevaluation. The designated party shall respond in accordance with paragraph (b) (6) (iii) (A) of this section to a report by the risk assessor of a hazard reduction control that has not been implemented or is failing, or that deteriorated lead-based paint is present.

(2) Newly-identified lead-based paint hazard found by a reevaluation. The designated party shall treat each:

(i) Dust-lead hazard or paint lead hazard by cleaning or hazard reduction measures, which are considered completed when clearance is achieved in accordance with Sec. 35.1340.

(ii) Soil-lead hazard by hazard reduction measures, which are considered completed when clearance is achieved in accordance with Sec. 35.1340.

ATTACHMENT V

EPA PAMPHLET

**“PROTECT YOUR FAMILY FROM LEAD
IN YOUR HOME”**

Simple Steps To Protect Your Family From Lead Hazards

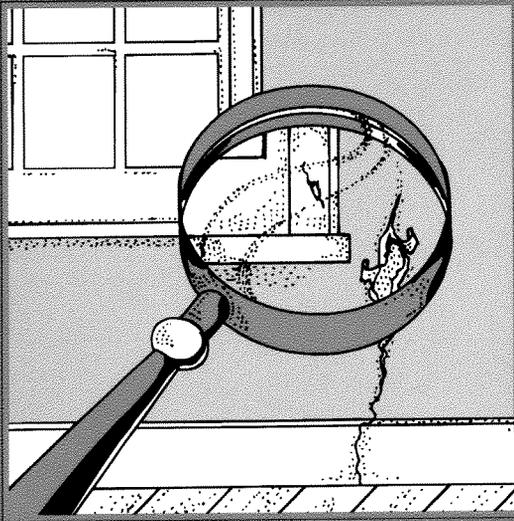
If you think your home has high levels of lead:

- ◆ Get your young children tested for lead, even if they seem healthy.
- ◆ Wash children's hands, bottles, pacifiers, and toys often.
- ◆ Make sure children eat healthy, low-fat foods.
- ◆ Get your home checked for lead hazards.
- ◆ Regularly clean floors, window sills, and other surfaces.
- ◆ Wipe soil off shoes before entering house.
- ◆ Talk to your landlord about fixing surfaces with peeling or chipping paint.
- ◆ Take precautions to avoid exposure to lead dust when remodeling or renovating (call 1-800-424-LEAD for guidelines).
- ◆ Don't use a belt-sander, propane torch, high temperature heat gun, scraper, or sandpaper on painted surfaces that may contain lead.
- ◆ Don't try to remove lead-based paint yourself.

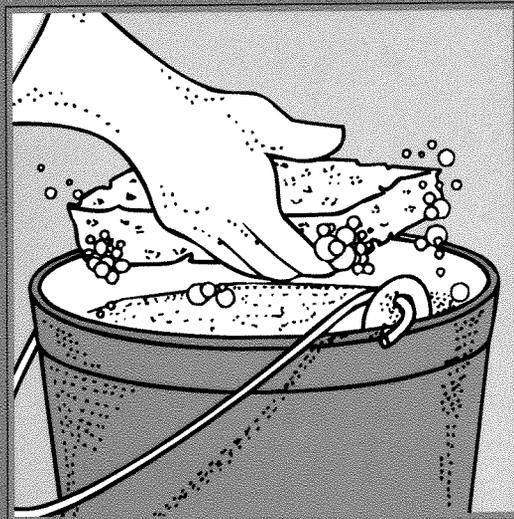
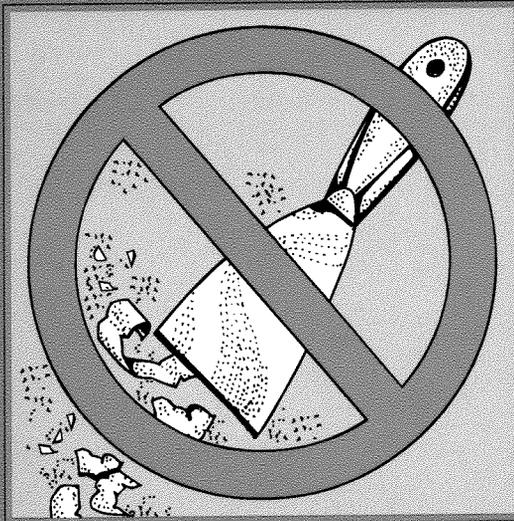


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(minimum 50% postconsumer) process chlorine free.



Protect Your Family From Lead In Your Home



 **EPA** United States
Environmental
Protection Agency



United States
Consumer Product
Safety Commission



United States
Department of Housing
and Urban Development

Are You Planning To Buy, Rent, or Renovate a Home Built Before 1978?

Many houses and apartments built before 1978 have paint that contains high levels of lead (called lead-based paint). Lead from paint, chips, and dust can pose serious health hazards if not taken care of properly.



OWNERS, BUYERS, and RENTERS are encouraged to check for lead (see page 6) before renting, buying or renovating pre-1978 housing.

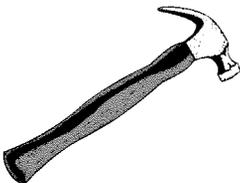
Federal law requires that individuals receive certain information before renting, buying, or renovating pre-1978 housing:



LANDLORDS have to disclose known information on lead-based paint and lead-based paint hazards before leases take effect. Leases must include a disclosure about lead-based paint.



SELLERS have to disclose known information on lead-based paint and lead-based paint hazards before selling a house. Sales contracts must include a disclosure about lead-based paint. Buyers have up to 10 days to check for lead.



RENOVATORS disturbing more than 2 square feet of painted surfaces have to give you this pamphlet before starting work.

IMPORTANT!

Lead From Paint, Dust, and Soil Can Be Dangerous If Not Managed Properly

- FACT:** Lead exposure can harm young children and babies even before they are born.
- FACT:** Even children who seem healthy can have high levels of lead in their bodies.
- FACT:** People can get lead in their bodies by breathing or swallowing lead dust, or by eating soil or paint chips containing lead.
- FACT:** People have many options for reducing lead hazards. In most cases, lead-based paint that is in good condition is not a hazard.
- FACT:** Removing lead-based paint improperly can increase the danger to your family.

If you think your home might have lead hazards, read this pamphlet to learn some simple steps to protect your family.

Lead Gets in the Body in Many Ways

Childhood lead poisoning remains a major environmental health problem in the U.S.

Even children who appear healthy can have dangerous levels of lead in their bodies.

People can get lead in their body if they:

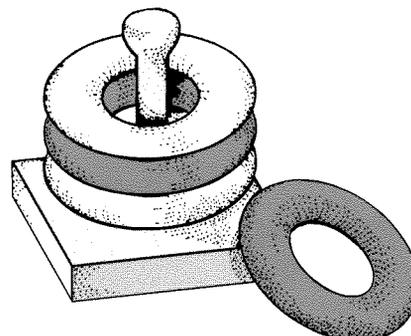
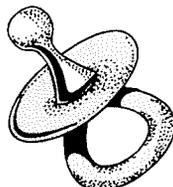
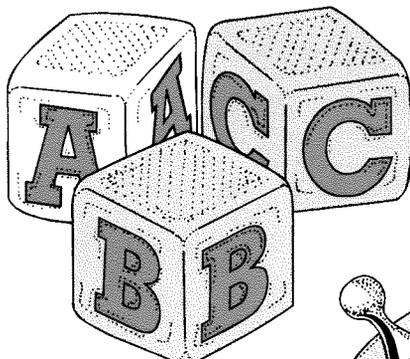
- ◆ Breathe in lead dust (especially during renovations that disturb painted surfaces).
- ◆ Put their hands or other objects covered with lead dust in their mouths.
- ◆ Eat paint chips or soil that contains lead.

Lead is even more dangerous to children under the age of 6:

- ◆ At this age children's brains and nervous systems are more sensitive to the damaging effects of lead.
- ◆ Children's growing bodies absorb more lead.
- ◆ Babies and young children often put their hands and other objects in their mouths. These objects can have lead dust on them.

Lead is also dangerous to women of childbearing age:

- ◆ Women with a high lead level in their system prior to pregnancy would expose a fetus to lead through the placenta during fetal development.



Lead's Effects

It is important to know that even exposure to low levels of lead can severely harm children.

In children, lead can cause:

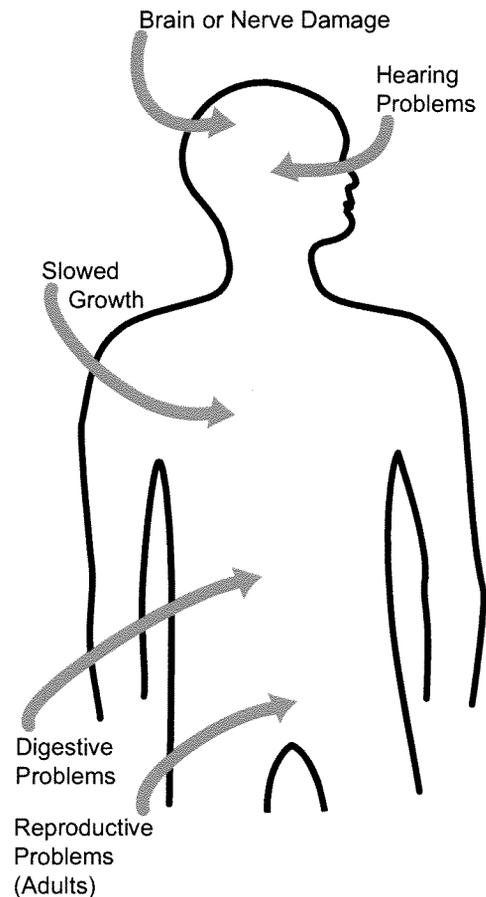
- ◆ Nervous system and kidney damage.
- ◆ Learning disabilities, attention deficit disorder, and decreased intelligence.
- ◆ Speech, language, and behavior problems.
- ◆ Poor muscle coordination.
- ◆ Decreased muscle and bone growth.
- ◆ Hearing damage.

While low-lead exposure is most common, exposure to high levels of lead can have devastating effects on children, including seizures, unconsciousness, and, in some cases, death.

Although children are especially susceptible to lead exposure, lead can be dangerous for adults too.

In adults, lead can cause:

- ◆ Increased chance of illness during pregnancy.
- ◆ Harm to a fetus, including brain damage or death.
- ◆ Fertility problems (in men and women).
- ◆ High blood pressure.
- ◆ Digestive problems.
- ◆ Nerve disorders.
- ◆ Memory and concentration problems.
- ◆ Muscle and joint pain.



**Lead affects
the body in
many ways.**

Where Lead-Based Paint Is Found

In general, the older your home, the more likely it has lead-based paint.

Many homes built before 1978 have lead-based paint. The federal government banned lead-based paint from housing in 1978. Some states stopped its use even earlier. Lead can be found:

- ◆ In homes in the city, country, or suburbs.
- ◆ In apartments, single-family homes, and both private and public housing.
- ◆ Inside and outside of the house.
- ◆ In soil around a home. (Soil can pick up lead from exterior paint or other sources such as past use of leaded gas in cars.)

Checking Your Family for Lead

Get your children and home tested if you think your home has high levels of lead.

To reduce your child's exposure to lead, get your child checked, have your home tested (especially if your home has paint in poor condition and was built before 1978), and fix any hazards you may have. Children's blood lead levels tend to increase rapidly from 6 to 12 months of age, and tend to peak at 18 to 24 months of age.

Consult your doctor for advice on testing your children. A simple blood test can detect high levels of lead. Blood tests are usually recommended for:

- ◆ Children at ages 1 and 2.
- ◆ Children or other family members who have been exposed to high levels of lead.
- ◆ Children who should be tested under your state or local health screening plan.

Your doctor can explain what the test results mean and if more testing will be needed.

Identifying Lead Hazards

Lead-based paint is usually not a hazard if it is in good condition, and it is not on an impact or friction surface, like a window. It is defined by the federal government as paint with lead levels greater than or equal to 1.0 milligram per square centimeter, or more than 0.5% by weight.

Deteriorating lead-based paint (peeling, chipping, chalking, cracking or damaged) is a hazard and needs immediate attention. It may also be a hazard when found on surfaces that children can chew or that get a lot of wear-and-tear, such as:

- ◆ Windows and window sills.
- ◆ Doors and door frames.
- ◆ Stairs, railings, banisters, and porches.

Lead dust can form when lead-based paint is scraped, sanded, or heated. Dust also forms when painted surfaces bump or rub together. Lead chips and dust can get on surfaces and objects that people touch. Settled lead dust can re-enter the air when people vacuum, sweep, or walk through it. The following two federal standards have been set for lead hazards in dust:

- ◆ 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) and higher for floors, including carpeted floors.
- ◆ 250 $\mu\text{g}/\text{ft}^2$ and higher for interior window sills.

Lead in soil can be a hazard when children play in bare soil or when people bring soil into the house on their shoes. The following two federal standards have been set for lead hazards in residential soil:

- ◆ 400 parts per million (ppm) and higher in play areas of bare soil.
- ◆ 1,200 ppm (average) and higher in bare soil in the remainder of the yard.

The only way to find out if paint, dust and soil lead hazards exist is to test for them. The next page describes the most common methods used.

Lead from paint chips, which you can see, and lead dust, which you can't always see, can both be serious hazards.

Checking Your Home for Lead

Just knowing that a home has lead-based paint may not tell you if there is a hazard.



You can get your home tested for lead in several different ways:

- ◆ A paint **inspection** tells you whether your home has lead-based paint and where it is located. It won't tell you whether or not your home currently has lead hazards.
- ◆ A **risk assessment** tells you if your home currently has any lead hazards from lead in paint, dust, or soil. It also tells you what actions to take to address any hazards.
- ◆ A combination risk assessment and inspection tells you if your home has any lead hazards and if your home has any lead-based paint, and where the lead-based paint is located.

Hire a trained and certified testing professional who will use a range of reliable methods when testing your home.

- ◆ Visual inspection of paint condition and location.
- ◆ A portable x-ray fluorescence (XRF) machine.
- ◆ Lab tests of paint, dust, and soil samples.

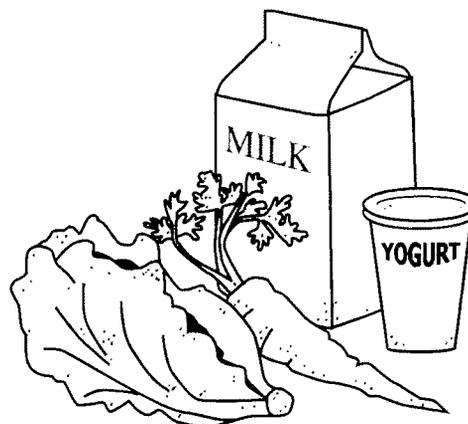
There are state and federal programs in place to ensure that testing is done safely, reliably, and effectively. Contact your state or local agency (see bottom of page 11) for more information, or call **1-800-424-LEAD (5323)** for a list of contacts in your area.

Home test kits for lead are available, but may not always be accurate. Consumers should not rely on these kits before doing renovations or to assure safety.

What You Can Do Now To Protect Your Family

If you suspect that your house has lead hazards, you can take some immediate steps to reduce your family's risk:

- ◆ **If you rent, notify your landlord of peeling or chipping paint.**
- ◆ **Clean up paint chips immediately.**
- ◆ **Clean floors, window frames, window sills, and other surfaces weekly.** Use a mop or sponge with warm water and a general all-purpose cleaner or a cleaner made specifically for lead. REMEMBER: NEVER MIX AMMONIA AND BLEACH PRODUCTS TOGETHER SINCE THEY CAN FORM A DANGEROUS GAS.
- ◆ **Thoroughly rinse sponges and mop heads after cleaning dirty or dusty areas.**
- ◆ **Wash children's hands often, especially before they eat and before nap time and bed time.**
- ◆ **Keep play areas clean.** Wash bottles, pacifiers, toys, and stuffed animals regularly.
- ◆ **Keep children from chewing window sills or other painted surfaces.**
- ◆ **Clean or remove shoes before entering your home to avoid tracking in lead from soil.**
- ◆ **Make sure children eat nutritious, low-fat meals high in iron and calcium, such as spinach and dairy products.** Children with good diets absorb less lead.



Reducing Lead Hazards In The Home

Removing lead improperly can increase the hazard to your family by spreading even more lead dust around the house.

Always use a professional who is trained to remove lead hazards safely.



In addition to day-to-day cleaning and good nutrition:

- ◆ You can **temporarily** reduce lead hazards by taking actions such as repairing damaged painted surfaces and planting grass to cover soil with high lead levels. These actions (called “interim controls”) are not permanent solutions and will need ongoing attention.
- ◆ To **permanently** remove lead hazards, you should hire a certified lead “abatement” contractor. Abatement (or permanent hazard elimination) methods include removing, sealing, or enclosing lead-based paint with special materials. Just painting over the hazard with regular paint is not permanent removal.

Always hire a person with special training for correcting lead problems—someone who knows how to do this work safely and has the proper equipment to clean up thoroughly. Certified contractors will employ qualified workers and follow strict safety rules as set by their state or by the federal government.

Once the work is completed, dust cleanup activities must be repeated until testing indicates that lead dust levels are below the following:

- ◆ 40 micrograms per square foot ($\mu\text{g}/\text{ft}^2$) for floors, including carpeted floors;
- ◆ 250 $\mu\text{g}/\text{ft}^2$ for interior windows sills; and
- ◆ 400 $\mu\text{g}/\text{ft}^2$ for window troughs.

Call your state or local agency (see bottom of page 11) for help in locating certified professionals in your area and to see if financial assistance is available.

Remodeling or Renovating a Home With Lead-Based Paint

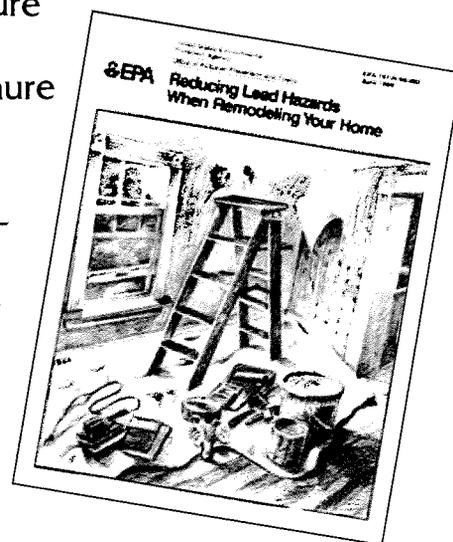
Take precautions before your contractor or you begin remodeling or renovating anything that disturbs painted surfaces (such as scraping off paint or tearing out walls):

- ◆ **Have the area tested for lead-based paint.**
- ◆ **Do not use a belt-sander, propane torch, high temperature heat gun, dry scraper, or dry sandpaper** to remove lead-based paint. These actions create large amounts of lead dust and fumes. Lead dust can remain in your home long after the work is done.
- ◆ **Temporarily move your family** (especially children and pregnant women) out of the apartment or house until the work is done and the area is properly cleaned. If you can't move your family, at least completely seal off the work area.
- ◆ **Follow other safety measures to reduce lead hazards.** You can find out about other safety measures by calling 1-800-424-LEAD. Ask for the brochure "Reducing Lead Hazards When Remodeling Your Home." This brochure explains what to do before, during, and after renovations.

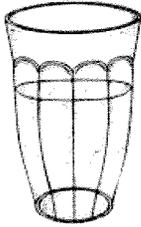
If you have already completed renovations or remodeling that could have released lead-based paint or dust, get your young children tested and follow the steps outlined on page 7 of this brochure.



If not conducted properly, certain types of renovations can release lead from paint and dust into the air.



Other Sources of Lead

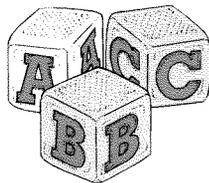


While paint, dust, and soil are the most common sources of lead, other lead sources also exist.

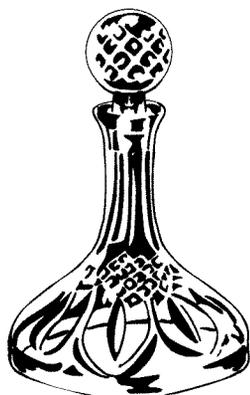
- ◆ **Drinking water.** Your home might have plumbing with lead or lead solder. Call your local health department or water supplier to find out about testing your water. You cannot see, smell, or taste lead, and boiling your water will not get rid of lead. If you think your plumbing might have lead in it:

- Use only cold water for drinking and cooking.
- Run water for 15 to 30 seconds before drinking it, especially if you have not used your water for a few hours.

- ◆ **The job.** If you work with lead, you could bring it home on your hands or clothes. Shower and change clothes before coming home. Launder your work clothes separately from the rest of your family's clothes.



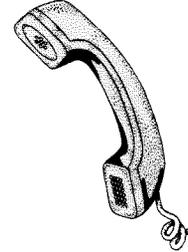
- ◆ Old painted **toys** and **furniture**.
- ◆ Food and liquids stored in **lead crystal** or **lead-glazed pottery or porcelain**.
- ◆ **Lead smelters** or other industries that release lead into the air.
- ◆ **Hobbies** that use lead, such as making pottery or stained glass, or refinishing furniture.
- ◆ **Folk remedies** that contain lead, such as "greta" and "azarcon" used to treat an upset stomach.



For More Information

The National Lead Information Center

Call **1-800-424-LEAD (424-5323)** to learn how to protect children from lead poisoning and for other information on lead hazards. To access lead information via the web, visit **www.epa.gov/lead** and **www.hud.gov/offices/lead/**.

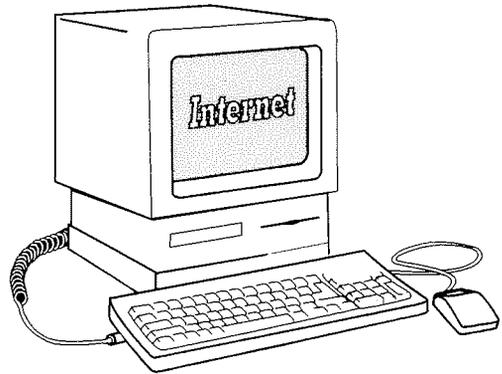


EPA's Safe Drinking Water Hotline

Call **1-800-426-4791** for information about lead in drinking water.

Consumer Product Safety Commission (CPSC) Hotline

To request information on lead in consumer products, or to report an unsafe consumer product or a product-related injury call **1-800-638-2772**, or visit CPSC's Web site at: **www.cpsc.gov**.



Health and Environmental Agencies

Some cities, states, and tribes have their own rules for lead-based paint activities. Check with your local agency to see which laws apply to you. Most agencies can also provide information on finding a lead abatement firm in your area, and on possible sources of financial aid for reducing lead hazards. Receive up-to-date address and phone information for your local contacts on the Internet at **www.epa.gov/lead** or contact the National Lead Information Center at **1-800-424-LEAD**.

For the hearing impaired, call the Federal Information Relay Service at **1-800-877-8339** to access any of the phone numbers in this brochure.

EPA Regional Offices

Your Regional EPA Office can provide further information regarding regulations and lead protection programs.

EPA Regional Offices

Region 1 (Connecticut, Massachusetts, Maine, New Hampshire, Rhode Island, Vermont)

Regional Lead Contact
U.S. EPA Region 1
Suite 1100 (CPT)
One Congress Street
Boston, MA 02114-2023
1 (888) 372-7341

Region 2 (New Jersey, New York, Puerto Rico, Virgin Islands)

Regional Lead Contact
U.S. EPA Region 2
2890 Woodbridge Avenue
Building 209, Mail Stop 225
Edison, NJ 08837-3679
(732) 321-6671

Region 3 (Delaware, Maryland, Pennsylvania, Virginia, Washington DC, West Virginia)

Regional Lead Contact
U.S. EPA Region 3 (3WC33)
1650 Arch Street
Philadelphia, PA 19103
(215) 814-5000

Region 4 (Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina, Tennessee)

Regional Lead Contact
U.S. EPA Region 4
61 Forsyth Street, SW
Atlanta, GA 30303
(404) 562-8998

Region 5 (Illinois, Indiana, Michigan, Minnesota, Ohio, Wisconsin)

Regional Lead Contact
U.S. EPA Region 5 (DT-8J)
77 West Jackson Boulevard
Chicago, IL 60604-3666
(312) 886-6003

Region 6 (Arkansas, Louisiana, New Mexico, Oklahoma, Texas)

Regional Lead Contact
U.S. EPA Region 6
1445 Ross Avenue, 12th Floor
Dallas, TX 75202-2733
(214) 665-7577

Region 7 (Iowa, Kansas, Missouri, Nebraska)

Regional Lead Contact
U.S. EPA Region 7
(ARTD-RALI)
901 N. 5th Street
Kansas City, KS 66101
(913) 551-7020

Region 8 (Colorado, Montana, North Dakota, South Dakota, Utah, Wyoming)

Regional Lead Contact
U.S. EPA Region 8
999 18th Street, Suite 500
Denver, CO 80202-2466
(303) 312-6021

Region 9 (Arizona, California, Hawaii, Nevada)

Regional Lead Contact
U.S. Region 9
75 Hawthorne Street
San Francisco, CA 94105
(415) 947-4164

Region 10 (Alaska, Idaho, Oregon, Washington)

Regional Lead Contact
U.S. EPA Region 10
Toxics Section WCM-128
1200 Sixth Avenue
Seattle, WA 98101-1128
(206) 553-1985

CPSC Regional Offices

Your Regional CPSC Office can provide further information regarding regulations and consumer product safety.

Eastern Regional Center

Consumer Product Safety Commission
201 Varick Street, Room 903
New York, NY 10014
(212) 620-4120

Western Regional Center

Consumer Product Safety Commission
1301 Clay Street, Suite 610-N
Oakland, CA 94612
(510) 637-4050

Central Regional Center

Consumer Product Safety Commission
230 South Dearborn Street, Room 2944
Chicago, IL 60604
(312) 353-8260

HUD Lead Office

Please contact HUD's Office of Healthy Homes and Lead Hazard Control for information on lead regulations, outreach efforts, and lead hazard control and research grant programs.

U.S. Department of Housing and Urban Development

Office of Healthy Homes and Lead Hazard Control
451 Seventh Street, SW, P-3206
Washington, DC 20410
(202) 755-1785

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U.S. EPA Washington DC 20460
U.S. CPSC Washington DC 20207
U.S. HUD Washington DC 20410

EPA747-K-99-001
June 2003

ATTACHMENT

SAMPLE DOCUMENT



ADDENDUM FOR SELLER'S DISCLOSURE OF INFORMATION ON LEAD-BASED PAINT AND LEAD-BASED PAINT HAZARDS AS REQUIRED BY FEDERAL LAW

CONCERNING THE PROPERTY AT _____
(Street Address and City)

A. LEAD WARNING STATEMENT: "Every purchaser of any interest in residential real property on which a residential dwelling was built prior to 1978 is notified that such property may present exposure to lead from lead-based paint that may place young children at risk of developing lead poisoning. Lead poisoning in young children may produce permanent neurological damage, including learning disabilities, reduced intelligence quotient, behavioral problems, and impaired memory. Lead poisoning also poses a particular risk to pregnant women. The seller of any interest in residential real property is required to provide the buyer with any information on lead-based paint hazards from risk assessments or inspections in the seller's possession and notify the buyer of any known lead-based paint hazards. A risk assessment or inspection for possible lead-paint hazards is recommended prior to purchase."

NOTICE: Inspector must be properly certified as required by federal law.

B. SELLER'S DISCLOSURE:

1. PRESENCE OF LEAD-BASED PAINT AND/OR LEAD-BASED PAINT HAZARDS (check one box only):
 - (a) Known lead-based paint and/or lead-based paint hazards are present in the Property (explain): _____
 - (b) Seller has no actual knowledge of lead-based paint and/or lead-based paint hazards in the Property.
2. RECORDS AND REPORTS AVAILABLE TO SELLER (check one box only):
 - (a) Seller has provided the purchaser with all available records and reports pertaining to lead-based paint and/or lead-based paint hazards in the Property (list documents): _____
 - (b) Seller has no reports or records pertaining to lead-based paint and/or lead-based paint hazards in the Property.

C. BUYER'S RIGHTS (check one box only):

1. Buyer waives the opportunity to conduct a risk assessment or inspection of the Property for the presence of lead-based paint or lead-based paint hazards.
2. Within ten days after the effective date of this contract, Buyer may have the Property inspected by inspectors selected by Buyer. If lead-based paint or lead-based paint hazards are present, Buyer may terminate this contract by giving Seller written notice within 14 days after the effective date of this contract, and the earnest money will be refunded to Buyer.

D. BUYER'S ACKNOWLEDGMENT (check applicable boxes):

1. Buyer has received copies of all information listed above.
2. Buyer has received the pamphlet *Protect Your Family from Lead in Your Home*.

E. BROKERS' ACKNOWLEDGMENT: Brokers have informed Seller of Seller's obligations under 42 U.S.C. 4852d to: (a) provide Buyer with the federally approved pamphlet on lead poisoning prevention; (b) complete this addendum; (c) disclose any known lead-based paint and/or lead-based paint hazards in the Property; (d) deliver all records and reports to Buyer pertaining to lead-based paint and/or lead-based paint hazards in the Property; (e) provide Buyer a period of up to 10 days to have the Property inspected; and (f) retain a completed copy of this addendum for at least 3 years following the sale. Brokers are aware of their responsibility to ensure compliance.

F. CERTIFICATION OF ACCURACY: The following persons have reviewed the information above and certify, to the best of their knowledge, that the information they have provided is true and accurate.

Buyer	Date	Seller	Date
Buyer	Date	Seller	Date
Other Broker	Date	Listing Broker	Date

The form of this addendum has been approved by the Texas Real Estate Commission for use only with similarly approved or promulgated forms of contracts. Such approval relates to this contract form only. TREC forms are intended for use only by trained real estate licensees. No representation is made as to the legal validity or adequacy of any provision in any specific transactions. It is not suitable for complex transactions. Texas Real Estate Commission, P.O. Box 12188, Austin, TX 78711-2188, 512-936-3000 (<http://www.trec.texas.gov>)

ATTACHMENT

INTERPRETIVE GUIDANCE ON HUD'S LEAD SAFE HOUSING RULE:

THE HUD REGULATION ON CONTROLLING LEAD-BASED PAINT HAZARDS IN HOUSING RECEIVING FEDERAL ASSISTANCE AND FEDERALLY OWNED HOUSING BEING SOLD

INTERPRETIVE GUIDANCE
ON HUD'S
LEAD SAFE HOUSING RULE:
THE HUD REGULATION ON CONTROLLING LEAD-BASED PAINT HAZARDS
IN HOUSING RECEIVING FEDERAL ASSISTANCE AND
FEDERALLY OWNED HOUSING BEING SOLD
(24 CFR Part 35)

U.S. Department of Housing and Urban Development
Office of Healthy Homes and Lead Hazard Control
Washington, DC 20410

www.hud.gov/offices/lead

Revised June 21, 2004

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INTRODUCTION

On September 15, 1999, The U.S. Department of Housing and Urban Development (HUD) published a final regulation, "Requirements for Notification, Evaluation and Reduction of Lead-Based Paint Hazards in Federally Owned Residential Property and Housing Receiving Federal Assistance," known as the Lead Safe Housing Rule. The purpose of the regulation is to protect young children from lead-based paint hazards in housing that is either receiving assistance from the Federal government or is being sold by the government. The regulation establishes procedures for evaluating whether a hazard may be present, controlling or eliminating the hazard, and notifying occupants of what was found and what was done in such housing. The Lead Safe Housing Rule took effect on September 15, 2000. The regulation does not have any substantive effect on the lead-based paint disclosure rule, which was issued jointly by HUD and the U.S. Environmental Protection Agency in 1996.

As required by Title X of the Housing and Community Development Act of 1992, the EPA published lead hazard standards in its final rule, Identification of Dangerous Levels of Lead (66 FR 1206; January 5, 2001). These EPA standards, which became effective March 6, 2001, are available from the Internet at www.epa.gov/lead/leadhaz.htm. Therefore, in accordance with Title X, HUD amended the Lead Safe Housing Rule on June 21, 2004, to incorporate the new EPA dust-lead and soil-lead standards as HUD's final standards. In addition, other minor technical corrections were made at that time.

The purpose of this document is to provide answers to many of the questions that HUD has received since the publication of the regulation. The questions and answers begin with general information and then are organized according to the subpart of the regulation to which they most closely apply.

The regulation is at part 35 of title 24 of the Code of Federal Regulations (24 CFR part 35). It implements sections 1012 and 1013 of the Residential Lead-Based Paint Hazard Reduction Act of 1992, which is Title X of the Housing and Community Development Act of 1992. Sections 1012 and 1013 amend the Lead-Based Paint Poisoning Prevention Act of 1971.

A. GENERAL INFORMATION

A1. PURPOSE OF THE REGULATION: What is the purpose of this regulation?

HUD issued this regulation to protect young children from lead-based paint hazards in housing that is financially assisted by the Federal government or sold by the government. The regulation establishes requirements that control lead-based paint hazards in such housing. It applies only to housing that was built before 1978; in that year, lead-based paint was banned nationwide for consumer use.

A2. NEW & EXISTING REGULATIONS: I thought HUD already had lead paint regulations. What's new about this?

HUD did have existing lead paint regulations. This new regulation consolidated all of the Department's existing regulations in one part of the Code of Federal Regulations (CFR). Now you can easily find HUD's lead paint policies in one place, instead of having to look through each program-specific part of the CFR.

More importantly, this regulation implemented the new requirements, concepts and terminology established by the Residential Lead-Based Paint Hazard Reduction Act of 1992, which is Title X ("ten") of the Housing and Community Development Act of 1992. The new regulation retained the existing fundamental requirement of repairing deteriorated paint, but it also required control of lead-contaminated dust associated with the presence of lead-based paint. Research has found lead in dust to be the most common pathway of childhood exposure to lead. The "clearance" requirement in the regulation is the best example of the emphasis on dust resulting from these research findings. Clearance involves testing settled dust for lead contamination after hazard control work. It ensures that fine particles of lead in dust have been cleaned up and the unit is safe for reoccupancy. The old regulations did not require cleanup or clearance. (See Question B8, below, for further information on clearance.) Also, this regulation uses the framework of trained and certified lead paint professionals to assure that lead hazard control work is done safely. The Department believes that these changes resulted in a much more effective national program that has reduced childhood lead poisoning.

A3. EFFECTIVE DATE: When does the regulation take effect?

Prohibitions against using dangerous methods of removing paint took effect on November 15, 1999, but most of the regulation was scheduled to take effect on September 15, 2000, one year after publication. The purpose of the one-year phase-in period was to provide time for owners and managers of housing, and local program

administrators to learn about the requirements and plan and budget for compliance. HUD provided training and technical assistance on the new requirements.

A4. EFFECT ON DISCLOSURE REGULATION: How does this regulation affect the lead paint disclosure requirements that were issued jointly by HUD and EPA in 1996?

It had no effect whatsoever on the disclosure requirements. However, it restructured the subpart of 24 CFR Part 35 where the HUD-published disclosure requirements are found from subpart H to subpart A. The section numbers and the text of the disclosure requirements stayed the same.

A5. EXEMPTIONS: What kinds of properties and activities are exempted from the regulation?

The following properties are not covered by this regulation, either because lead paint is unlikely to be present, or because children will not occupy the house in the future:

- Housing built on or after January 1, 1978 (when lead paint was banned for residential use)
- Housing exclusively for the elderly or persons with disabilities, unless a child under age 6 is expected to reside there for prolonged periods of time
- Zero bedroom dwellings, including efficiency apartments, single-room occupancy housing, dormitories, or military barracks
- Property that has been found to be free of lead-based paint by a certified inspector
- Property from which all lead-based paint has been removed, and clearance has been achieved
- Unoccupied housing that will remain vacant until it is demolished
- Non-residential property
- Any rehabilitation or housing improvement that does not disturb a painted surface.

Also, emergency repair actions, which are those needed to safeguard against imminent danger to human life, health or safety, or to protect property from further structural damage, are exempted.

Finally, the requirements do not apply to emergency housing assistance (such as for the homeless), unless the assistance lasts more than 100 days, in which case the rule does apply.

A6. SUMMARY OF REQUIREMENTS: What are the requirements of the regulation?

In accordance with the Statute (Title X of the 1992 Housing and Community Development Act), the requirements vary, depending on the nature of the Federal involvement (e.g., whether the housing is being disposed of or assisted by the Federal government); the type, amount and duration of financial assistance; the age of the structure (which is associated with the amount of lead in the paint); and whether the dwelling is rental or owner-occupied.

A summary of requirements for each type of housing assistance is at the end of the answer to this question. Details are in the regulation itself. If you are responsible for compliance with the regulation, you should become familiar with the specific requirements for your particular program or programs by reading the regulation itself.

To illustrate the nature of the requirements, below is a brief description of two of the more common sets of hazard evaluation and control requirements.

One set of hazard control requirements that applies to several HUD programs is:

- Stabilization of any deteriorated paint, including correction of any moisture leaks or other obvious causes of paint deterioration, as well as repainting (paint stabilization is not required if the paint is tested and found not to be lead-based paint);
- "Clearance" following paint stabilization to ensure that the work has been completed, that dust, paint chips and other debris have been satisfactorily cleaned up, and that settled dust has low levels of lead; and
- Ongoing maintenance of the paint and periodic reevaluation to ensure that the housing remains lead safe.

Another set of requirements found in the regulation is:

- a risk assessment to identify lead-based paint hazards;
- interim control measures to eliminate any hazards that are identified;
- clearance; and
- ongoing maintenance and periodic reevaluation to ensure that lead-based paint hazards do not reappear.

The terms, "risk assessment," "lead-based paint hazards," and "interim controls" are explained below in questions C1-C3.

SUMMARY OF HUD LEAD-BASED PAINT (LBP) REQUIREMENTS

Sub-part	Type of Program	Construction Period	Requirements ^{1, 2, 3}
A	Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards	Pre-1978	<ul style="list-style-type: none"> • See www.hud.gov/offices/lead for Lead Disclosure Rule requirements for sale or lease of residential property.
B	General Lead-Based Paint Requirements and Definitions	Pre-1978	<ul style="list-style-type: none"> • All properties covered by the Lead Safe Housing Rule.⁴
C	Disposition by Federal Agency Other Than HUD	Pre-1960	<ul style="list-style-type: none"> • LBP inspection and risk assessment. • Abatement of LBP hazards. • Notice to occupants.
		1960-1977	<ul style="list-style-type: none"> • LBP inspection and risk assessment. • Notice to occupants of results.
D	Project-Based Assistance by Federal Agency Other Than HUD	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Risk assessment. • Interim controls. • Notice to occupants. • Response to child with EIBLL.⁵
F	HUD-Owned Single Family Sold With a HUD-Insured Mortgage	Pre-1978	<ul style="list-style-type: none"> • Visual assessment. • Paint stabilization. • Notice to occupants of clearance.
G	Multifamily Mortgage Insurance:		
	1. For properties that are currently residential	Pre-1960	<ul style="list-style-type: none"> • Provision of pamphlet. • Risk assessment. • Interim controls. • Notice to occupants. • Ongoing LBP maintenance.
		1960-1977	<ul style="list-style-type: none"> • Provision of pamphlet. • Ongoing LBP maintenance.
2. For conversions and major renovations.	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • LBP inspection. • Abatement of LBP. • Notice to occupants. 	
H	Project-Based Assistance by HUD		
	For all properties	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Notice to occupants. • Ongoing LBP maintenance and reevaluation. • Response to child with EIBLL.⁵
	1. Multifamily property receiving more than \$5,000 per unit per year	Pre-1978	<ul style="list-style-type: none"> • Risk assessment. • Interim controls.
	2. Multifamily property receiving less than or equal to \$5,000 per unit per year, and single family properties	Pre-1978	<ul style="list-style-type: none"> • Visual assessment. • Paint stabilization.
I	HUD-Owned Multifamily Property	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • LBP inspection and risk assessment. • Interim controls. • Notice to occupants. • Ongoing LBP maintenance and reevaluation. • Response to child with EIBLL.⁵

SUMMARY OF HUD LEAD-BASED PAINT (LBP) REQUIREMENTS (continued)

Sub-part	Type of Program	Construction Period	Requirements ^{1, 2, 3}
J	Rehabilitation Assistance: For all Properties 1. Property receiving less than or equal to \$5,000 per unit 2. Property receiving more than \$5,000 and up to \$25,000 3. Property receiving more than \$25,000 per unit	Pre-1978 Pre-1978 Pre-1978 Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Paint testing of surfaces to be disturbed, or presume LBP. • Notice to occupants. • Ongoing LBP maintenance if HOME rental. • Safe work practices in rehab. • Repair disturbed paint. • Clearance of the worksite. • Risk assessment. • Interim controls. • Risk assessment. • Abatement of LBP hazards. • Interim controls allowed for exterior.
K	Acquisition, Leasing, Support Services, or Operation	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Visual assessment. • Paint stabilization. • Notice to occupants. • Ongoing LBP maintenance for ongoing assistance.
L	Public Housing	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • LBP inspection. • Risk assessment if LBP not yet abated. • Interim controls if LBP not yet abated. • Abatement of LBP during modernization. • Notice to occupants. • Ongoing LBP maintenance and reevaluation. • Response to child with EIBLL.⁵
M	Tenant-Based Rental Assistance for units to be occupied by children under 6 years of age	Pre-1978	<ul style="list-style-type: none"> • Provision of pamphlet. • Visual assessment. • Paint stabilization. • Notice to occupants. • Ongoing LBP maintenance. • Response to child with EIBLL.⁵

1. Safe work practices and occupant protection are always required. Clearance is required after abatement, interim controls, paint stabilization, or standard treatments, except when the amount of deteriorated paint is below the de minimis levels specified in Subpart R of the rule.
2. Notice to occupants must include results of evaluations (paint testing, inspection, and risk assessment) and clearance, where applicable.
3. Training requirements (see www.hud.gov/offices/lead for information; see www.epa.gov/lead about certification):
 Evaluation: Visual assessment: Web-based HUD visual assessment course, or risk assessment certification.
 Inspection: LBP inspection certification.
 Risk assessment, or re-evaluation: Risk assessment certification.
 Clearance: LBP inspection or risk assessment certification, or sampling technician course.
 Hazard Control (except for small (“de minimis”) amounts of paint disturbance; see 24 CFR 35.1350(d)):
 Repair of paint, paint stabilization, or interim control: Lead-safe work practices course.
 Abatement: Abatement certification.
4. See 24 CFR 35.115 for exemptions.
5. Environmental intervention blood lead level: At least 20 micrograms of lead per deciliter (µg/dL) for a single test, or 15-19 µg/dL in two tests taken at least 3 months apart.

A7. ORGANIZATION OF THE REGULATION: How is the regulation organized?

The regulation is divided into "subparts" of 24 CFR Part 35. Three subparts apply to all programs. Subpart A is the existing disclosure regulation that requires sellers and lessors of most pre-1978 housing to disclose known information on lead-based paint and/or lead-based paint hazards to prospective buyers and renters. Subpart B describes the scope of coverage of the new regulation and provides definitions and general requirements for all programs. Subpart R describes methods and standards for lead-based paint hazard evaluation and reduction activities. (Subparts E, and N through Q, are reserved for future use.)

Each of the other subparts (C through M) contains the requirements for a particular type of housing program or housing assistance, such as multifamily mortgage insurance, project-based assistance, rehabilitation, public housing, tenant-based assistance, or acquisition, leasing, support services or operation. The lead-hazard control requirements depend on the type of assistance provided. As programs are modified and new programs come into existence, the list will be amended, as appropriate.

A8. LOW-INCOME HOUSING TAX CREDITS: Does the Lead Safe Housing Rule apply to the Internal Revenue Service's Low-Income Housing Credit program?

Yes, when the HUD Uniform Physical Conditions Standards (UPCS) are used by the state housing credit agency to monitor for compliance in the low-income housing credit program. (The Lead Safe Housing Rule is part of the UPCS [24 CFR 5.703(f)]. The IRS' monitoring regulation became effective January 1, 2001 [26 CFR 1.42-5(d)(2)(ii)].)

A9. OTHER FEDERAL AGENCIES: Where can I find the requirements under this regulation for housing programs of a Federal agency other than HUD?

Subpart C of the regulation covers disposition (which means sale) to a non-Federal entity by Federal agencies other than HUD of housing built before 1978. Subpart D of the regulation covers project-based assistance provided by those agencies for housing built before 1978.

Each other Federal agency may establish its own regulations, policies and procedures for implementing the Act, in addition to the requirements of this regulation. You should directly contact the Federal agency you are interested in for information on its programs and practices.

A10. PROGRAMS RECEIVING MORE THAN ONE TYPE OF FEDERAL ASSISTANCE: What subpart do I use if the program I administer at the local level provides more than one type of assistance?

Some HUD programs can be used for several different types of housing assistance. Such programs include the Community Development Block Grant (CDBG) program, the HOME Investment Partnerships program, and the Indian Housing Block Grant program. If you are administering such a program for a city, county, State or Indian tribe, you will have to determine which subpart of the regulation applies to the type of assistance being provided to a particular unit or property. For example, if rehabilitation assistance is being provided, use subpart J, which applies to rehabilitation. If tenant-based rental assistance is being provided, use subpart M, which applies to all tenant-based rental assistance.

A11. HOUSING UNITS RECEIVING MORE THAN ONE TYPE OF FEDERAL ASSISTANCE: What if a dwelling unit receives more than one type of assistance? Which subpart applies?

The types of assistance provided to a dwelling unit determine what subparts of the regulation apply to that dwelling unit. If more than one type of assistance is being provided to the same dwelling unit, and two or more sets of lead paint requirements apply, the most protective requirements apply. Section 35.100 of the regulation includes a table listing HUD programs from the most protective to the least protective hazard reduction requirements. Section 35.100 also provides additional guidance on how to use the table.

A12. NUMBER OF DWELLINGS AFFECTED: How many dwelling units will be affected by this regulation?

HUD estimates that about 2.8 million HUD-associated dwelling units containing lead-based paint will be covered by 2005. The Economic Analysis accompanying the rule explains how these numbers were developed.

A13. COSTS AND BENEFITS: What are the benefits and costs of the regulation?

The Economic Analysis accompanying the rule, as published in the Federal Register, contains a full description of costs and benefits. The benefits of the rule are primarily the increased lifetime earnings of children whose exposure to lead is reduced by living in housing made lead-safe as a result of the regulation. The estimate of increased lifetime earnings is from scientific studies of links between lead exposure and lost IQ, and between IQ and lifetime earnings. Other benefits include avoided costs of medical treatment and special education. In addition, benefits that have not been estimated in

monetary terms include improving children's stature, hearing, and vitamin D metabolism; reducing juvenile delinquency and the burden on the educational system; avoiding the parental and family time, expenses and emotional costs involved in caring for lead poisoned children; and reducing personal injury claims and associated court costs.

HUD estimates that the present value of total benefits associated with the first five years of the regulation is \$2.65 billion for HUD-associated dwellings, using a three percent discount rate. The present value of the costs associated with the first five years of the regulation is estimated to be \$564 million. Therefore, estimated net benefits are \$2.08 billion.

The average cost of compliance per HUD-associated dwelling unit is estimated at approximately \$200 (\$564 million/2.8 million units). The costs will range from the many units that will have no costs at all (because they have been well maintained and have no deteriorated lead paint) to other units that may have significant costs.

A14. OBTAINING COPIES OF THE REGULATION: How can I get a copy of the regulation?

You can obtain the regulation, including its "preamble" (an explanation of the issues and policies), by downloading from the Internet at www.hud.gov/offices/lead, or by mail from the National Lead Information Center at 1-800-424-LEAD.

HUD published the regulation in the Federal Register, on September 15, 1999, starting on page 50410. Also, HUD published three corrections to the regulation: one on January 21, 2000, starting on page 3386, one on March 30, 2000, starting on page 16818, and one on June 21, 2004, starting on page 34262. You can obtain copies of these issues by downloading from the HUD web site, shown above, from the Federal Register web site, www.gpoaccess.gov/fr/, or by mail, for a fee, from the Government Printing Office toll-free at (888) 293-6498 or at 1-202-512-1530 (this is a toll call). There is no difference between the copies available from the HUD web site, the National Lead Information Center, the Federal Register web site, or the Government Printing Office. If you are a hearing- or speech-impaired person, you may reach the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

Subpart B. GENERAL REQUIREMENTS

B1. EFFECTIVE DATE FOR EPA-CERTIFIED INDIVIDUALS: The regulation published on September 15, 1999 states, in section 35.165, that: (1) lead-based paint inspections, risk assessments and abatements conducted after August 29, 1999 must be performed by individuals certified to perform such activities by EPA or an EPA-authorized State or tribal program, and (2) such activities conducted prior to August 30, 1999 are acceptable under the regulation if the performing individuals were approved by a State or tribal program, regardless of whether the program was authorized by EPA. The “preamble” to the regulation indicates that HUD chose the date, August 30, 1999, because that was the effective date of the certification requirements promulgated by the U.S. Environmental Protection Agency (EPA) at 40 CFR 745.226 and 745.239. However, EPA has since changed that date to March 1, 2000. Which date now applies to the HUD regulation: August 30, 1999 or March 1, 2000?

March 1, 2000. HUD amended its regulation on January 21, 2000 and MMM DD, 2004 to make the dates in 24 CFR 35.165 conform to the effective date of the EPA certification requirements in 40 CFR 745.226 and 745.239.

B2. ADEQUATE VENTILATION: Section 35.140(f) states that “paint stripping in a poorly ventilated space using a volatile stripper that is a hazardous substance in accordance with regulations of the Consumer Product Safety Commission . . . and/or . . . the Occupational Safety and Health Administration . . .” is prohibited. What is an adequately ventilated space?

Adequately ventilated means conditions that prevent occupational exposures from exceeding the Permissible Exposure Limit of the Occupational Safety and Health Administration for the hazardous substance. (For more information, see OSHA’s rules at 29 CFR parts 1910 and 1926). These rules can be found at OSHA’s web site at www.osha.gov, which also contains OSHA’s published guidance; or from OSHA’s regional and area offices (phone numbers can be obtained from OSHA toll-free at 1-800-321-OSHA (6742); or, for a fee, from the Government Printing Office at (888) 293-6948 (toll-free) or 1-202-512-1530 (this is a toll call).) Paint strippers should not be used in spaces that have no fresh air supply. If you are a hearing- or speech-impaired person, you may reach the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

B3. PAMPHLET: Is the pamphlet that must be provided under the new HUD regulation the same pamphlet that must be provided under the 1996 HUD-EPA regulation on disclosure of lead-based paint hazards? If so, why do I need to provide it again, and if I do how do I get copies of the pamphlet?

The two pamphlets are the same. It is not necessary to provide the pamphlet again if you can show that it has already been provided (see section 35.130). Also, the first edition, dated 1995, is still valid; you do not need to provide a more recent edition if you have provided a copy of the first edition. There is a third regulation that requires provision of the same pamphlet: the EPA pre-renovation hazard education rule at 40 CFR part 745, subpart E. All three pamphlet-provision requirements are called for in the basic statute, the Residential Lead-Based Paint Hazard Reduction Act of 1992, which is Title X of the Housing and Community Development Act of 1992. If you can show that the pamphlet has already been provided in compliance with the disclosure rule or the pre-renovation education rule, you need not provide it again.

A black and white version of the pamphlet can be downloaded from the web site of the HUD Office of Lead Hazard Control at www.hud.gov/lead. Click on "Lead Info Pamphlet." A printed, color version of the pamphlet, "Protect Your Family From Lead In Your Home," can be purchased from the U.S. Government Printing Office (\$24.00 for packages of 50) by calling (888) 293-6948 (toll-free) or 1-202-512-1530 (this is a toll call). The GPO stock number is 055-000-00507-9. [Check for the Spanish version stock number.] Individual copies of the printed, color version, in either English or Spanish ("Proteja a Su Familia del Plomo en Su Casa"), can be obtained at no cost from the National Lead Information Center at 1-800-424-LEAD or electronically at www.epa.gov/opptintr/lead/nlicdocs.htm. The Center also has a black and white version that can be photocopied. If you are a hearing- or speech-impaired person, you may reach the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

B4. POSTED NOTICE: Section 35.125(c)(4) says that one method of notifying occupants of evaluation and hazard reduction activities is to post a notice in centrally located common areas. How long should such a notice remain posted?

HUD did not specify a minimal duration for the posting of a notice, but four weeks should be adequate to allow for the possibility that some occupants may temporarily not be in residence.

B5. NOTICE OF VISUAL ASSESSMENT AND HAZARD CONTROL BELOW THE DE MINIMIS: As stated in section 35.1010, a visual assessment alone is not considered an evaluation for the purposes of this regulation. Therefore no notice of evaluation is required after a visual assessment to identify deteriorated paint, even though it may result in a hazard reduction activity. Is this correct? Also, if hazard reduction is necessary, are any notice requirements triggered?

Yes, this is correct. It is not necessary to provide a notice to occupants after a visual assessment alone is completed. However, if the visual assessment results in paint stabilization and clearance, the owner must provide occupants with a Notice of Lead Hazard Reduction Activity describing the work that was done and the results of clearance. The clearance examination involves the testing of samples for the presence of

lead in dust and another visual assessment, this time to see if any deteriorated surfaces remain, and whether there are any visible amounts of dust, debris, paint chips, or residue. This is new information that must be provided to the occupants, regardless of the level of Federal assistance. If paint stabilization was completed on surfaces with areas below the de minimis threshold, no clearance, safe work practices, safe work practices training, or notification is required.

B6. COMPLETION OF HAZARD REDUCTION NOTICE: The regulation, at section 35.125(b), requires that the notice of hazard reduction activity must be provided to occupants no more than 15 calendar days after the hazard reduction activities have been completed. What constitutes “completion?”

The completion date is the date on which clearance is achieved, that is, when the subject property has passed the visual assessment and the dust samples are all below the levels indicated in section 35.1320(b)(2)(i).

B7. CLEARANCE FAILURE: What happens if clearance is not achieved at first?

If clearance is not achieved at first, you should re-clean the spaces represented by the dust samples that failed and take new samples. Sometimes, multiple small work areas will be isolated within a structure to protect building occupants and their belongings. In these circumstances, a single set of samples may be collected from the floor and other horizontal surfaces, such as windows and troughs, to represent up to four isolated areas. If that set of samples fails, all unsampled areas represented by those samples must be re-cleaned and re-cleared. (Areas represented by samples that passed clearance do not have to be re-cleaned.) Usually that is sufficient, unless the surfaces are so cracked or pitted that they cannot be effectively cleaned. If clearance is not achieved after two attempts, it is recommended that you make sure that failing horizontal surfaces (floors, interior window sills, or window troughs) are smooth and cleanable before the third sampling. It is not necessary to issue a notice of hazard reduction activity until after clearance has been achieved. The notice must include information regarding any failed clearance sampling, however, because that is important information indicating that there has been lead-contaminated dust in the property. It is also important to note that this information must be disclosed in compliance with the HUD-EPA lead-based paint disclosure rule.

B8. CLEARANCE AND COMPLIANCE: What happens if clearance is never achieved?

Clearance can always be achieved. If the property owner decides not to achieve clearance, the property or unit is not in compliance with the regulation. Where possible, local program administrators may find it expedient to provide program funds to assist owners in making horizontal surfaces smooth and cleanable if clearance proves difficult.

B9. CHILD OCCUPIED FACILITIES: Are child-occupied facilities covered by this regulation?

Child-occupied facilities, such as child care centers, serving children under 6 years old, are covered by this regulation only if they located in a common area or a dwelling unit in a residential property that is covered by this regulation. The EPA regulates the use of certified personnel to conduct lead-related work in child occupied facilities, but does not require that any work be done. The EPA's lead training and certification rule may be found at 40 CFR 745.

B10. ZERO-BEDROOM UNITS: Why are zero-bedroom dwelling units exempt from the regulation?

Zero-bedroom dwelling units are exempt because the statute states clearly that they are not to be covered by the implementing regulations. The definition of target housing in the statute excludes "any 0-bedroom dwelling" (42 U.S.C. §4851b).

B11. CHILDREN LIVING IN ELDERLY HOUSING: A property that is designated exclusively for occupancy by the elderly or persons with disabilities is exempt from the regulation, but it is not exempt if a child of less than 6 years of age resides or is expected to reside there. If the management of a property designated for occupancy by the elderly or persons with disabilities makes an exception that allows a young child to live there, what parts of the property are covered by the regulation?

If the dwelling unit is assisted by a Federal housing program, the regulation applies to the dwelling unit in which the child resides, any common areas servicing such dwelling unit, and exterior painted surfaces associated with such dwelling unit or common areas. HUD expects that, if numerous exceptions are made to allow young children to reside in a property designated for occupancy by the elderly or persons with disabilities, (such as the Living Equitably: Grandparents Aiding Children and Youth Act of 2003, P.L. 108-186) the exemption from the regulation would no longer be available and the regulation would apply to the entire property. If the exception is for temporary residence for emergency rental assistance or foreclosure prevention assistance, the regulation does not apply, but this exemption expires for a dwelling unit no later than 100 days after the initial occupancy.

B12. DETERMINATION OF ELDERLY PROPERTIES: How does one determine whether a property is designated exclusively for occupancy by the elderly or persons with disabilities?

The lease or other residency agreement should so state. The term "housing for the elderly" is defined in the regulation as "retirement communities or similar types of

housing reserved for households composed of one or more persons 62 years of age or more, or other age if recognized as elderly by a specific Federal housing assistance program.” A person with a disability is defined in the Americans With Disabilities Act (ADA) and the Rehabilitation Act of 1973 as any person who has a physical or mental impairment that substantially limits one or more major life activities, has a record of an impairment, or is regarded by others as having such an impairment. It is not necessary that the lease or residency agreement include these precise definitions.

B13. CHILD VISITS TO ELDERLY HOUSING: If a child visits an elderly housing facility or a facility for persons with disabilities for more than 10 hours a week, would this trigger lead paint requirements for a single unit in the facility?

No. It is triggered only if the child resides there. HUD recognizes that the meaning of the term “reside” may be subject to different interpretations, especially for young children, and may vary in different communities. As general guidance it may be useful to think of residence as the place where one sleeps most of the time and keeps most of one's clothing. Also, residence is a relatively permanent (as opposed to temporary) concept, and therefore it may be appropriate to consider that residence is a condition that lasts longer than 100 days.

B14. HOSPICE: Does the regulation apply to a hospice?

No, so long as the occupants are terminally ill or if occupancy is limited to adults at least 18-years of age.

B15. DEMOLITION: Section 35.115(a)(6) says that an unoccupied property that is to be demolished is exempt from the regulation, provided the property remains unoccupied until demolition. Can't demolition generate lead hazards? Shouldn't the soil be tested after demolition and, if lead-contaminated, be remediated?

The regulation does not apply to demolition, but parties planning demolition should determine first whether other Federal, State or local environmental requirements apply. Federal Occupational Safety and Health Administration (OSHA) standards (or, where applicable, State or local occupational safety and health standards) must be observed, and, in the case of Base Realignment and Conversion (BRAC) properties of the Department of Defense, EPA regulations pertaining to soil may apply. (If you are involved with a BRAC property, you should contact the Department of Defense office for the property.) It is possible that lead hazards may be generated in the act of demolition of residential properties with lead-based paint. Soil remediation following demolition depends on the level of lead in the soil and the planned reuse of the site (e.g., whether residential or another use, and whether the soil will be covered). Remediation of lead-contaminated soil may be required by other environmental laws and regulations. You may contact the EPA's Regional Lead Coordinator for more information on EPA's

regulations and policies. (The phone number of your region's Coordinator is available from an EPA hotline, 1-202-554-1404 (this is not a toll-free number), or on the Internet at www.epa.gov/lead.) If you are a hearing- or speech-impaired person, you may reach the above telephone number via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

B16. ENFORCEMENT: How will the regulation be enforced?

Monitoring and enforcement of compliance with this regulation will be integrated into the administrative procedures for each affected HUD program.

B17. BLOOD TESTING REQUIREMENT: Can a program require that children have a blood test for lead as a prerequisite for program participation?

No. Children cannot be required to have their blood tested as a prerequisite for program participation. However, parents should be encouraged to have their children tested.

B18. HISTORIC PRESERVATION: How is HUD reconciling lead hazard reduction requirements with the requirements for preservation of historic resources, such as windows and exterior paint?

The regulation includes an exception at section 35.115(a)(13) that allows designated parties to use interim controls instead of abatement methods, if requested by the State Historic Preservation Office, on properties listed or determined to be eligible for listing in the National Register of Historic Places or contributing to a National Register Historic District. This policy is explained in the preamble to the regulation at III.A.5.j at page 50150 of the Federal Register version.

B19. COMMERCIAL PORTIONS OF RESIDENTIAL PROPERTIES: In a mixed-use building receiving assistance, is the commercial portion exempt from the lead paint regulation?

Yes, the commercial part is exempt from the lead paint regulation. However, common areas servicing the residential units are covered by the lead regulation. Therefore, entryways and hallways serving the residential units are subject to the requirements even if they are also located in the commercial space. Exterior areas are also covered by the lead regulation.

B20. FANNIE MAE AND FREDDIE MAC: Are there any lead paint requirements that apply to a property if the mortgage is purchased by Fannie Mae or Freddie Mac?

The new HUD regulation regarding lead hazard control in federally assisted housing has no separate requirements that pertain strictly to Fannie Mae or Freddie Mac. However, the lead-based paint disclosure rule applies to almost all of the pre-1978 residential properties with which those organizations are involved. Also, Fannie Mae and Freddie Mac have certain additional lead paint requirements of their own for multifamily properties.

B21. FHA SINGLE FAMILY MORTGAGE INSURANCE: What lead paint requirements apply to a property covered by an application for FHA single-family mortgage insurance in general and especially for Rehabilitation Home Mortgage Insurance Under Section 203(k)?

Until further notice, the new HUD lead paint regulation does not change existing requirements for pre-1978 housing covered by an application for any FHA single family mortgage insurance programs, such as Rehabilitation Home Mortgage Insurance under Section 203(k), unless it is for a HUD-owned property that is being sold. HUD-owned single-family properties that are being sold with FHA mortgage insurance are covered by subpart F of the new regulation, which became effective September 15, 2000. For buildings that HUD does not own, the existing requirements, which are at 24 CFR 200.800-810, state that any defective paint must be treated by covering or removal. "Covering may be accomplished by such means as adding a layer of wallboard to the wall surface. Depending on the wall condition, wall coverings which are permanently attached may be used. Covering or replacing trim surfaces is also permitted. Paint removal may be accomplished by such methods as scraping, heat treatment (infra-red or coil type heat guns) or chemicals. Machine sanding and use of propane or gasoline torches (open flame methods) are not permitted. Washing and repainting without thorough removal or covering does not constitute adequate treatment." Defective paint spots can be treated by "scraping and repainting." Treatment is not required if the paint is found not to be lead-based paint by a certified lead paint inspector or risk assessor. Until a new subpart E is promulgated, these existing requirements will continue to apply to properties insured under section 203(b), 203(k), and other single-family mortgage insurance programs, except for HUD-owned properties.

Subpart C. DISPOSITION OF RESIDENTIAL PROPERTY BY FEDERAL AGENCIES OTHER THAN HUD

C1. BUYER'S RESPONSIBILITY: Under subpart C of the regulation, can the responsibility for the initial lead paint inspection and risk assessment be passed on to the buyer?

No. For properties built after 1959 and before 1978, the statute explicitly states that “the results of such inspections shall be made available to prospective purchasers” (42 U.S.C. 4822(a)(3)(B)). HUD interprets that provision to mean that it is the intent of the legislation that the inspection and risk assessment be conducted by the Government before the sale. For properties built before 1960, the statute requires “the inspection and abatement of lead-based paint hazards” (emphasis added). The regulation permits the Federal agency to pass the responsibility for abatement on to the buyer, if the agency takes the responsibility for assuring that abatement is carried out by the purchaser before occupancy; but it does not permit the agency to pass on the responsibility for the inspection and risk assessment. If abatement work must be conducted on the outside of a building where weather conditions are unsuitable for conventional construction activities, the owner may occupy the living space once all required interior abatement and final clearance has been completed. Prospective buyers who are expected to conduct abatement need to estimate the cost of abatement based on the results of the inspection/risk assessment before preparing their offers. See the answer to the next question for further discussion of this issue.

C2. UPDATING RISK ASSESSMENTS IN SUBPART C: The regulation states, at section 35.165(b)(1) and at section 35.210(b), that a risk assessment must be no more than 12 months old to be considered current. For pre-1960 properties covered by subpart C, who is responsible for updating the risk assessment if the Federal agency conducts a risk assessment but assigns responsibility for abatement to the buyer, and then more than 12 months expire after the risk assessment before the buyer starts abatement?

The Federal agency may require the buyer to conduct an update of the risk assessment if it has expired. The agency has complied with subpart C if it has done an inspection and risk assessment, given a copy of the report(s) to the buyer, and has written an agreement with the buyer that ensures that the buyer will abate lead-based paint hazards prior to occupancy. Such an agreement should also include a condition that the risk assessment will be made current by the buyer if more than 12 months have elapsed from the date of the Government's risk assessment to the time when abatement work will begin. HUD recommends that the date that is considered to be the beginning of abatement is when on-site preparation activities start, rather than when the abatement contract is issued.

C3. NO LEAD PAINT HAZARDS: What if the Government's risk assessment finds no lead-based paint hazards?

If the risk assessment conducted by the Federal agency finds no lead-based paint hazards, the regulation does not require the agency to conduct any abatement of hazards. Therefore the Federal agency has no responsibility under the regulation to require the buyer to conduct such abatement. If the buyer is not required to conduct abatement of lead-based paint hazards, there is no need under the regulation for an updated risk assessment. Of course, if there is a significant amount of lead-based paint on the property, the agency may choose to recommend to the buyer that if more than 12 months pass after the Government's risk assessment before the property is put into residential use, it would be advisable prior to occupancy to conduct a reevaluation and control any lead-based paint hazards found.

C4. CONVERSION OF NON-RESIDENTIAL PROPERTY TO RESIDENTIAL PROPERTY: If a federally-owned, pre-1978 property is nonresidential at the time of sale but the Federal agency knows or suspects the structure is going to be used as housing by the buyer, does subpart C apply?

No. In HUD's opinion, subpart C of the regulation does not apply to property that is not housing at the time of sale. However, if the agency knows the property is going to be used as housing, HUD recommends that at the very least the agency inform the buyer that lead-based paint hazards may be present and remind the buyer that subpart A of the regulation (disclosure) will apply when the property becomes housing.

C5. CONVERSION OF RESIDENTIAL PROPERTY TO NON-RESIDENTIAL PROPERTY: If a federally-owned, pre-1978 property is residential at the time of sale but the Federal agency knows the structure is going to be used for nonresidential purposes, does subpart C apply?

Subpart C applies in this case, except when the building or buildings are to be demolished, are unoccupied at time of sale, and will remain unoccupied until demolition. If these conditions are met, subpart C does not apply, except that the Federal agency is responsible for assuring that the conditions are followed.

C6. FRICTION, IMPACT AND CHEWABLE SURFACES: Do the limitations on when friction, impact and chewable surfaces are considered lead-based paint hazards (found in Sec. 35.1330(c) and (d)) apply to risk assessments conducted in compliance with subpart C?

Risk assessments performed to comply with subpart C are not subject to the limitations in section 35.1330, paragraphs (c)(1), (c)(2) and (d)(1). However, HUD recommends that risk assessors follow such limitations.

C7. CLEARANCE FOR ABATEMENT PROJECTS: Do the clearance requirements at §35.1340 apply to abatements conducted in compliance with subpart C?

No. Abatements conducted in compliance with subpart C must comply with EPA requirements at 40 CFR 745.227.

Subpart H. PROJECT-BASED ASSISTANCE

H1. SECTION 236 MORTGAGE INTEREST SUBSIDIES: Does subpart H apply to housing with a mortgage interest subsidy under section 236 of the National Housing Act if such housing has no rental assistance?

Yes. Title X defines “federally assisted housing” as “residential dwellings receiving project-based assistance under programs including – (A) section 221(d)(3) or 236 of the National Housing Act; . . .” Therefore HUD has determined that section 236 housing is covered by subpart H of the regulation.

Subpart J. REHABILITATION ASSISTANCE PROGRAMS

J1. EFFECTIVE DATE AND GRANT PAYMENT DATABASE: What are the lead-based paint rule effective dates for the HOME, CDBG, and State & Small Cities CDBG programs?

HOME Program

The regulation states that the new requirements apply to funds committed to a specific local project on or after September 15, 2000. The date of commitment to a specific project would coincide with the execution of a written agreement to acquire, rehabilitate or construct a project or to provide TBRA. (Commitment to a specific local project is a defined term under 24 CFR 92.2(2)). At this point, no CHDO reservations or commitments to State or subrecipients from before that date should be carried over. Therefore all projects should be subject to these new requirements.

CDBG Entitlement

As with the HOME Program, the effective date of the lead-based paint rule is September 15, 2000. At this point, no CDBG reservations or commitments from before that date should be carried over. Therefore all projects should be subject to these new requirements.

CDBG State Program

The effective date is the date the State or HUD (as applicable) awards funds to a local government. In the State program, the new regulatory provisions should apply to grants which the State awards to units of local government on or after September 15, 2000. At this point, no State award from before that date should be carried over. Therefore all projects should be subject to these new requirements.

CDBG Insular Areas Program and HUD-Administered Small Cities Program in Hawaii

In the Insular Areas program and the HUD Administered Small Cities Program in Hawaii, the new regulatory provisions apply to grants which HUD awards on or after September 15, 2000. HUD-Administered Small Cities grants awarded by HUD in FY1999 and earlier are not subject to the requirements of the new rule, unless a community is jointly funding activities using a combination of HUD Small Cities grant funds and funds from other programs which would be subject to the new provisions.

J1a. STATE CDBG AND REHABILITATION FUNDED WITH CDBG PROGRAM INCOME: If a grantee uses program income from a State CDBG grant awarded before September 15, 2000, does the new Lead Safe Housing Rule apply?

It depends. For State CDBG grantees who operate CDBG rehabilitation programs:

1. Program income generated from and used to continue rehabilitation activities for which funds were awarded by the state prior to September 15, 2000 is not subject to the new rule, as long as the state grant recipient does not receive additional funding for the same activities from the state after September 15, 2000.
2. Program income generated from activities for which funds were awarded by the state prior to September 15, 2000, but which are subsequently attributed to or used in conjunction with/to continue activities for which funding was awarded by the state on or after September 15, 2000 is covered by the new rule as of the date of award of the subsequent state funding.
3. Program income generated from activities which are not subject to the Lead Safe Housing Rule requirements, but for which the state grants approval on or after September 15, 2000 to use for activities which are subject to LBP requirements is subject to the new rule as of the date of state approval to use them for covered activities.

<u>Source of Funding for Activity:</u>	<u>Subject to LSH Rule?</u>
a. State CDBG grant for rehab awarded before September 15, 2000:	No
b. State CDBG grant for rehab awarded after September 15, 2000:	Yes
c. Program income from a pre-September 15 award used to continue an activity that was originally funded before September 15, 2000:	No

- d. Program income from a pre-September 15, 2000, award that is subsequently rolled into a post-Sept. 15, 2000 award activity: Yes
(This includes revolving loan fund program income that is transferred to the newly-funded activity)
- e. Program income from a post-September 15, 2000, award: Yes
- f. Program income generated from an activity which was not subject to the LSH Rule, for which a state approves an amendment to use it for an LBP-subject activity. Yes.
(If state approval occurs on/after 9/15/2000).

J2. If I am conducting rehabilitation with Federal assistance covered by Subpart J of the regulation, is it necessary that the rehabilitation work be done by a certified lead paint abatement contractor?

Those parts of the rehabilitation that are conducted with the express intent to permanently eliminate lead-based paint hazards, particularly those documented in HUD regulations, job specifications, cost allocation document, or local agency or court order requiring abatement, must be done by a certified lead-based paint abatement contractor. HUD also requires abatement when the hard costs of Federal rehabilitation assistance exceed \$25,000 per unit, and interim controls when costs are between \$5,000 and \$25,000. Costs are calculated as described in question J3 below. Abatement is an option when costs are less, but is not required by HUD. Regardless of whether or not abatement or interim controls is conducted, occupant protection, lead-safe work practices, and clearance are required whenever lead-based paint hazards are above de minimis levels (see the joint HUD/EPA letter of April 19, 2001 at www.hud.gov/offices/lead).

J3. Calculation of Average Federal Assistance and Average Rehabilitation Costs: In the instructions in section 35.915 for calculating the Federal rehabilitation assistance per unit for a given project, what is “rehabilitation assistance?” Does it include Federal funds to acquire a property that is to be rehabilitated? If so, please explain how the calculation is made for a multifamily property.

Section 1012(a)(3) of Title X amended the Lead Based Paint Poisoning Prevention Act to require, among other things, that procedures established by HUD require “reduction of lead-based paint hazards in the course of rehabilitation projects receiving less than \$25,000 per unit in Federal funds” and “abatement of lead-based paint hazards in the course of substantial rehabilitation projects receiving more than \$25,000 per unit in Federal funds” (emphasis added). This statutory language allows for the fact that Federal funds are used to assist various costs associated with rehabilitation projects. For example, Federal assistance is often used for acquisition or soft costs associated with rehabilitation. Such projects are considered rehabilitation projects for program purposes, regardless of the specific costs paid with Federal funds. To ensure that both the level of average Federal assistance per unit and the extent of rehabilitation are accurately measured for purposes of triggering lead-based paint requirements, the regulation calls

for a dual-threshold method of the applicable set of lead-based paint requirements for a rehabilitation project.

Under the dual-threshold approach to calculating the level of rehabilitation assistance, the designated party makes two calculations and uses the lesser of the two to determine the applicable requirements. One calculation is of average Federal assistance per unit; the other is of average rehabilitation hard costs per unit, regardless of whether the source of funds is Federal or non-Federal.

For the purpose of calculating average Federal assistance per dwelling unit, Federal assistance per unit includes all Federal funds, including program income generated by Federal funds are counted. (Note: Proceeds of the sale of Low-Income Housing Tax Credits and proceeds from rehabilitation mortgage insurance, such as a 203(k) loan are not considered Federal assistance for this purpose. Funds provided under the Department of Energy's Weatherization Program are not counted as Federal assistance or covered by this regulation because it is not considered a housing assistance program. However, Weatherization performed with CDBG and HOME funds is covered by the regulation and therefore should be included when calculating average Federal assistance). All Federal funds must be included in this calculation regardless of how the Federal funds are used in the project. For example, in a project involving acquisition and rehabilitation, all Federal funds received by the project are included in the calculation even if the Federal funds were used to pay for the acquisition or other non-rehabilitation costs.

The average Federal assistance per unit is the total Federal assistance divided by the total number of federally assisted dwelling units in the project.

The average rehabilitation hard costs per dwelling unit are the actual costs, regardless of the source of funds, associated with the physical development of a unit (i.e., total per unit project costs minus “soft” costs, administrative costs, relocation costs, environmental review costs, acquisition costs, etc.), not including lead hazard evaluation and reduction costs. Soft costs include financing fees, credit reports, title binders and insurance, recordation fees, transaction taxes, impact fees, legal and accounting fees, appraisals, architectural and engineering fees. Lead hazard evaluation and reduction costs include costs associated with site preparation, occupant protection, relocation, interim controls, abatement, clearance, and waste handling attributable to lead-based paint hazard reduction.

If all the units in a multi-unit project are Federally-assisted, the average rehabilitation hard cost per unit is calculated as follows:

Average Per Unit Rehab Hard Cost = Total rehab hard costs for project / Total number of units

For multi-unit projects with both Federally-assisted and non-assisted units, calculate the total rehabilitation hard costs per unit using the following formula:

$$a/c + b/d,$$

where:

a = Rehabilitation hard costs, as defined above, for all assisted dwelling units (not including common areas and exterior surfaces),

b = Rehabilitation hard costs, as defined above, for common areas and exterior surfaces,

c = Number of federally assisted dwelling units in the project, and

d = Total number of dwelling units in the project.

Example: A 20-unit property is undergoing rehabilitation. Total rehabilitation hard costs for the project are \$650,000, including \$150,000 for repairs to the exterior and common areas of the building, \$250,000 to rehabilitate 10 HOME-assisted dwelling units, and \$250,000 for repairs to the unassisted units. The average rehabilitation hard costs per unit are:

$\$250,000/10 \text{ units} + \$150,000/20 \text{ units} = \$25,000 + \$7,500 = \$32,500 \text{ per unit.}$

(Remember that the above formula applies to the calculation of the average rehabilitation hard costs per unit, not to the Federal funds per unit.)

The category into which a rehabilitation job falls is determined by the lesser of the two threshold numbers (i.e., average Federal assistance per unit or average the rehabilitation hard costs per unit.)

If, in the example above, total Federal assistance to the project is \$200,000, then the applicable requirements would be those for the \$5,000 - \$25,000 category (average Federal assistance per unit (\$20,000) would be the lesser number and would determine the applicable requirements).

If in the example, total Federal assistance to the project is \$300,000, then the applicable requirements would be those for the over \$25,000 category (average Federal assistance per unit (\$30,000) is again the lesser number and would determine the applicable requirement).

J3a. CALCULATING AVERAGE REHABILITATION HARD COSTS FOR SINGLE-FAMILY PROPERTIES: Can you clarify the average Federal assistance and average rehabilitation cost for single-family properties. How do I use the dual threshold approach if I'm only rehabilitating one unit?

Average Federal assistance per unit

For the purpose of calculating Federal assistance per dwelling unit, Federal assistance includes all Federal funds, including program income generated by Federal funds.

The per-unit Federal assistance is the total Federal assistance divided by the total number of federally assisted dwelling units in the project.

Example 1: The city spends \$40,000 of CDBG funds to rehabilitate a single-family home. The city is rehabilitating one home. The per-unit federal assistance for this project will be \$40,000 divided by 1, or \$40,000.

Total Federal Assistance/Number of dwelling units = Average Federal Assistance/Unit

$$\$40,000/1 = \$40,000$$

Average rehabilitation cost per unit

Example 1a: Using the same example of the city rehabilitating a single family home, the hard costs of rehabilitation for the home is \$35,000. The average rehabilitation cost per unit will be \$35,000 divided by 1, or \$35,000.

Total Rehab Hard costs for project/Total number of units = Average rehab. cost per unit

$$\$35,000/1 = \$35,000$$

Applying the Dual Threshold Calculation

The category into which a rehabilitation job falls is determined by the lesser of the two threshold numbers (i.e., Federal assistance per unit or the rehabilitation hard costs per unit.)

In the single family home example, the total federal assistance to the project was \$40,000; the average per unit rehabilitation hard cost was \$35,000. The average per unit rehabilitation hard cost (\$35,000) is the lesser of the two numbers and therefore the lead-based paint rehabilitation requirements for projects with greater than \$25,000 of rehabilitation assistance apply.

J4. CHANGE ORDERS: How does a change order affect the level of assistance in a rehabilitation project for the purposes of the regulation?

HUD recognizes that unanticipated change orders are common in rehabilitation projects. Therefore, the Department will not require a recalculation of the level of assistance for the purposes of the lead-based paint regulation, and thus will not require a change in the category of lead-based paint requirements, as a result of a change order; except that if a pattern is found that indicates an obvious abuse of this policy to avoid the more protective requirements, the Department will find the designated party in noncompliance.

J5. SUBTRACTION OF LEAD HAZARD REDUCTION COSTS: To what extent can designated parties subtract the cost of lead-based paint hazard reduction activities in calculating the “hard costs of rehabilitation,” which are used to determine which category of Federal rehabilitation assistance a particular project belongs to (i.e., up to and including \$5,000, more than \$5,000 and up to and including \$25,000, or more than \$25,000 per unit)?

Designated parties can subtract costs of lead-based paint hazard reduction from the total cost of a project to determine the category of rehabilitation assistance in which the project belongs, but they should not subtract costs of rehabilitation they would have done anyway, in the absence of the regulation. To be subtracted, costs should be clearly and reasonably attributable to lead-based paint hazard reduction.

Section 35.915(b)(2) states that, “the amount of rehabilitation assistance is the average per unit amount of Federal funds for the hard costs of rehabilitation, excluding lead-based paint hazard evaluation and hazard reduction activities. Costs of site preparation,

occupant protection, relocation, interim controls, abatement, clearance and waste handling attributable to lead-based paint hazard reduction are not to be included in the hard costs of rehabilitation.” The intent of this provision is explained in the “preamble” to the regulation, where it states that “determination of the category of assistance . . . will be based on the hard costs of ordinary rehabilitation, not including the additional costs of complying with this rule” (64 FR 50174, emphasis added). The term “lead-based paint hazard reduction” does not include rehabilitation activities that would have been conducted in the absence of the regulatory requirements.

For each lead-based paint hazard reduction activity for which costs are subtracted, designated parties should: (1) document what the activity is, its scale or extent, and where in the building it is conducted, (2) document that the surface affected is a known or presumed lead-based paint hazard prior to the rehabilitation, (3) document that the activity is a reasonable and acceptable method of eliminating or controlling the hazard, and (4) determine that the cost of the activity is reasonable.

The most authoritative way to provide documentation of items 1 through 3 above is to conduct a risk assessment of the subject property before the rehabilitation. The risk assessment report should document the nature and location of the hazard and should indicate acceptable methods for controlling the hazard. Paint testing results may also be helpful.

If the standard treatments option is taken, the designated party should record the results of a visual assessment that documents the conditions being treated, e.g., deteriorated paint; rough, pitted or porous horizontal surfaces; and bare soil. These conditions become presumed lead-based paint hazards. Remember that standard treatments must be conducted throughout the assisted part of the property, including common areas, because the option is in lieu of a risk assessment and interim controls, which is a property-wide requirement.

The most questionable way to establish the existence of lead-based paint hazards is to presume their existence without any risk assessment, paint testing or lead-based paint inspection, and without taking the standard treatments option. Much old paint is not lead-based paint. However, a presumption may be acceptable if a designated party has a sound factual basis for it, such as positive paint testing data from similar surfaces on the same property or on structures of a similar construction period in the same neighborhood, combined with a documented visual assessment finding deteriorated paint on the subject surfaces. Guidance on this approach is given in the HUD *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing* (www.hud.gov/offices/lead).

In deciding whether activities qualify as lead-based paint hazard reduction activities, remember that intact lead-based paint is generally not considered a hazard. Therefore, if you are, for example, removing an interior partition on which the paint is intact, you should not classify that activity as lead-based paint hazard reduction even if the partition has lead-based paint on it. It is also important to apply the reasonableness test to activities in which paint disturbance is only ancillary to the task. For example, do not

allocate the cost of a furnace replacement to lead hazard reduction because it happens to include repair and repainting a partition with deteriorated lead-based paint. Do not allocate the cost of roof repair to lead hazard reduction because the job includes replacement of fascia or soffits with deteriorated lead-based paint.

Window replacement or repair is a rehabilitation activity that can sometimes be attributable to lead-based paint hazard reduction, but only if the windows would not be replaced as part of the rehabilitation project. If the windows are deteriorated and would have been replaced regardless of the presence or absence of lead-based paint, they are rehabilitation costs, not lead hazard reduction costs, and cannot be subtracted in calculating the level of assistance for the purposes of the regulation.

J6. ROOF REPAIR AND LEAD HAZARD CONTROL COSTS: A leaky roof is causing damage to lead-based paint. Since controlling the lead hazard involves fixing the roof, does the roof repair count as a lead hazard control cost? Can that be subtracted from the rehabilitation hard costs?

A leaky roof has many other code implications beyond lead safety. Fixing the roof, while it contributes to controlling the lead hazards, does not constitute hazard reduction in and of itself.

J7. DE MINIMIS AREAS AND PAINT TESTING/CLEARANCE/NOTIFICATION REQUIREMENTS: The regulation states, at section 35.1350(d), that if the area of painted surfaces being disturbed totals no more than a specified de minimis level, safe work practices are not required. Does this mean that paint testing, clearance, and notice of hazard reduction activity are also not required?

There is no need to perform paint testing if the job is exempt from safe work practices. Clearance is not required in this situation (see either section 35.930(b)(3) or 35.1340(g)). Similarly, provision of a notice of hazard reduction is not required if a clearance examination is not required (see § 35.125(b)(3)).

J8. DE MINIMIS AREA OF PAINT DISTURBANCES: If the average Federal rehabilitation assistance for a project is \$10,000, but the amount of paint being disturbed is minor, affecting an area of less than the de minimis threshold for safe work practices stated at section 35.1350(d), is it still necessary to conduct a risk assessment and interim controls?

Yes. If paint is being disturbed, the project is covered by the regulation, and then the requirements for lead-based paint hazard evaluation and reduction are based on the level of assistance, not the amount of paint being disturbed. Work on surfaces where the amount of paint disturbed is below the de minimis threshold need not follow safe work

practices, although HUD recommends that caution be used to minimize the dispersal of lead in dust, paint chips, or debris.

J9. PAINT TESTING FOR REHABILITATION OVER \$5,000: Why does the regulation require a risk assessment and paint testing for rehabilitation projects over \$5,000? Isn't paint testing included as part of a risk assessment?

The statute requires an inspection to determine the presence of lead-based paint. A risk assessment is required to identify lead-based paint hazards which the law requires to be abated. A risk assessment usually includes paint testing of a sampling of deteriorated painted surfaces, plus dust and soil testing. The paint testing requirement is for all deteriorated painted surfaces plus all painted surfaces to be disturbed or replaced during rehabilitation. However, there is no need to retest painted surfaces that have already been tested to comply with the risk assessment or paint testing requirements of the rehabilitation subpart.

J10. EXEMPTIONS AND PROJECT REHABILITATION COSTS: Does the exemption for rehabilitation that does not disturb a painted surface (at section 35.115(a)(8)) apply regardless of the project cost?

Yes.

J11. FUNDS FROM FEDERAL AGENCIES OTHER THAN HUD: When calculating average Federal assistance per unit, should I include funds from all Federal agencies?

Yes, but only if the Federal program is considered a housing assistance program. For example the Department of Energy Weatherization program is not considered a housing assistance program since the intent is to conserve energy, not change the housing conditions. As with other construction activities, HUD and DOE recommends that weatherization activities disturbing more than the de minimis threshold use lead-safe work practices and clearance examinations, unless the paint is known to be non-lead-based paint.

J12. VOLUNTEER PAINT PROGRAM APPLICABILITY: Does subpart J apply to "paint programs," in which paint is distributed, or funds are provided to purchase the paint, so homeowners or volunteers can paint their homes? What if the program provides only \$250 worth of paint in-kind?

Paint programs are rehabilitation programs as specified in the CPD memo on "Classification of Paint Programs," dated July 13, 1992. Therefore, they are subject to the requirements of subpart J if the paint is being purchased with funds provided under a program covered by subpart J, such as the Community Development Block Grant program, and if painted surfaces are being disturbed by scraping, sanding or other

abrasive methods during preparation of the surfaces for repainting. (HUD does not consider washing of painted surfaces, by itself, to constitute disturbance of painted surfaces, unless the treatment is water *blasting*.)

Because \$250 in funds is less than \$5,000, the threshold for interim controls, the lead-based paint requirements for this work include safe work practices and clearance of the worksite. It makes no difference if the program provides the paint in-kind or the funds to purchase the paint.

Surface preparation before repainting is an activity that can generate a significant amount of lead dust if the paint is lead-based paint. Occupants as well as workers can be exposed to significant levels of dust, and interior and exterior environments can be contaminated. It is important, therefore, that safe work practices, as set forth in §35.1350, be used and that worksite clearance be achieved to assure that the site is not left contaminated with lead dust or contaminated debris. See HUD's Fact Sheet of March 2000 on Federal Requirements for Volunteer Paint and Rehabilitation programs, which can be found at HUD's web site at www.hud.gov/offices/lead, or obtained from HUD at 1-202-755-1785 ext. 104 (this is a toll call). If you are a hearing- or speech-impaired person, you may reach the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

J13. VOLUNTEER PAINT PROGRAM REQUIREMENTS: What are the requirements that apply to paint programs and how does HUD recommend that homeowners and volunteers carry out these requirements?

Most, if not all, of the repainting assisted by paint programs will have a Federal assistance cost of no more than \$5,000 per dwelling unit, so the requirements of section 35.930(b) will apply. Those requirements are basically that safe work practices must be followed in the course of the surface preparation and repainting and that clearance of the worksite must be achieved. However, safe work practices and clearance are not required if the area of paint being disturbed is no more than 20 square feet on exterior surfaces, 2 square feet in any one interior room, or 10 percent of the total surface area on an interior or exterior component with a small surface area (such as window sills, baseboards or trim). If the area of paint disturbance is expected to be greater than those areas, there is a requirement that either surfaces to be disturbed must be tested for the presence of lead or the presence of lead-based paint must be presumed.

If the paint to be disturbed is tested and found not to be lead-based paint, safe work practices and clearance are not required, although safe work practices are always good practice because there may be some lead in the paint even if it is not above the defined level of "lead-based paint." If the paint is tested and found to be lead-based paint or if it is presumed to be lead-based paint, safe work practices must be implemented during the surface preparation and repainting, and a clearance examination must be conducted of the area where the surface preparation and repainting occurred and clearance must be achieved.

Safe work practices are as follows (as listed at section 35.1350): (1) prohibited methods of paint removal (listed in section 35.140) shall not be used, (2) occupants and their belongings shall be protected in accordance with section 35.1345, and (3) specialized cleaning shall be conducted after completion of the work to assure that clearance will be achieved.

The regulation requires that persons performing repainting or other rehabilitation activities that are covered by section 35.930(b) (which is the up-to-\$5,000 category) be supervised or formally trained in accordance with the requirements for interim controls workers at section 35.1330(a)(4), only when the activities are intended to control lead hazards. Nevertheless, safe work practices must be followed and clearance of the worksite must be achieved, regardless of the intent of the work, if the area of disturbed paint exceeds the small areas described above, and designated parties are responsible for assuring compliance with these requirements. (For rehab in the up-to-\$5,000 category that is not intended to control lead hazards, HUD recommends that contractors and employees take a short course on safe work practices for the type of work they will do, take the HUD-approved interim controls training, or be supervised by a certified abatement supervisor.)

However, HUD recommends that designated parties (i.e., grantees, participating jurisdictions, sub-recipients) arrange for homeowners and volunteers to take a short course on safe work practices for the type of work they will do. Adaptations can be made from the approved courses listed in section 35.1330(a)(4) (see Question S5 for information on availability of course materials), or a course can be adapted from the booklet, "Lead Paint Safety: A Field Guide for Painting, Home Maintenance, and Renovation Work," which can be obtained by calling 1-800-424-LEAD, or downloaded from the HUD web site, www.hud.gov/offices/lead. The objectives of such brief training should be to acquaint people with the following topics: (1) why one should be concerned about lead-based paint hazards; (2) how to prepare surfaces for repainting without using the prohibited practices of paint removal; (3) how to protect occupants, their belongings, the worksite, and the rest of the home from lead contamination by using polyethylene ("poly") or other floor coverings; (4) how to clean up after the work in order to achieve clearance; and (5) the importance of achieving clearance.

Persons performing rehabilitation activities intended to control lead hazards must be trained in safe work practices or, if the work is abatement, as abatement workers (see question R5).

With regard to clearance, HUD suggests that designated parties arrange for persons who are certified to perform clearance examinations to be available for clearance of participating homes, with the cost being paid by the program. There are several ways this could work. The local housing or public health agency could have certified personnel on staff who could perform the clearance for free. Alternatively, owners or volunteers might be provided with a list of clearance examiners; they could arrange for the clearance examination directly and then present the clearance examiner's bill to the designated

party, along with a copy of the clearance report showing that the worksite passed clearance.

J14. FUNDING OF PAINT PROGRAM COORDINATORS: If a grantee is using CDBG funds to support a project coordinator to oversee volunteers who are doing rehabilitation work, is the project subject to the regulation? If so, how are the costs covered, since no funds flow to the rehabilitation project?

If the project coordinator has hands on, day-to-day control over the actual work being performed by volunteers at a project site, then Federal funds would be deemed to be used for rehabilitation activities and 24 CFR 35, Subpart J would apply. However, if the project coordinator only performs rehabilitation services (24 CFR 570.202(b)(9)), such as the general administration of a volunteer program or the preparation of work specifications, then 24 CFR Part 35, Subpart J would not apply because these are considered soft costs.

J15. SWEAT EQUITY PROGRAMS: Are sweat equity programs covered by the regulation?

Yes, if Federal funds are being used to pay for labor and materials (hard costs). In such a case, sweat equity workers must meet the same requirements as other workers and must use safe work practices.

J16. GRAFFITI REMOVAL: Is a graffiti removal program considered rehabilitation? Is it residential? What if the homeowner does it him/herself?

Graffiti removal is rehabilitation, although some removal may be exempted from the rule, as discussed below. The exterior of a home, fences, and out buildings are all considered part of the residential property and therefore, they are covered by the lead-based paint rule. Even if the homeowner does the work personally, the work is still subject to the lead-based paint requirements if it is supported by Federal assistance. See the question above on sweat equity.

However, most graffiti removal may be exempted because it disturbs no painted surfaces (such as when simply painting over graffiti), or the surface can be tested to show that the graffiti (and paint underneath the graffiti) is not lead-based paint. If the work is not exempt for those reasons, the area of paint being disturbed in graffiti removal will often be no more than 2 square feet or 20 square feet, on large interior or exterior surfaces, respectively, which are the de minimis levels for safe work practices, so safe work practices and clearance would not be required for such work.

J17. FACADE RENOVATIONS: If CDBG or HOME funds are used to renovate the façade and the sign of a mixed-use building, is this covered by the regulation?

Yes. If the façade is the exterior of the residential units, then this would be considered residential rehabilitation and would be subject to the requirements of Subpart J. If the sign is in an area accessible to residents of the building, it too would be covered.

J18. USE OF CDBG AND HOME FUNDS FOR TRAINING AND OTHER LEAD-RELATED EXPENSES: Can grantees use CDBG and HOME funds to train contractors or landlords to perform lead hazard evaluation or reduction? Can CDBG and HOME funds be used to purchase and XRF analyzer?

Training contractors or landlords is eligible as a rehabilitation service under the CDBG regulations at 24 CFR 570.202(b)(9) or as an administrative expenses under 24 CFR 570.206. Under the HOME program, landlord or contractor training is eligible as an administrative expense under 24 CFR 92.207 or as a project delivery cost under 92.206(d).

CDBG and HOME funds can also be used to pay for an XRF analyzer (a device used to measure the lead content in paint) under the eligibility category of 24 CFR 570.202(b)(9), Rehabilitation Services for CDBG, and 24 CFR 92.206(d) for the HOME program.

J19. HOME MATCH ELIGIBLE HOUSING: If a project is not receiving Federal assistance, but contributions toward the project are being counted as match for HOME Program purposes, do the lead-based paint rules apply?

No. While HOME-match eligible projects are subject to the HOME property standards, Part 35 does not apply. HOME match contributions are required by statute to be non-federal and are, therefore, not counted as Federal assistance for the purpose of determining the applicable requirements for rehabilitation projects.

J20. PARTIALLY HOME-ASSISTED PROJECTS: In a project that includes both HOME-assisted and non-assisted units, do the lead-based paint rules apply to the non-assisted units?

Yes. If a project receives HOME funds, the lead-based paint requirements apply to the entire project, irrespective of the designation of individual units. In addition, if a project receives CDBG assistance, the entire project is considered assisted and the lead-based paint requirements apply to all units.

J21. PROJECT ACQUISITION AND REHABILITATION COSTS: If a developer acquires a property with HOME or CDBG funds and uses non-Federal funds for rehabilitation, would the project be subject to the acquisition (Subpart K) requirements of the rule, rather than the rehabilitation requirements?

No. In both the HOME and CDBG programs, this project would be considered a rehabilitation project because rehabilitation is the ultimate activity. Consequently, the rehabilitation (subpart J) requirements would apply.

J22. ADMINISTRATIVE COSTS AND HARD COSTS: If an Entitlement Community provides administrative funds to a nonprofit to operate a rehabilitation program but no money for construction, does it have to comply with the lead-based paint regulation?

No, administrative costs are not included in “hard costs of rehabilitation,” as defined in section 35.110.

J23. ANNUAL INSPECTIONS AND LEAD PAINT MAINTENANCE: The HOME regulations require annual physical inspections only for rental projects with more than 25 HOME-assisted units. However, the lead-based paint rule calls for annual lead-based paint maintenance. Please clarify.

The HOME program requires periodic monitoring (i.e., every 1, 2 or 3 years, depending on project size) of the physical condition of an assisted rental property. This is distinct from the ongoing maintenance requirement for HOME rental projects under the lead-based paint rule. Under the latter requirement, the Participating Jurisdiction must require a project owner who received HOME rehabilitation assistance to perform lead-based paint maintenance as a part of regular building maintenance. This means that the owner must perform a visual assessment for deteriorated paint surfaces, stabilization of deteriorated paint surfaces and clearance, annually and at unit turnover. During periodic physical inspections of the property required by the HOME regulations, the Participating Jurisdiction is required to determine whether the owner has been following the required protocol, as well as perform a physical inspection for compliance with property standards it has adopted for its HOME program.

J24. RELOCATION AND REHABILITATION PROGRAMS: Is relocation required when performing lead-based paint hazard reduction or rehabilitation covered by subpart J of the regulation?

As stated in section 35.1345, temporary relocation is required unless: (1) the work will not disturb lead-based paint or lead-based paint hazards; (2) only exterior work is being conducted and openings to the interior are closed during the work and lead-hazard-free entry to the dwelling is provided; (3) the interior work will be completed in 8 hours, the work sites are contained to prevent dust release into other areas, and no other health or safety hazards are created; or (4) interior work will be completed in 5 consecutive days, work sites are contained, no other health or safety hazards are created, work sites and areas 10 feet from the containment are cleaned at the end of each work day, and occupants have safe access to sleeping, kitchen and bathroom facilities. Safe access to sleeping areas, and bathroom and kitchen facilities does not require that such facilities be provided in the same unit. Such facilities can be provided in another convenient location

in many instances, thereby avoiding an unnecessary relocation of residents. The term “interior work” refers to work in a single room. At no time can occupants be permitted into the work sites, unless they are employed in the work, until after work is complete and clearance, if required, has been achieved.

Relocation of elderly occupants is not typically required, so long as complete disclosure of the nature of the work is provided and informed consent of the elderly occupant(s) is obtained before commencement of the work.

J25. PROGRAM ADMINISTRATION: If CDBG funds are used for program administration costs only and not for any project costs, does the regulation apply?

No, because these are considered to be soft costs. Program administration costs, in the CDBG program, are those costs which involve the overall program management, coordination, monitoring, and evaluation of the program. Project delivery costs include staff and overhead costs directly involved in carrying out an eligible activity. In neither case are such costs included in the “hard costs” of rehabilitation.

J26. LONG-TERM EMERGENCY REHABILITATION: If an emergency rehabilitation program does \$7,000-\$10,000 worth of work on a property over a two-to-five year period, how is it classified?

First, if it takes two-to-five years to complete “emergency” work, such work does not qualify for the emergency exemption at 35.115(a)(9), which only applies to “actions immediately necessary to safeguard against imminent danger to human life, health or safety, or to protect property from further structural damage (such as when a property has been damaged by a natural disaster, fire, or structural collapse).” Second, a program of rehabilitation that is expected to extend over several years for a single property must be considered as one project for the purposes of determining the category of requirements in subpart J. Therefore the category would be \$5,000-\$25,000 per unit in this case.

J27. FUNDING BEFORE THE EFFECTIVE DATE: Does Subpart J apply to a project receiving rehabilitation assistance from a HOME, IHBG or CDBG Entitlement, HOPWA, Supportive Housing Program, or Indian CDBG program before the effective date of the rule, September 15, 2000, to which funds are added on or after the effective date, and if so, to what part of the project?

Yes, Subpart J does apply to funds from those programs, whether to a new project or a modification of an existing project. You must also determine whether a project is receiving over \$5,000 or over \$25,000 per unit.

J28. APPLICABILITY TO SECTION 203(k) PROGRAM: Does subpart J apply to rehabilitation being conducted on a single family home being purchased with a loan insured under the Section 203(k) Rehabilitation Mortgage Insurance program?

The 203(k) program, commonly known as single-family rehabilitation mortgage insurance, involves rehabilitation loans and the provision of mortgage insurance by HUD. The mortgage insurance covers, at a minimum, the indebtedness resulting from the loan. HUD provides the mortgage insurance, but not the original rehabilitation loan. As such, the 203(k) program is treated as any other single-family mortgage insurance program.

At the current time, 24 CFR Part 35, Subpart E has been reserved for the coverage of all HUD single-family mortgage or guarantee programs. Until further notice, these programs are covered at 24 CFR 200.800-810 as revised at 64 FR 50226, published on September 15, 1999, with no change in applicable requirements.

Subpart K. ACQUISITION, LEASING, SUPPORT SERVICES, OR OPERATION

K1. EMERGENCY SHELTERS: If HUD funds are being used to operate an emergency shelter, is the shelter subject to the lead-based paint regulation?

The answer to this question depends on the configuration of the shelter. Most emergency shelters are exempt, because they fall under the definition of zero-bedroom dwellings, which are exempt under the Title X statute. If the shelter does not qualify for the zero-bedroom exemption, it is covered by the regulation.

A zero-bedroom dwelling is defined in section 35.110 as "any residential dwelling in which the living areas are not separated from the sleeping area. The term includes efficiencies, studio apartments, dormitory or single room occupancy housing, military barracks, and rentals of individual rooms in residential dwellings." The term "single room occupancy housing" is defined as "housing consisting of zero-bedroom dwelling units that may contain food preparation or sanitary facilities or both." Group homes are exempt if they consist of "rentals of individual rooms in residential dwellings."

If you provide funds for a shelter with units having one or more bedrooms, and that receive assistance for more than 100 days, it is required that you adopt and implement a policy that assures that the child-occupied spaces will be lead safe. If you provide funds for a shelter with zero-bedroom units, or a shelter receiving assistance for up to, but not more than, 100 days, the units are exempt from the regulation, but HUD recommends that you adopt and implement a policy that assures that the child-occupied spaces will be lead safe, when the units are occupied by children of less than 6 years of age.

K2. SUPPORT SERVICES (E.G. "MEALS ON WHEELS"): Does Subpart K apply to homes in which support services, such as meals on wheels, are provided to residents?

The regulation applies to support services that can be considered to be housing assistance. Programs that provide services such as medical care, education, or food service are not considered housing assistance programs and are not covered by the regulation. However, similar to the guidance provided in K1 above, HUD recommends that efforts be made to assure that facilities providing these types of support services are lead-safe, if they are frequented by children less than 6 years of age. Programs that assist in buying, renting, improving, operating or maintaining housing are covered. Therefore meals on wheels is not covered, but housing operation assistance is covered, except when the facility is otherwise exempt (e.g., because of the zero-bedroom exemption). The lead-based paint regulation applies only to residential properties.

K3. COUNSELING AND DEFAULT FUNDING: Does default and delinquency funding trigger lead-based paint requirements? What about counseling?

If, as is usually the case, the default and delinquency funding is emergency rental assistance or foreclosure prevention assistance, it qualifies for the 100-day exemption provided at section 35.115(a)(11). Counseling does not trigger requirements under the regulation.

K4. SECURITY DEPOSIT ASSISTANCE: If McKinney Homeless funds are used to provide security deposits to homeless persons to assist them in obtaining housing, what lead-based paint requirements apply to the unit?

The requirements of subpart K apply to this unit. (If the activity involves the placement of a person in a unit that will be used for housing purposes for more than 100 days, the exemption for emergency rental assistance does not apply.)

In the HOME Program, security deposit assistance is categorized as a form of tenant-based rental assistance (see M.5). In the CDBG program, grantees can provide security deposit assistance as a public service activity eligible under 24 CFR 570.201(c).

K5. HOMELESS SHELTERS: At section 35.115(a)(11), a 100-day exemption from the requirements of subpart K is provided for emergency rental assistance or foreclosure prevention assistance. Does this apply to homeless shelters?

Usually not. First, most shelters are exempt from the regulation, because they fall under the definition of zero-bedroom dwellings (see question K1). Second, as stated in section 35.115(a)(11), the 100-day exemption applies to the dwelling unit, not the family. Therefore, if a shelter is covered by the rule, it is likely to be assisted for more than 100 days. The purpose of the 100-day exemption is to allow local agencies to conduct short-term assistance to help prevent homelessness. As stated in the preamble to the regulation in the Federal Register, “HUD does not intend that multiple households receiving emergency assistance can be recycled through a unit without subjecting the unit to the requirements of subpart K.”

K6. EMERGENCY RENTAL ASSISTANCE AND THE 100 DAY EXEMPTION: In the case of the exemption for emergency rental assistance (section 35.115(a)(11)), do the 100 days accumulate with a family over a period of time, or do you count from day one each time you help the same family? If they do accumulate, over what period of time?

The 100-day time period applies to the dwelling unit, not the family. The clock begins at the time the emergency assistance is first provided in a given unit and runs for 100 cumulative days. After that, if the designated party wishes to assist a family (any family) in that unit on an emergency basis using HUD funds, the exemption has expired and the

requirements of subpart K apply, unless another exemption applies. As stated in K5 above, HUD does not intend that multiple households receiving emergency rental assistance can be recycled through a unit without subjecting the unit to the requirements of subpart K.

K7. EMERGENCY RENTAL ASSISTANCE AND TENANT-BASED ASSISTANCE: If the 100-day exemption applies to emergency rental assistance, why doesn't it apply to subpart M, which is the subpart that pertains to tenant-based rental assistance?

Emergency rental assistance for homelessness prevention falls under the category of leasing assistance that is covered by subpart K. Subpart M applies to programs that provide assistance that is expected to continue for much longer than 100 days.

Under the Community Development Block Grant program, funds may be used to provide emergency payments to providers of housing (landlords) for up to three consecutive months on behalf of a family facing homelessness. Such emergency assistance should not exceed 100 days, so the assistance would be exempt from subpart K unless the affected dwelling unit was being used for more than one 100-day period, as explained in the answer to the previous question.

K8. MOBILE HOME PADS: If HUD program funds are used to help a family rent a pad for a mobile home, what lead-based paint requirements apply?

The requirements of Subpart K apply if the home was manufactured before 1978. If rehabilitation of the unit is also being undertaken, then the lead-based paint requirements is the stricter of the subpart K requirements or the applicable subpart J (rehabilitation) requirements.

K9. ONGOING MAINTENANCE AND DURATION OF ASSISTANCE: Section 35.1015(c) states that ongoing lead-based paint maintenance is required of properties covered by subpart K. Does this requirement apply to all such properties, regardless of the duration of assistance?

Ongoing lead-based paint maintenance is required only when there is a continuing, active programmatic relationship for more than one year between the property and the federally funded program, such as continuing financial assistance, ownership, or periodic inspections or certifications. Generally, the ongoing maintenance requirement in subpart K applies to transitional housing, shelters and group homes that are not exempt from the regulation and which have a continuing programmatic relationship. The ongoing lead-based paint maintenance requirement normally does not apply to one-time assistance, such as mortgage insurance or loan guarantees, to owner-occupants or to renters. If a homebuyer receives a loan to purchase a home, this is considered one-time assistance, even though the homebuyer is making monthly payments on the loan. One-time downpayment assistance and security-deposit assistance are other types of assistance to

which the ongoing maintenance requirement does not apply. The existence of a federally assisted land trust that is designed to keep home prices affordable does not create a continuing relationship with buyers of homes on the land for the purposes of this regulation, so the ongoing maintenance requirement does not apply.

K10. DELEGATING RESPONSIBILITY FOR ONGOING MAINTENANCE: If the grantee or participating jurisdiction is not the owner or operator of the property, can the grantee or participating jurisdiction assign the responsibilities of ongoing lead-based maintenance to the owner or operator of the property?

Yes. For properties subject to subpart K, “The grantee or participating jurisdiction may assign to a subrecipient or other entity the responsibilities set forth in this subpart.”
(section 35.1000(b))

Subpart L. PUBLIC HOUSING PROGRAMS

L1. REVIEW OF PREVIOUS LEAD PAINT INSPECTIONS: Section 35.1115(a) of the regulation requires public housing agencies to review the quality of prior lead-based paint inspections that were not performed by persons certified in accordance with EPA regulations. The review is to be done in accordance with quality control procedures established by HUD. What are those procedures, and how does one obtain them?

In 1995 HUD issued Notice PIH 95-8 (HA) on “Quality Control Procedures for On-Site Lead-Based Paint (LBP) Testing Activities.” That document is current until revised and can be obtained from www.hud.gov/offices/lead or from lead_regulations@hud.gov, by calling 1-202-755-1785, ext. 104, or by writing Lead Regulations, HUD Office of Healthy Homes and Lead Hazard Control, 451 Seventh Street, SW, Room P-3206, Washington, DC 20410. If you are a hearing- or speech-impaired person, you may reach the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

L2. NUMBER OF UNITS TO INSPECT: In performing the quality control review of prior lead-based paint inspections, will I have to do more testing?

It depends on the results of the review. If the inspection was done in accordance with HUD’s 1991 *Interim Guidelines for Hazard Identification and Abatement in Public and Indian Housing*, or its *Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*, for which the lead-based paint inspection chapter was revised 1997, it is unlikely that further testing will be needed. The chapter can be obtained from the sources listed in question L1.

L3. RISK ASSESSMENTS AND PREVIOUSLY COMPLETED ABATEMENT: Section 35.1115(b) states that, “if a lead-based paint inspection has found the presence of lead-based paint, or if no lead-based paint inspection has been conducted, the PHA shall conduct a risk assessment . . .”. What if a lead-based paint inspection has been conducted and has identified lead-based paint, but all lead-based paint has been abated? Is it still necessary to conduct a risk assessment? What if the abatement was done with methods that did not remove all the lead-based paint (i.e., with encapsulation or enclosure)? In this case, should there be a risk assessment, or should there be a reevaluation?

Section 35.115(a)(5) provides an exemption from the regulation if all lead-based paint has been identified and *removed* in accordance with EPA regulations at 40 CFR 745.227(b) and (e) if the work was done before September 15, 2000, or in accordance with sections 35.1320, 35.1325, and 35.1340 of the new HUD regulation if the work was done on or after September 15, 2000. If these conditions are met, the property is exempt from the regulation, and a risk assessment is not required.

If, however, the abatement used encapsulation or enclosure methods for some or all of the abatement, the lead-based paint has not been entirely removed; so further evaluation is required. The correct evaluation in this situation is a reevaluation, not a new risk assessment, because the reevaluation includes a survey of prior lead hazard reductions to determine whether such treatments are intact and functioning as intended.

Subpart M. TENANT-BASED RENTAL ASSISTANCE

M1. PREGNANT WOMEN: Section 35.1200(b) states that subpart M “applies only to dwelling units occupied or to be occupied by families or households that have one or more children of less than 6 years of age. . .” Does this mean that the subpart applies to a unit with a family that includes a pregnant woman but no other children?

Yes. If the designated party knows that the family includes a pregnant woman, the regulation applies, because it is known that the unit is “to be occupied” by a family with a child of less than 6 years of age. This interpretation is consistent with the definition of the term “expected to reside” (in section 35.110), where the regulation states that, “if a resident woman is known to be pregnant, there is actual knowledge that a child will reside in the dwelling unit.”

M2. RESPONSIBILITIES OF OWNERS AND DESIGNATED PARTIES: Under the new HUD lead-based paint regulation, what are the responsibilities of the designated party administering tenant-based rental assistance versus the owner of the property?

Below is a list of: (1) activities that may be required in housing occupied or to be occupied by families with children of less than 6 years of age under subpart M of the regulation and (2) the corresponding responsible party. According to 35.1200(b)(2)(ii), for purposes of the Section 8 tenant-based certificate and voucher programs the PHA shall be the designated party. For purposes of the HOPWA and Shelter Plus Care programs, the grantee shall be the designated party. For the purposes of the HOME program, the participating jurisdiction shall be the designated party. For the Indian Housing Block Grant program, the IHBG recipient shall be the designated party.

Subpart M. TENANT-BASED RENTAL ASSISTANCE (continued)

Activity.	Responsible Party.
Visual assessment at initial and periodic inspections.	Designated party.
Paint stabilization.	Owner.
Clearance.	Designated party.
Notice of clearance.	Owner.
Incorporation of ongoing lead-based paint maintenance into regular building operations.	Owner must perform the ongoing lead-based paint maintenance. Designated party must ensure that an owner incorporates ongoing maintenance into regular building operations.
Attempt to obtain from health department names and/or addresses of children with environmental intervention blood lead level.	Designated party.
Report to health department addresses of assisted units, unless health department states it does not want such a report.	Designated party.
Match information from health department on names and/or addresses of children with names or addresses of assisted families.	Designated party, unless health department does it.

The following is a list of activities that are required in a dwelling unit occupied by a child of less than 6 years of age with an environmental intervention blood lead level:

Activity	Responsible Party
Risk assessment within 15 days after notification.	Designated party, unless public health department has already done it.
Verification of blood lead level, if initial source of information is not a medical health care provider.	Designated party must obtain written documentation of the child's blood lead level from the health department or other medical health care provider.
Hazard reduction of lead-based paint hazards identified in the risk assessment.	Owner.
Clearance.	Designated party.
Notice of evaluation and hazard reduction.	Owner.
Reporting to health department the presence of child with environmental intervention blood lead level if health department is not source of information.	Designated party.

Note: For purposes of the Section 8 tenant-based certificate and voucher programs initial clearance testing and risk assessments will be reimbursed by HUD in the form of an administrative fee.

M3. FAMILIES WITH CHILDREN: The regulation states that the requirements of subpart M apply only to units that are occupied by families with a child of less than 6 years of age. It further states, in section 35.1225, that if a child living in a unit subject to subpart M is found to have an environmental intervention blood lead level and then that child moves out before any lead hazard evaluation or reduction work is done, the requirements of section 35.1225 still apply if another family with tenant-based rental assistance moves into the unit. Does this mean any assisted family, or only one with a child under 6?

The requirements apply to the unit regardless of whether or not the new assisted family has a child under 6. If HUD funds continue to assist the unit, a risk assessment must be conducted and if lead hazards are found they must be corrected.

M4. LONG-TERM AND SHORT-TERM RENTAL ASSISTANCE: Section 33.115(a)(11) provides an exemption for emergency assistance lasting less than 100 days. It specifically mentions rental assistance but exempts it only from the requirements of Subpart K. However, rental assistance is discussed in Subpart M. This seems inconsistent.

Short-term, emergency rental assistance is covered by subpart K. The rental assistance to which subpart M applies is longer term assistance, usually involving a one-year lease. The same is true with project-based rental assistance, which is covered by subpart H (see K7).

M5. HOME SECURITY DEPOSIT ASSISTANCE: If a Participating Jurisdiction uses HOME funds for a security deposit assistance program, what lead-based paint requirements apply?

In the HOME Program, security deposit assistance is a form of tenant-based rental assistance. Consequently, it might be expected that subpart M of the lead-based paint regulation would apply to these programs. However, Subpart M is intended to apply to housing that receives ongoing tenant-based rental assistance rather than limited, one-time assistance such as security deposit assistance. Because security deposit assistance does not constitute an ongoing relationship with a Federal housing program, the requirements of subpart K apply. The applicable requirements are visual assessment for deteriorated paint and stabilization of any deteriorated paint, followed by clearance and notice of clearance results.

M6. CONFIDENTIAL MEDICAL INFORMATION: In some States the public health department is not able to provide the public housing agency or other designated party with the addresses of children with environmental intervention blood lead levels because of privacy concerns. In such cases, how will the housing agency be able to comply with the requirement to search for a match of such addresses with the addresses of housing receiving tenant-based rental assistance?

If the health department is unable to provide addresses to the housing agency, the housing agency should send the addresses of housing with tenant-based assistance to the health department and request that the health department perform the match and notify the housing agency or other designated party of the presence of any children with such blood lead levels. (A list of pre-1978 units occupied by children of less than 6 years old is acceptable.) That will meet the information exchange requirements at section 35.1225(f) of the regulation.

HUD and the Centers for Disease Control and Prevention (CDC) strongly urge public health departments and housing agencies to work together to assure that children who have environmental intervention blood lead levels and are living in housing with tenant-based rental assistance receive the assistance from the public agencies and housing owners that is called for in the regulation. The requirement for information exchange between health and housing agencies stems from a finding in 1994 by the United States General Accounting Office that many children living in housing with Section 8 certificates or vouchers were not being adequately protected from lead-based paint hazards because health agencies often did not know that the home of a child with an elevated blood lead level was federally assisted and therefore did not ask the housing agency to require a response from the owner pursuant to HUD's regulations (see report number GAO/RCED-94-137, May 1994).

M7. EXTENSIONS FOR STABILIZING DETERIORATED PAINT: May a Public Housing Agency extend the period for stabilizing deteriorated paint, normally before assisted occupancy commences, or within 30 days of notification of the presence of deteriorated paint after assisted occupancy has commenced?

For consistency with provisions that give PHAs the authority to grant reasonable time extensions to owners for correcting other housing quality standards violations, the PHA may grant the owner an extension of time, for reasonable cause, of up to 90 days of the period to complete paint stabilization and clearance (See section 35.1215(d).)

M8. PAINT STABILIZATION AFTER THE FAMILY RECEIVING ASSISTANCE LEAVES: Is paint stabilization of deteriorated painted surfaces required for housing receiving tenant-based rental assistance to meet housing quality standards?

Owners of housing receiving tenant-based rental assistance must complete paint stabilization of deteriorated paint found by visual assessment. The completion of the paint stabilization is required for the unit to meet Housing Quality Standards (HQS) (see 24 CFR 982.401(a)(3) and (j)). The unit remains in non-compliance with the HQS until the paint stabilization is completed or the unit is no longer covered by this subpart because the unit is no longer under a housing assistance payment (HAP) contract with the housing agency. Once the unit leaves the program, such as by the assisted family leaving, the process starts anew if and when another family is requesting the unit. (See section 35.1215(b).)

Subpart R. METHODS AND STANDARDS

R1. EXTERIOR SURFACES: Are there dust-lead clearance standards for exterior surfaces, like there are in the HUD Guidelines?

Neither the Guidelines nor the regulation has dust-lead clearance standards for porches or balconies or other horizontal exterior surfaces, such as railings.

R2. PAINT TESTING AND CERTIFIED PERSONS: Can paint testing of deteriorated paint or paint to be disturbed by rehabilitation or maintenance be conducted by someone who is not a certified lead-based paint inspector or risk assessor?

No. Paint testing must be performed by a certified lead-based paint inspector or risk assessor.

R3. If paint testing is achieved through laboratory analysis of a paint chip, instead of with an X-ray fluorescence (XRF) analyzer, is a certified person required?

Yes. For the paint testing results to be considered valid under the regulation, the sample must be taken and the laboratory results interpreted and reported by a certified lead-based paint inspector or certified risk assessor.

R4. DEFINITION OF LEAD-BASED PAINT: Is the definition of lead-based paint the same for HUD and EPA regulations as it is for the Consumer Product Safety Commission (CPSC)?

No. The terms and definitions are different, because they have different purposes and have different meanings. The HUD/EPA term "lead-based paint" addresses the layers of paint on an applicable surface having lead equal to or greater than 1.0 mg/cm² or 0.5% by weight. The CPSC term is "lead-containing paint," which may not be sold for consumer purposes. The maximum amount of lead in paint that may be sold for consumer use is 0.06% of the dry weight of the paint. (The CPSC rule is published at 16 CFR 1303.) The CPSC rule does not use the term "lead-based paint."

R5. TRAINING: The regulation has several training requirements and options. How does one get the training required for performance of a visual assessment for deteriorated paint and/or for the performance of interim controls?

HUD has made visual assessment training available in the form of an Internet-based module. It is accessible via the HUD Office of Lead Hazard Control web site (www.hud.gov/offices/lead) and from the National Lead Information Clearinghouse toll-

free at 1-800-424-LEAD. Designated parties are responsible for assuring that persons performing visual assessment have completed the training.

With regard to training for interim controls, including paint stabilization, there are several options, all of which are designed to ensure that workers performing interim controls do so with safe work practices. Designated parties are responsible for assuring that workers complete the training. Training of contractors or landlords is eligible as a rehabilitation service under the CDBG regulations at 24 CFR 570.202(b)(9) or as an administrative expense under 24 CFR 570.206. Under the HOME program, landlord or contractor training is eligible as an administrative expense under 24 CFR 92.207 or as a project delivery cost under 24 CFR 92.206(d).

Training for lead-based paint abatement supervisors and lead-based paint abatement workers that is accredited in accordance with EPA regulations at 40 CFR part 745 is one acceptable option for training in interim controls. A list of accredited trainers can be obtained from the National Lead Information Center at 1-800-424-LEAD. Certified abatement supervisors and workers have been appropriately trained.

If an otherwise untrained interim controls worker is to be supervised by a certified lead-based paint abatement supervisor, it is the responsibility of the abatement supervisor to ensure that safe work practices are followed, and the worker must be trained in accordance with the OSHA hazard communication standard at 29 CFR 1926.59. It is the responsibility of the employer to provide the worker with training in the OSHA standard.

If an untrained interim controls worker is not to be supervised by a certified abatement supervisor, he or she must still be trained in the OSHA standard and, in addition, must also successfully complete a lead safe work practices course approved by HUD for this purpose. A current list of approved courses is available on the Internet at www.hud.gov/offices/lead, or by mail or fax from the HUD Office of Healthy Homes and Lead Hazard Control at (202) 755-1785, extension 104 (this is not a toll-free number). Persons with hearing or speech impediments may access the above telephone number via TTY by calling the toll-free Federal Information Relay Service at (800) 877-8339.

For rehabilitation in the up-to-\$5,000 category, see question J13 for HUD's training requirements for work that is intended to control lead hazards, and HUD's recommendations for work that is not intended to control lead hazards,

If the amount of paint being disturbed by work other than abatement (that is, by rehabilitation, interim controls, standard treatments, or ongoing maintenance) is at or below the de minimis threshold, no training in safe work practices is required, although HUD recommends such training.

R6. EXTENT OF SUPERVISION: What is the extent of supervision required when an interim controls worker is being supervised by a certified abatement supervisor and has not taken one of the optional training courses listed in section 35.1330?

HUD has no requirements concerning the amount or extent of supervision. It is the responsibility of the certified lead-based paint abatement supervisor to ensure that the work is being performed safely and effectively.

R7. SOIL TESTING: Must a lead hazard screen include soil testing?

Lead hazard screens must be done in accordance with EPA standards at 40 CFR 745.227(c) and the HUD interim standards at 24 CFR 35.1330(b)(2). At the time of this writing (June 21, 2004), the EPA standards do not require soil testing, so HUD does not require it. However, HUD recommends soil testing as a part of lead hazard screens in neighborhoods known to have soil-lead hazards.

R8. WORKSITE AND UNIT-WIDE CLEARANCE: Must the clearance examination be of the entire dwelling unit or only of the worksite?

Clearance must be of the entire dwelling unit, common area or residential property (as applicable) unless the regulation specifically permits clearance of only the worksite. Clearance of only the worksite is permitted after rehabilitation, interim controls, standard treatments, and ongoing maintenance work, when containment is used to ensure that dust and debris generated by the work is kept within the worksite. (See section 35.1340(g).) Otherwise, clearance must be of the entire dwelling unit, common area or outbuilding, as applicable.

R9. CLEARANCE AND DE MINIMIS: Is clearance required when the area of painted surfaces being disturbed is no more than the *de minimis* levels for safe work practices?

No. (See section 35.1340(b).)

R10. SOIL TESTING AND CLEARANCE: The definition of “clearance examination” in section 35.110 states that clearance is “to determine that the hazard reduction activities are complete and that no soil-lead hazard or settled dust-lead hazards . . . exist.” Section 35.1340 does not explicitly require the clearance examiner to determine whether all the hazard reduction activities are complete and does not require soil testing. Which part of the regulation should I follow?

The two sections are not contradictory. The visual assessment by the clearance examiner, together with the dust sampling, will enable a determination to be made that no interior lead-based paint hazards exist, which is essentially the same thing as ensuring

that all hazard reduction activities have been completed. Soil testing is not required, but section 35.1340(b)(2)(ii) calls for a visual assessment of the ground and any outdoor living areas close to any exterior painted surfaces that have been disturbed by the hazard reduction, and it requires that visible dust or debris in living areas be cleaned up and visible paint chips on the ground removed.

R11. CLEARANCE AFTER EXTERIOR-ONLY PAINT STABILIZATION: If only exterior work is done, such as exterior paint stabilization or reduction of soil-lead hazards, is clearance required? If so, is it necessary to do a visual assessment of the interior and take dust samples?

Under section 35.1340(a), when the exterior work is abatement, a clearance examination is done by a certified risk assessor or lead-based paint inspector using EPA's procedures. After exterior lead-based paint abatement, the EPA requires (in its regulation at 40 CFR 745.227(e)(8)(v)(C)) a visual assessment of the outdoor living area closest to the abated surface, and of the dripline or next to the foundation below the abated surface.

If the exterior work is other than abatement, a clearance examination by a certified risk assessor, lead-based paint inspector or clearance technician is required by HUD, in accordance with section 35.1340(b). The clearance examination includes a visual assessment for visible dust and debris at the work site and on the outdoor living area closest to the treated surface, and for paint chips on the dripline or next to the foundation below any exterior surface where work was performed. Soil sampling is not required. Interior clearance is not required if affected window, door, ventilation and other openings are sealed during the exterior work. When the exterior work is distant from the building, unit-wide clearance is not required.

R12. NOTIFICATION OF CLEARANCE FAILURE: If a unit fails initial clearance, is it necessary to notify occupants of those results and to disclose them to future tenants/purchasers?

Yes. You must notify occupants of the initial as well as final clearance results, within 15 calendar days after the hazard reduction activity has been completed, in accordance with section 35.125 and related requirements of the new HUD regulation. You must also disclose the results of the initial as well as final clearance to comply with the EPA-HUD lead-based paint disclosure rule, which calls for disclosure of all reports pertaining to lead-based paint or lead-based paint hazards. Note that if the final clearance test shows that the unit passed clearance, you must include those results as part of the notification and disclosure processes to show that the problem was corrected.

R13. CLEARANCE BEFORE COMPLETION OF WORK: Can clearance be performed before all the work in a unit is complete?

No. Clearance must be performed after all the rehabilitation and/or hazard reduction work is complete. You should wait at least one hour after the cleaning to allow dust to settle. It is permissible to perform interim clearance. However, a final clearance would still be required when all work was complete.

R14. LONGEVITY OF INTERIM CONTROL TRAINING: Section 35.1330(a)(4) specifies the supervision and training requirements for workers performing interim controls. Is there a limit on how long ago a worker may have taken one of these courses?

There are no HUD requirements regarding the age or date of the course taken. However, the abatement supervisor and abatement worker courses must be accredited in accordance with EPA requirements (40 CFR part 745, subparts L and/or Q) and there may be refresher-course requirements to maintain certification. Consult the EPA-authorized program in your state, or, if it does not have an EPA-authorized program, call the EPA regional lead coordinator in your EPA regional office. (The phone number of your region's Coordinator's is available from an EPA hotline, 1-202-554-1404 (this is not a toll-free number) or on the Internet at www.epa.gov/lead.) If you are a hearing- or speech-impaired person, you may reach the above telephone number via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

R15. CERTIFICATION OF SPEC WRITERS: Does the person who writes specifications for lead-based paint hazard control work have to be certified?

No, but training in lead hazard reduction methods and safe work practices is recommended. The most useful course for spec writers is the abatement supervisor course. State and local regulations may apply as well.

R16. INSPECTIONS AND LEAD HAZARD REDUCTION: Does a lead-based paint inspection (using an XRF) provide all of the information and documentation necessary to implement lead hazard evaluation and reduction?

A lead-based paint inspection will identify all the lead based paint in the unit but it will not tell you whether lead-based paint **hazards** (such as dust-lead and soil-lead hazards) are present and, if so, where they are. A combination risk assessment/inspection will provide complete information on lead-based paint and lead-based paint hazards.

R17. DE MINIMIS LEVELS: How does the de minimis level, defined at section 35.1350(d)(3) as “10 percent of the total surface area on an interior or exterior type of component with a small surface area” interact with the other de minimis definitions of “20 square feet on exterior surfaces” and “2 square feet in any one interior room or space?”

To be exempt from safe work practices, the area of deteriorated paint in an interior room cannot exceed a total of 2 square feet or 10% of a component with a small surface area, such as interior window sills, baseboards and trim. In other words, both thresholds apply at all times. For example, living room baseboards with 3 square feet of deteriorated paint cannot be exempted on the grounds that the 3 square feet constitutes less than 10% of the component. Similarly, deteriorated paint of an area of less than 2 square feet is not considered below the de minimis level if the area exceeds 10% of a small component, such as a window sill.

R18. RELOCATION: Is temporary relocation required in all cases where there is a pregnant woman or a young child present?

No. Relocation depends on the size of the work area and the duration of the work. See section 35.1345(a) for details. All occupants (except those who are employed in the work) must be kept out of the work area while work is under way.

R19. RELOCATION AND CLEARANCE: Section 35.1345(a)(2) provides an exception to the general requirement for temporary relocation if “treatment of the interior will be completed within one period of 8 daytime hours and the worksite is contained” or if “treatment will be completed within 5 calendar days, the worksite is contained . . . and, at the end of work on each day, the worksite and the area within at least 10 feet of the containment area is cleaned to remove any visible dust or debris, and occupants have safe access to sleeping areas and bathroom and kitchen facilities.” If it is necessary to achieve clearance in order to “complete” treatment, how can treatment be completed in 8 hours?

If clearance results can not be obtained and clearance achieved within the 8-hour time period, consider the job to be similar to a 5-day project, maintain the containment, clean the area outside the containment, and allow residents to occupy all parts of the dwelling outside the containment.

R20. MONITORING: Is monitoring required when ongoing lead-based paint maintenance is not?

No.

R21. STANDARD TREATMENTS AND REEVALUATION: Section 35.1355(b)(4) says reevaluation is required, when required by the applicable subpart, if a risk assessment or

other evaluation found lead-based paint hazards. What if standard treatments were used and there was no evaluation?

If standard treatments were used, reevaluation is required if it is required by the applicable subpart. Use of standard treatments presumes the existence of hazards.

R22. CHEWABLE SURFACES: Section 35.1330(d) says that a chewable surface is to be treated if there is evidence that a child has chewed on a painted surface. If the child has moved away or is not 6 years old or more, do I still have to treat the surface?

No.

R23. HAIRLINE CRACKS: Are hairline cracks and nail holes considered deteriorated paint?

No.

R24. INTERIM CONTROLS AND ABATEMENT: Is removal of chipping, peeling, or flaking paint on a deteriorated lead-based paint surface considered "abatement" of the hazard?

No. Removal of deteriorated paint to prepare the surface for repainting is part of paint stabilization, which is an interim control.

R25. When is the use of certified abatement personnel required?

Those activities that are conducted with the express intent to permanently eliminate lead-based paint hazards must be done by certified abatement personnel. Intent would in virtually all circumstances be established when HUD regulations require abatement, when abatement is specified in job specifications, job writeups, cost allocation or similar documents, or when abatement is expressly ordered by a responsible state or local agency or court order. HUD requires abatement when Federal rehabilitation assistance covered by subpart J exceeds \$25,000 per unit, and interim controls when costs are between \$5,000 and \$25,000. Costs are calculated as described in question J3 above. Abatement is an option when costs are less, but is not required by HUD. Abatement is also required in conventional public housing during modernization covered by subpart L and for conversions covered by subpart G. Regardless of whether or not abatement or interim controls is conducted, occupant protection, lead-safe work practices, and clearance are required whenever lead-based paint hazards are above de minimis levels (see the joint HUD/EPA letter of April 19, 2001 at www.hud.gov/offices/lead).

R26. What is the difference between composite samples and representative samples?

A composite sample is one where two to four samples of dust, paint, or soil are put together by the clearance examiner to be analyzed as a whole. When comparing the analytical result with the dust standards in section 35.1320(b)(2)(i), you divide the appropriate standard in the table by one-half the number of subsamples that are composited. For example, for a floor clearance composite sample of four subsamples put together into a single sample, the standard is $40 \mu\text{g}/\text{ft}^2 / (4 / 2) = 40 \mu\text{g}/\text{ft}^2 / 2 = 20 \mu\text{g}/\text{ft}^2$. (This calculation is the same as the alternative of multiplying the clearance standard by 2 and dividing the product by the number of subsamples that the clearance examiner. In the example above, $2 \times 40 \mu\text{g}/\text{ft}^2 / 4 = 80 \mu\text{g}/\text{ft}^2 / 4 = 20 \mu\text{g}/\text{ft}^2$.)

A representative set of samples is collected for clearance purposes when the work site is a collection of up to four work areas that are contained in a room or series of rooms. (If there are more than four contained areas, an additional representative set of samples must be collected for every four additional areas.) The representative set of samples is comprised of at least one floor sample, plus at least one window sill and one window trough, if present in the contained work area (and from different windows if possible), plus at least one floor sample near the contained area (within five feet outside of an entrance). If the representative set of samples includes a sample that fails clearance (the dust-lead level is at or above the clearance dust standard in section 35.1320(b)(2)(i)), every part of the contained area represented by the clearance failure (that is, floors, or sills, or troughs that were not sampled) must be re-cleaned and re-cleared.

S. QUESTIONS PERTAINING TO MORE THAN ONE SUBPART

S1. VISUAL ASSESSMENT AND CLEARANCE: In housing for which the requirement is a visual assessment for deteriorated paint followed by stabilization of any deteriorated paint and clearance, if the visual assessment finds no deteriorated paint, is clearance still required?

No, because no paint stabilization work will be done.

S2. MOVE-IN BY A LEAD-POISONED CHILD: If the designated party knows that a family moving into an assisted unit has a child with an environmental intervention blood lead level, is it necessary to take any special action before the child moves in?

Yes. For the purposes of subparts H, I, L, and M, a designated party (i.e., owner, HUD, public housing agency or participating jurisdiction) must conduct a risk assessment and control any lead-based paint hazards before a child with an environmental intervention blood lead level moves into the unit. This will ensure that the child will be protected from further exposure. Also, normally it is easier to conduct the risk assessment and, if required, hazard reduction before rather than after the family is in residence.

S3. VERIFICATION OF BLOOD LEAD LEVEL: What exactly is a designated party expected to do to verify a report that a child has an environmental intervention blood lead level?

If a designated party (e.g., property owner or housing agency) receives a report from a source that is not a public health department or another medical health care provider that a resident child has an environmental intervention blood lead level, the designated party must verify the report. This verification is typically obtained by asking the person who provided the report to obtain written documentation of the child's blood lead level from the health department or another medical health care provider (an physician, licensed medical clinic, certified doctor's assistant, registered nurse, or similarly qualified person). Such documentation should include the date when the blood lead analysis was performed and/or reported by the laboratory.

S4. LEAD-SAFETY DURING TEMPORARY RELOCATION: If tenant-based rental assistance is being provided to a family to assist them to relocate temporarily while work is being done on their home, does the temporary dwelling have to meet the lead-based paint requirements for TBRA?

The requirements that apply are actually those of Section 35.1345(a)(2), which states that temporary relocation must be to a "unit that does not have lead-based paint hazards." This requirement can be met by ensuring that the unit does not have deteriorated paint (or

deteriorated lead-based paint if paint testing is conducted) and by conducting dust sampling to determine that the unit does not have dust-lead hazards. A unit built after January 1, 1978 can be presumed to meet the requirement.

S5. TRAINING: Where may I obtain information about training for lead hazard management and control activities related to the rule?

Information on types of training related to the rule, and contact information for training providers, can be obtained from the Lead Listing, www.leadlisting.org. Additional information is also available from the National Lead Information Center at 1-800-424-LEAD, HUD's web site at www.hud.gov/offices/lead, or HUD at 1-202-755-1785 ext. 104 (this is a toll call). If you are a hearing- or speech-impaired person, you may reach the above telephone numbers via TTY by calling the toll-free Federal Information Relay Service at 1-800-877-8339.

S6. Does a State law defining "child" as a person under 16 years old generate any obligations under the HUD rule for children 6 to 15 years old?

No obligation is created under the HUD rule. Compliance with the State law, which is outside the scope of the HUD rule, is unaffected by the rule, as discussed in section 35.150(b).

T. TRANSITION ASSISTANCE

The transition assistance period in certain jurisdictions that HUD provided after the effective date of the Lead Safe Housing Rule to address the lack of capacity of trained or licensed professionals to meet the requirements of the regulation in those jurisdictions has closed. Full compliance should be achievable for all parties.

ATTACHMENT

GUIDELINES FOR THE EVALUATION AND CONTROL OF LEAD-BASED PAINT HAZARDS IN HOUSING

CHAPTER 7: LEAD-BASED PAINT INSPECTION



U.S. Department of Housing and Urban Development

**Guidelines for the
Evaluation and Control
of Lead-Based Paint
Hazards in Housing**

**Chapter 7:
Lead-Based Paint Inspection**

1997 Revision

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Step-by-Step Summary

Lead-Based Paint Inspection: How to Do It

Note: This 1997 Revision replaces Chapter 7 of the 1995 *HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*

1. See Chapters 3, 5 and 16 for guidance on when a lead-based paint inspection is appropriate. A lead-based paint inspection will determine:
 - Whether lead-based paint is present in a house, dwelling unit, residential building, or housing development, including common areas and exterior surfaces; and
 - If present, which building components contain lead-based paint.

The U.S. Department of Housing and Urban Development (HUD) and the U.S. Environmental Protection Agency (EPA) define an inspection as a surface-by-surface investigation to determine the presence of lead-based paint (see 40 CFR part 745 and Title X of the 1992 Housing and Community Development Act). The sampling protocols in this chapter fulfill that definition.

2. The client should hire a certified (licensed) lead-based paint inspector or risk assessor (see 40 CFR part 745). Lists of inspectors and laboratories can be obtained by calling 1-888-LEADLIST or through the Internet at www.leadlisting.org. Lists are also available through State agencies (call 1-800-LEAD-FYI for the appropriate local contact). More than half of all States now require a license or certification to perform a lead-based paint inspection. If the State does not yet have a certification law, an inspector or risk assessor certified under another State's law should be used. By the fall of 1999, all lead-based paint inspections must be performed by a certified lead-based paint inspector or risk assessor in accordance with 40 CFR part 745, section 227.
3. The inspector should use the HUD/EPA standard for lead-based paint of 1.0 mg/cm² or 0.5% by weight, as defined by Title X of the 1992 Housing and Community Development Act. If the applicable standard in the jurisdiction is different, the procedures in this chapter will need to be modified. For the purposes of the HUD/EPA lead-based paint disclosure rule, 1.0 milligrams per square centimeter (mg/cm²) or 0.5% by weight are the standards that must be used.
4. Obtain the *XRF Performance Characteristic Sheet* for the X-Ray Fluorescence (XRF) lead paint analyzer to be used in the inspection. It will specify the ranges where XRF results are positive, negative or inconclusive, the calibration check tolerances, and other important information. Contact the National Lead Information Center Clearinghouse (1-800-424-LEAD) to obtain the appropriate *XRF Performance Characteristic Sheet*, or download it from the Internet at www.hud.gov/lea/leahome.html. *XRF Performance Characteristic Sheets* have been developed by HUD and EPA for most commercially available XRFs (see Addendum 3 of this chapter).
5. Report lead paint amounts in mg/cm² because this unit of measurement does not depend on the number of layers of non-lead-based paint and can usually be obtained without damaging the painted surface. All measurements of

lead in paint should be in mg/cm², unless the surface area cannot be measured or if all paint cannot be removed from the measured surface area. In such cases, concentrations may be reported in weight percent (%) or parts per million by weight (ppm).

6. Follow the radiation safety procedures explained in this chapter, and as required by the U.S. Nuclear Regulatory Commission and applicable State and local regulations when using XRF instruments.
7. Take at least three calibration check readings before beginning the inspection. Additional calibration check readings should be made every 4 hours or after inspection work has been completed for the day, or according to the manufacturer's instructions, whichever is most frequent. Calibration checks should always be done before the instrument is turned off and again after it has been warmed up (calibration checks do not need to be done each time an instrument enters an automatic "sleep" state while still powered on).
8. When conducting an inspection in a multifamily housing development or building, obtain a complete list of all housing units, common areas, and exterior site areas. Determine which can be grouped together for inspection purposes based on similarity of construction materials and common painting histories. In each group of similar units, similar common areas, and similar exterior sites, determine the minimum number of each to be inspected from the tables in this chapter. Random selection procedures are explained in this chapter.
9. For each unit, common area, and exterior site to be inspected, identify all testing combinations in each room equivalent. A testing combination is characterized by the room equivalent, the component type, and the substrate. A room equivalent is an identifiable part of a residence (e.g., room, house exterior, foyer, etc.). Painted surfaces include any surface coated with paint, shellac, varnish, stain, paint covered by wallpaper, or any other coating. Wallpaper should be assumed to cover paint unless building records or physical evidence indicates no paint is present.
10. Take at least one individual XRF reading on each testing combination in each room equivalent. For walls, take at least four readings (one reading on each wall) in each room equivalent. A different visible color does not by itself result in a separate testing combination. It is not necessary to take multiple XRF readings on the same spot, as was recommended in the 1990 Interim Guidelines for Public and Indian Housing.
11. Determine whether to correct the XRF readings for substrate interference by consulting the *XRF Performance Characteristic Sheet*. If test results for a given substrate fall within the substrate correction range, take readings on that bare substrate scraped completely clean of paint, as explained in this chapter.
12. Classify XRF results for each testing combination. Readings above the upper limit of the inconclusive range are considered positive, while readings below the lower limit of the inconclusive range are considered negative. Readings within the inconclusive range (including its boundary values) are classified as inconclusive. Some instruments have a threshold value separating ranges of readings considered positive from readings considered negative for a given substrate. Readings at or above the threshold are considered positive, while readings below the threshold are considered negative.
13. In single-family housing inspections, all inconclusive readings must be confirmed in the laboratory, unless the client wishes to assume that all inconclusive results are positive. Such an assumption may reduce the cost of an inspection, but it will probably increase subsequent abatement, interim control, and maintenance costs, because laboratory analysis often shows that testing combinations with inconclusive readings do not in fact contain lead-based paint. Inconclusive readings cannot be assumed to be negative.

14. In multifamily dwelling inspections, XRF readings are aggregated across units and room equivalents by component type. Use the flowchart provided in this chapter (Figure 7.1) to make classifications of all testing combinations or component types in the development as a whole, based on the percentages of positive, negative, and inconclusive readings.
15. If the inspector collected paint-chip samples for analysis, they should be analyzed by a laboratory recognized under the EPA's National Lead Laboratory Accreditation Program (NLLAP). Paint-chip samples are collected when the overall results for a component type are inconclusive. They may be collected by a properly trained and certified inspector, client, or third party, if permitted by State law. Paint-chip samples should contain all layers of paint (not just peeled layers) and must always include the bottom layer. If results will be reported in mg/cm², including a small amount of substrate with the sample will not significantly bias results. Substrate material should not, however, be included in samples reported in weight percent. Paint from 4 square inches (25 square centimeters) should provide a sufficient quantity for laboratory analysis. Smaller surface areas may be used, if the laboratory indicates that a smaller sample is acceptable. In all cases, the surface area sampled must be recorded.
16. The client or client's representative should evaluate the quality of the inspection using the procedures in this chapter.
17. The inspector should write an inspection report indicating if and where lead-based paint is located in the unit or the housing development (or building). The report should include a statement that the presence of lead-based paint must be disclosed to potential new buyers (purchasers) and renters (lessees) prior to obligation under a sales contract or lease, based on Federal law (see 24 CFR part 35, subpart H or 40 CFR part 745, subpart F). The suggested language below may be used. The inspection report should contain detailed information on the following:
 - Who performed the inspection;
 - Date(s);
 - Inspector's certification number;
 - All XRF readings;
 - Classification of all surfaces into positive or negative (but not inconclusive) categories, based on XRF and laboratory analyses;
 - Specific information on the XRF and laboratory methodologies;
 - Housing unit and sampling location identifiers;
 - Results of any laboratory analyses; and
 - Additional information described in Section IV of this chapter.

This chapter also contains language that may be used in an inspection report in the case where no lead-based paint has been identified (see the suggested language below).

Recommended Report Language On Disclosure For Use In Lead-Based Paint Inspections

"A copy of this summary must be provided to new lessees (tenants) and purchasers of this property under Federal law (24 CFR part 35 and 40 CFR part 745) before they become obligated under a lease or sales contract. The complete report must also be provided to new purchasers and it must be made available to new tenants. Landlords (lessors) and sellers are also required to distribute an educational pamphlet approved by the U.S. Environmental Protection Agency and include standard warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards."

(See Section IV of Chapter 7 of the HUD *Guidelines* for further details)

Recommended Report Language for Inspections Where No Lead-Based Paint Was Identified

"The results of this inspection indicate that no lead in amounts greater than or equal to 1.0 mg/cm² in paint was found on any building components, using the inspection protocol in Chapter 7 of the *HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1997 Revision)*. Therefore, this dwelling qualifies for the exemption in 24 CFR part 35 and 40 CFR part 745 for target housing being leased that is free of lead-based paint, as defined in the rule. However, some painted surfaces may contain levels of lead below 1.0 mg/cm², which could create lead dust or lead-contaminated soil hazards if the paint is turned into dust by abrasion, scraping, or sanding. This report should be kept by the inspector and should also be kept by the owner and all future owners for the life of the dwelling."

(See Section IV of Chapter 7 of the HUD *Guidelines* for further details)

Chapter 7: Lead-Based Paint Inspection

Note: This 1997 Revision replaces Chapter 7 of the 1995 *HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing*

I. Introduction

A. Purpose

This chapter explains methods for performing lead-based paint inspections in housing to determine:

- Whether lead-based paint is present in a house, dwelling unit, residential building, or housing development, including common areas and exterior surfaces; and
- If present, which building components contain lead-based paint.

The information presented here is intended for both inspectors and persons who purchase inspection services (clients). Both an inspection protocol and methods for determining the quality of an inspection are provided. Means for locating certified lead inspectors are also described.

1. Disclosure of Inspections

Federal law now requires that the results of lead-based paint inspections and risk assessments be disclosed to prospective renters (lessees, tenants) entering into a new lease and renters renewing an old lease, and to prospective purchasers prior to obligation under a sales contract, if lead-based paint is found. If the inspection described in this chapter finds that lead-based paint is not present in units which are to be leased, the dwelling unit and, for multifamily housing, all other dwelling units characterized by the inspection are exempt from disclosure requirements. However, for dwelling units which are being sold (not leased), the owner still has certain legal responsibilities to fulfill under Federal

law *even if no lead-based paint is identified*. See the HUD and EPA regulations in 24 CFR part 35 or 40 CFR part 745, respectively, for additional details.

You may contact the National Lead Information Center Clearinghouse (1-800-424-LEAD) to obtain HUD and EPA brochures, question-and-answer booklets, the regulations mentioned above (and the descriptive preamble to those regulations), and other information on lead-based paint disclosure. See Section IV for recommended inspection report language regarding these disclosure requirements.

2. Limitation of this Inspection Protocol

The protocol described here is not intended for investigating housing units where children with elevated blood lead levels are currently residing. Such a protocol can be found in Chapter 16 or may be available from a State or local health department.

3. Documentation of Results

The complete set of forms provided at the end of this chapter may be used in single-family and multifamily housing. Equivalent forms or computerized reports may also be used to document the results of inspections.

B. Qualifications of Inspectors and Laboratories

1. Where to Find Inspectors and Laboratories

Lists of State-licensed (certified) inspectors and accredited laboratories recognized under the U.S. Environmental Protection Agency (EPA) National Lead Laboratory Accreditation Program (NLLAP) are often available from State or local agencies. Call the National Lead Information Center Clearinghouse (1-800-424-LEAD) to locate the appropriate local contact.

A nationwide listing of certified inspectors, risk assessors, and accredited laboratories is also available on the Internet at www.leadlisting.org. The lists are

also available through an automated telephone system by calling 1-888-LEADLIST (1-888-532-3547).

2. Qualifications of Inspectors

The inspector must be certified (licensed) in lead-based paint inspection by the State where the testing is to be done if it has an inspection certification program; if the State does not have such a program, the inspector should be certified by another State. Currently, more than half of all States have such licensing laws. By the fall of 1999, all lead-based paint inspections must be performed only by a certified lead-based paint inspector or risk assessor in accordance with the work practices of 40 CFR part 745, section 227 (see the regulation for specific effective dates for States and Indian Tribes).

C. Other Sources of Information Required to Use This Protocol

The other sources of information and materials needed for using this protocol include an *XRF Performance Characteristic Sheet*, U.S. Nuclear Regulatory Commission and State radiation protection regulations, and standards issued by the American Society for Testing and Materials (ASTM). The National Institute of Standards and Technology (NIST) produces Standard Reference Materials (SRMs) and provides supporting documentation for these materials.

1. XRF Performance Characteristic Sheet

An *XRF Performance Characteristic Sheet* defines acceptable operating specifications and procedures for each model of X-Ray Fluorescence (XRF) lead-based paint analyzer. An inspector should follow the *XRF Performance Characteristic Sheet* for all inspection activities. For most commercially available XRFs, *XRF Performance Characteristic Sheets* are available from the National Lead Information Center Clearinghouse or through the Internet at www.hud.gov/lea/leahome.html. They are also included in a new, easy-to-use format in Addendum 3 to this chapter.

2. XRF Radiation Protection Regulations

Regulations that govern radioactive sources used in XRFs are available from State radiation protection agencies, and the Nuclear Regulatory Commission (301-415-7000).

3. ASTM and NIST Standards

Other helpful information and standards are available from ASTM (610-832-9585), including:

- ASTM E 1583 on evaluating laboratories used to determine lead levels
- ASTM E 1605 on terminology
- ASTM E 1613 on determining lead by atomic emission or atomic absorption spectroscopy
- ASTM E 1645 on laboratory preparation of paint-chip samples
- ASTM E 1729 on collecting paint-chip samples
- ASTM E 1775 on-site extraction and field-portable stripping voltammetry analysis for lead
- ASTM PS 53 on identifying and managing lead in facilities
- ASTM PS 87 on ultrasonic extraction for later analysis for lead
- ASTM PS 88 on determining lead by portable electroanalysis

NIST (301-975-6776) has developed series of paint films that have known amounts of lead-based paint and can be used for calibration check purposes. NIST Standard Reference Material 2579 is available as of mid-1997; NIST is planning to release additional series of paint films in late 1997 or early 1998 (see Section IV.D, below).

D. Paint Testing for Inspections and Risk Assessments

Risk assessments determine the presence of lead-based paint *hazards*, while inspections determine the presence of lead-based paint. The paint-chip sampling and measurement techniques used for paint inspections are similar to the techniques used for risk assessment. However, the number of paint measurements or samples taken for a paint inspection is considerably greater than the number of paint samples required for a risk assessment, because risk assessments measure lead only in deteriorated paint (risk assessments also measure lead in dust and soil). Inspections measure lead in both deteriorated and

intact paint, which involves many more surfaces. Risk assessments always note the condition of paint films; inspections may not. For dwellings in good condition, a full risk assessment may be unnecessary, and a lead hazard screen risk assessment may be conducted. In a lead hazard screen or risk assessment, the certified risk assessor tests only painted surfaces in "deteriorated" condition for their lead content, either by XRF or laboratory analysis. See Chapter 5 for methods to determine the condition of paint films when conducting a risk assessment.

E. Most Common Inspection Method

Portable XRF lead-based paint analyzers are the most common primary analytical method for inspections in housing because of their demonstrated abilities to determine if lead-based paint is present on many surfaces and to measure the paint without destructive sampling or paint removal, as well as their high speed and low cost per sample. Portable XRF instruments expose a building component to X rays or gamma radiation, which causes lead to emit X rays with a characteristic frequency or energy. The intensity of this radiation is measured by the instrument; the inspector must then compare this displayed value (reading) with the inconclusive range or threshold specified in the *XRF Performance Characteristic Sheet* for the specific XRF instrument being used, and the specific substrate beneath the painted surface (see Section IV.G, below). If the reading is less than the lower boundary of the inconclusive range, or less than the threshold, then the reading is considered negative. If the reading is greater than the upper boundary of the inconclusive range, or greater than or equal to the threshold, then the reading is considered positive. Readings within the inconclusive range, including its boundary values, are considered inconclusive. Because the inconclusive ranges and/or thresholds shown in the Performance Characteristic Sheet are based on 1.0 mg/cm², positive and negative readings are consistent with the HUD definition of lead-based paint for identification and disclosure purposes.

F. XRF Performance Characteristic Sheets and Manufacturer's Instructions

Only XRF instruments that have a HUD/EPA-issued or equivalent *XRF Performance Characteristic Sheet* should be used. XRFs must be used in accordance with the manufacturer's instructions and the *XRF Performance Characteristic Sheet*. The *XRF*

Performance Characteristic Sheet contains information about XRF readings taken on specific substrates, calibration check tolerances, interpretation of XRF readings (see section I.E, above), and other aspects of the model's performance. If discrepancies exist between the *XRF Performance Characteristic Sheet*, the *HUD Guidelines* and the manufacturer's instructions, the most stringent guidelines should be followed. For example, if the *XRF Performance Characteristic Sheet* has a lower (more stringent) calibration check tolerance than the manufacturer's instructions, the *XRF Performance Characteristic Sheet* should be followed. These *Guidelines* and the *XRF Performance Characteristic Sheets* are applicable to all XRF instruments that detect K X rays, L X rays, or both.¹

G. Inspection by Paint Chip Analysis

Performing inspections by the sole use of laboratory paint chip analysis is not recommended because it is time-consuming, costly, and requires extensive repair of painted surfaces. Laboratory analysis of paint-chip samples is recommended for inaccessible areas or building components with irregular (non-flat) surfaces that cannot be tested using XRF instrumentation. Laboratory analysis is also recommended to confirm inconclusive XRF results, as specified on the applicable *XRF Performance Characteristic Sheet*. Some newer laboratory analytical methods can provide results within minutes (see section I.H, below). Only laboratories recognized under the EPA NLLAP should be used. Laboratory analysis is more accurate and precise than XRF but only if great care is used to collect and analyze the paint-chip sample. Laboratory results should be reported as mg/cm². Appendix 1 of these *Guidelines* explains why units of mg/cm² are not dependent on the number of overcoats of lead-free paint and why such units of measure are therefore more reliable than weight percent. The dimensions of the area from which a paint-chip sample is removed must be measured as accurately as possible (to the nearest millimeter or 1/16th of an inch).

Although laboratory results can also be reported as a percentage of lead by weight of the paint sample, percents should only be used when it is not feasible to use mg/cm². These two units of measure are not interchangeable. Laboratory results should be reported as mg/cm² if the surface area can be accurately measured and if all paint within that area is collected.

In mg/cm² measurements, collecting small amounts of substrate material with the sample does not bias the results significantly, although having any amount of substrate in the sample can result in less precise results. In weight percent measurements, however, no substrate may be included because the substrate will "dilute" the amount of lead reported. Regardless of the units of measurement selected, the bottom layer of paint must always be included in the sample. If a visual examination shows that the bottom layer of paint appears to have "bled" into the substrate, a very thin upper portion of the substrate should be included in the sample to ensure that all lead within the sample area has been included in the sample. In cases where significant amounts of substrate are included in the sample, the results should always be reported in mg/cm².

See Section VI for additional information on laboratory analysis.

H. Additional Means of Analyzing Paint

Methods of analyzing lead in paint are available in addition to XRF and laboratory paint chip analysis, including transportable instruments and chemical test kits. Because these methods involve paint removal or disturbance, repair is needed after sampling, unless the substrate will be removed, encapsulated, enclosed, or repainted before occupancy (see Section VI), or if analysis shows that the paint is not lead-based paint, and leaving the damage is acceptable to the client and/or the owner.

1. Mobile Laboratories

Portable instruments that employ anodic stripping voltammetry and potentiometric stripping voltammetry are now available. Their use is described in ASTM Provisional Standard Practice PS 88. Also, ASTM Standard Guide E 1775 may be used as a basis for evaluating the performance of on-site extraction and electrochemical and spectrophotometric analyses. If the organization using a portable instrument is recognized under the EPA NLLAP and used that type of instrument to obtain the laboratory's recognition, they can be used in the same way as any other NLLAP-recognized laboratory. In short, both fixed-site and mobile laboratories may be used, provided they are recognized under NLLAP.

2. Chemical Test Kits

Chemical test kits are intended to show a color change when a part of the kit makes contact with the lead in lead-based paint. One type of chemical test kit is based on the formation of lead sulfide, which is black, when lead in paint reacts with sodium sulfide. Another is based on the formation of a red or pink color when lead in paint reacts with sodium rhodizonate.

EPA did not find that chemical spot test kits are sufficiently reliable for use in lead-based paint inspection, and recommended that they not be used (EPA 1995). HUD and EPA may recommend them in the future for inspections if chemical test kit technology is demonstrated to be equivalent to XRF or laboratory paint chip analysis in its ability to properly classify painted surfaces into positive, negative, and inconclusive categories, with appropriate estimates of the magnitude of sampling and analytical error. *XRF Performance Characteristic Sheets* currently provide such estimates for XRFs, and analytical error is well-described for laboratory analysis. HUD is currently funding the National Institute for Standards and Technology (NIST) and other researchers to evaluate commercially available chemical test kits and provide the basis for improved chemical test kits. Information on test kits or other new technologies for testing for lead in paint can be obtained from the National Lead Information Center Clearinghouse (1-800-424-LEAD).

II. Summary of XRF Radiation Safety Issues

Radiation hazards associated with the use of XRFs are covered in detail in Section VII. The shutter of an XRF must never be pointed at anyone, even if the shutter is closed. Inspectors should wear radiation dosimeters to measure their exposure, although excessive exposures are highly unlikely if the instruments are used in accordance with the manufacturer's instructions. If feasible, persons should not be near the other side of a wall, floor, ceiling, or other surface being tested.

III. Definitions

Definitions of several key terms used in this chapter are provided here. Some additional definitions may be found in ASTM Standard E 1605, Standard Terminology Relating to Abatement of Hazards from Lead-based Paint on Buildings and Related Structures, and in other standard chemical, statistical, architectural and engineering dictionaries and texts. For terms discussed both here and in the ASTM document, the definitions and descriptions in this chapter should be used.

Lead-based paint - Lead-based paint means paint or other surface coatings that contain lead equal to or greater than 1.0 mg/cm² or 0.5 percent by weight (equivalent units are: 5,000 µg/g, 5,000 mg/kg, or 5,000 ppm by weight). Surface coatings include paint, shellac, varnish, or any other coating, including wallpaper which covers painted surfaces.

Lead loading - The mass of lead in a given surface area on a substrate. Lead loading is typically measured in units of milligrams per square centimeter (mg/cm²). It is also called area concentration.

Room equivalent - A room equivalent is an identifiable part of a residence, such as a room, a house exterior, a foyer, staircase, hallway, or an exterior area (exterior areas contain items such as play areas, painted swing sets, painted sandboxes, etc.). Closets or other similar areas adjoining rooms should not be considered as separate room equivalents unless they are obviously dissimilar from the adjoining room equivalent. Most closets are not separate room equivalents. Exteriors should be included in all inspections. An individual side of an exterior is not considered to be a separate room equivalent, unless there is visual or other evidence that its paint history is different from that of the other sides. All sides of a building (typically two for row houses or four for freestanding houses) are generally treated as a single room equivalent if the paint history appears to be similar. For multifamily developments or apartment buildings, common areas and exterior sites are treated as separate types of units, not as room equivalents (see section V.C.1 for further guidance).

Substrate - The substrate is the material underneath the paint. Substrates should be classified into one of six types: brick, concrete, drywall, metal, plaster, or wood. These substrates cover almost all building

materials that are painted and are linked to those used in the *XRF Performance Characteristic Sheets*. For example, the concrete substrate type includes poured concrete, precast concrete, and concrete block.

If a painted substrate is encountered that is different from the substrate categories shown on the *XRF Performance Characteristic Sheet*, select the substrate type that is most similar in density and composition to the substrate being tested. For example, for painted glass substrates, an inspector should select the concrete substrate, because it has about the same density (2.5 g/cm³) and because the major element in both is silicon.

For components that have layers of different substrates, such as plaster over concrete, the substrate immediately adjacent to (underneath) the painted surface should be used. For example, plaster over concrete block is recorded as plaster.

Testing Combination - A testing combination is a unique combination of room equivalent, building component type, and substrate. Visible color may not be an accurate predictor of painting history and is not included in the definition of a testing combination. Table 7.1 lists common building component types that could make up distinct testing combinations within room equivalents. The list is not intended to be complete. Unlisted components that are coated with paint, varnish, shellac, wallpaper, stain, or other coating should also be considered as a separate testing combination.

Certain building components that are adjacent to each other and not likely to have different painting histories can be grouped together into a single testing combination, as follows:

- Window casings, stops, jambs and aprons are a single testing combination
- Interior window mullions and window sashes are a single testing combination--do not group interior mullions and sashes with exterior mullions and sashes
- Exterior window mullions and window sashes are a single testing combination
- Door jambs, stops, transoms, casings and other door frame parts are a single testing combination
- Door stiles, rails, panels, mullions and other door parts are a single testing combination

- Baseboards and associated trim (such as quarter-round or other caps) are a single testing combination (do not group chair rails, crown molding or walls with baseboards)
- Painted electrical sockets, switches or plates can be grouped with walls

Each of these building parts should be tested separately if there is some specific reason to believe that they have a different painting history. In most cases, separate testing will not be necessary.

Table 7.1: Examples of Interior and Exterior Building Component Types

Commonly Encountered Interior Painted Components That Should Be Tested Include:	
Air Conditioners	Fireplaces
Balustrades	Floors
Baseboards	Handrails
Bathroom Vanities	Newel Posts
Beams	Other Heating Units
Cabinets	Radiators
Ceilings	Shelf Supports
Chair Rails	Shelves
Columns	Stair Stringers
Counter Tops	Stair Treads and Risers
Crown Molding	Stools and Aprons
Doors and Trims	Walls
Painted Electrical Fixtures	Window Sashes and Trim

Exterior Painted Components That Should Be Tested Include:	
Air Conditioners	Handrails
Balustrades	Lattice Work
Bulkheads	Mailboxes
Ceilings	Painted Roofing
Chimneys	Railing Caps
Columns	Rake Boards
Corner boards	Sashes
Doors and Trim	Siding
Fascias	Soffits
Floors	Stair Risers and Treads
Gutters and Downspouts	Stair Stringers
Joists	Window and Trim

Other Exterior Painted Components Include:	
Fences	Storage Sheds & Garages
Laundry Line Posts	Swing sets and Other Play Equipment

Table 7.2 provides six examples of different testing combinations. The first example is a wooden bedroom door. This is a testing combination because it is described by a room equivalent (bedroom), component (door), and substrate (wood). If one of these variables is different for another component, that component is a different testing combination. For example, if a second door in the room equivalent is metal, two testing combinations, not one, would be present.

For doors separating rooms, each side of the door is assigned to the room equivalent it faces and is tested separately. The same is true of door casings. For prefabricated metal doors where it is apparent that both sides of the door have the same painting history, only one side needs to be tested.

Table 7.2: Examples of Distinct Testing Combinations

Room Equivalent	Building Component	Substrate
Master Bedroom (Room 5)	Door	Wood
Master Bedroom (Room 5)	Door	Metal
Kitchen (Room 3)	Wall	Plaster
Garage (Room 10)	Floor	Concrete
Exterior	Siding	Wood
Exterior	Swing set	Metal

Building Component Types - A building component type consists of doors, windows, walls, and so on that are repeated in more than one room equivalent in a unit and have a common substrate. If a unique building component is present in only one room, it is considered to be a testing combination. Each testing combination may be composed of more than one building component (such as two similar windows within a room equivalent). Component types can be located inside or outside the dwelling. For example, typical component types in a bedroom would be the ceiling, walls, a door and its casing, the window sash, window casings, and any other distinct surface, such as baseboards, crown molding, and chair rails. If trends or patterns of lead-based paint classifications are found among building component types in different room equivalents, an inspection report may summarize results by building component type, as long as all measurements are included in the report. For example, the inspection may find that all doors and door casings in a dwelling unit are positive.

Test Location - The test location is a specific area on a testing combination where either an XRF reading or a paint-chip sample will be taken.

IV. Inspections in Single-Family Housing

Single-family housing inspections should be conducted by a State- or EPA-certified (licensed) lead-based paint inspector using the following seven steps, some of which may be done at the same time:

- List all testing combinations, including those that are painted, stained, shellacked, varnished, coated, or wallpaper which covers painted surfaces.
- Select testing combinations.
- Perform XRF testing (including the calibration check readings).
- Collect and analyze paint-chip samples for testing combinations that cannot be tested with XRF or that had inconclusive XRF results.
- Classify XRF and paint-chip results.
- Evaluate the work and results to ensure the quality of the paint inspection.
- Document all findings in a plain language summary and a complete report; include language in both the summary and the report indicating that the information must be disclosed to tenants and prospective purchasers in accordance with Federal law (24 CFR part 35 or 40 CFR part 745).

A. Listing Testing Combinations

Develop a list of all testing combinations in all interior rooms, on all exterior building surfaces, and on surfaces in other exterior areas, such as fences, playground equipment, and garages. The "Single-Family Housing LBP Testing Data Sheet" (see Form 7.1 at the end of this chapter) or a comparable data collection instrument may be used for this purpose. An inventory of a house may be completed either before any testing or on a room-by-room basis during testing.

1. Number of Room Equivalents to Inspect

Test all room equivalents inside and outside the dwelling unit. The final report must include a final determination of the presence or absence of lead-based paint on each testing combination in each room equivalent.

For varnished, stained, or similar clear-coated floors, measurements in only one room equivalent are permissible if it appears that the floors in the other room equivalents have the same coating.

2. Number of Testing Combinations to Inspect

Inspect each testing combination in each room equivalent, unless similar building component types with identical substrates (such as windows) are all found to contain lead-based paint in the first five interior room equivalents. In that case, testing of that component type in the remaining room equivalents may be discontinued, *if and only if* the purchaser of the inspection services agrees beforehand to such a discontinuation. The inspector should then conclude that similar building component types in the rest of the dwelling unit also contain lead-based paint. See item 6 entitled, "Conditions for Abbreviation of Testing," later in this section for additional details.

Because it is highly unlikely that testing combinations *known* (and not just presumed) to have been replaced or added to the building after 1977 will contain lead-based paint, they need not be tested. If the age of the testing combination is in doubt, it should be tested.

Some testing combinations have multiple parts. For example, a window testing combination could theoretically be broken down into the interior sill (stool), exterior sill, trough, sash, apron, parting bead, stop bead, casing, and so on. Because it is highly unlikely that all these parts will have different painting histories, they should not usually be considered separate testing combinations. (Inspectors should regard parts of building components as separate testing combinations if they have evidence that different parts have separate, distinct painting histories). See the definition of testing combination (Section III, above) for guidance on which building component parts may and which may not be grouped together.

3. Painted Furniture

Painted furniture that is physically attached to the unit (for example, a desk or dresser that is built-in) should be included in the inspection as a testing combination. Other painted furniture may also be tested, depending on the client's wishes. Children's furniture (such as cribs or playpens), especially if built before 1978, may contain lead-based paint and can be tested, subject to the client's wishes.

4. Building Component Types

Results of an inspection may be summarized by classifying component types across room equivalents if patterns or trends are supported by the data.

5. Substrates

All substrates across all room equivalents should be grouped into one of the six substrate categories (brick, concrete, drywall, metal, plaster, or wood) shown on the *XRF Performance Characteristic Sheet* for the instrument being used. Substrate correction procedures can then be applied for all building component types with the same substrate. For example, the substrate correction procedure for wooden doors and wooden baseboards can use the same substrate correction value (see Section IV.E, below).

6. Conditions for Abbreviation of Testing

If lead-based paint is determined to be present (a "positive" finding) for a building component type with

the same substrate in all of the first five room equivalents inspected, further testing of that component type may be discontinued in the remaining room equivalents within that dwelling unit, *if and only if* the purchaser of inspection services agrees beforehand to such a discontinuation. The inspector should then conclude that the similar building component types in the rest of the dwelling unit also contain lead-based paint. For example, if an inspector finds that baseboards in the first five room equivalents are all positive, the inspector -- with the client's permission -- may conclude that all remaining room equivalents in the unit contain positive baseboards.

B. Number and Location of XRF Readings

1. Number of XRF Readings for Each Testing Combination

XRF testing is required for at least one location per testing combination, except for interior and exterior walls, where four readings should be taken, one on each wall. Previous editions of this chapter stated that three readings for each testing combination were needed to control for spatial variation and other sources of error. Recent analysis² of EPA data show a median difference in spatial variation of only 0.1 mg/cm² and a change in classification (positive, negative, or inconclusive) occurs less than 5 percent of the time as a result of different test locations on the same testing combination. Multiple readings on the same testing combination or testing location are, therefore, unnecessary, except for interior and exterior walls.

Because of the large surface areas and quantities of paint involved, and the possibility of increased spatial variation, take at least four readings (one reading on each wall) in each room equivalent. (For room equivalents with fewer than four walls, test each wall.) For each set of walls with the same painting history in a room equivalent, test the four largest walls. Classify each wall based on its individual XRF reading. If a room equivalent has more than four walls, calculate the average of the readings, round the result to the same number of decimal places as the XRF instrument displays, and classify the remaining walls with the same painting history as the tested walls, based on this rounded average. When the remaining walls in a room equivalent clearly do not have the same painting history as that of the tested walls, test and classify the remaining walls individually. For exterior walls, select

at least four sides and average the readings (rounding the result as described above) to obtain a result for any remaining sides. If there are more than four walls and the results of the tested walls do not follow a classification pattern (for example, one is positive and the other three are negative), test each wall individually.

2. Location of XRF Readings

The selection of the test location for a specific testing combination should be representative of the paint over the areas which are most likely to be coated with old paint or other lead-based coatings. Thus, locations where the paint appears to be thickest should be selected. Locations where paint has worn away or been scraped off should not be selected. Areas over pipes, electrical surfaces, nails, and other possible interferences should also be avoided if possible. All layers of paint should be included and the XRF probe faceplate should be able to lie flat against the surface of the test location.

If no acceptable location for XRF testing exists for a given testing combination, a paint-chip sample should be collected. The sample should include all paint layers and should be taken as unobtrusively as possible. Because paint chip sampling is destructive, a single sample may be collected from a wall and used to characterize the other walls in a room equivalent (see section VI for additional details on paint chip sampling).

3. Documentation of XRF Reading Locations

Descriptions of testing combinations should be sufficiently detailed to permit another individual to find them. While it is not necessary to document the *exact* spot or the *exact* building component on which the reading was taken, it is necessary to record the *exact* testing combination measured. Current room uses or colors can change and should not be the only way of identifying them. A numbering system, floor plan, sketch or other system may be used to document which testing combinations were tested. While HUD does not require a standard identification system, one that could be used is as follows:

a. Side identification

Identify perimeter wall sides with letters A, B, C, and D (or numbers or Roman numerals). Side A for single-family housing is the street side for the address. Side A in multifamily housing is the apartment entry door side.

Side B, C, and D are identified clockwise from Side A as one faces the dwelling; thus Wall B is to the left, Wall C is across from Side A, and Side D is to the right of Side A.

Each room equivalent's side identification follows the scheme for the whole housing unit. Because a room can have two or more entries, sides should not be allocated based on the entry point. For example, giving a closet a side allocation based on how the room is entered would make it difficult for another person to make an easy identification, especially if the room had two closets and two entryways.

b. Room Equivalent Identification

Room equivalents should be identified by both a number and a use pattern (for example, Room 5-Kitchen). Room 1 can always be the first room, at the A-D junction at the entryway, or it can be the exterior. Rooms are consecutively numbered clockwise. If multiple closets exist, they are given the side allocation: for example, Room 3, Side C Closet. The exterior is always assigned a separate room equivalent identifier.

c. Sides in a Room

Sides in an interior room equivalent follow the overall housing unit side allocation. Therefore, when standing in any four-sided room facing Side C, the room's Side A will always be to the rear, Side B will be to the left, and Side D will be to the right.

d. Building Component Identification

Individual building components are first identified by their room number and side allocation (for example, the radiator in Room 1, Side B is easily identified). If multiple similar component types are in a room (for example, three windows), they are differentiated from

each other by side allocation. If multiple components are on the same wall side, they are differentiated by being numbered left to right when facing the components. For example, three windows on Wall D are identified as windows D1, D2, and D3, left to right. If window D3 has the only old original sash, it is considered a separate testing combination from the other two windows.

A sketch of the dwelling unit's floor plan is often helpful, but is not required by this protocol. Whatever documentation is used, a description of the room equivalent and testing combination identification system must be included in the final inspection report.

C. XRF Instrument Reading Time

The recommended time to open an XRF instrument's shutter to obtain a single XRF result for a testing location depends on the specific XRF instrument model and the mode in which the instrument is operating. The *XRF Performance Characteristic Sheet* provides information on this issue.

To ensure that a constant amount of radiation is delivered to the painted surface, the open-shutter time must be increased as the source ages and the radiation source weakens. Almost all commercially available XRF instruments automatically adjust for the age of the source. (Some instruments adjust for source decay in some but not all modes; operators should check with the manufacturers of their instruments to determine whether these differences need to be accommodated). The following formula should be employed for instruments requiring manual adjustment of the open-shutter time:

$$\text{Open-Shutter Time} = 2^{(\text{Age}/\text{Half-life})} \times \text{Nominal Time}$$

where:

Age is the age (in days) of the radioactive source, starting from the date the manufacturer says the source had its full radiation strength;

Half-life is the time (in days) it takes for the radioactive material's activity to decrease to one-half its initial level; and

Nominal Time is the recommended nominal number of seconds for open-shutter time,

when the source is at its full radiation strength, and is obtained from the *XRF Performance Characteristic Sheet*.

For example, if the age of the source is equal to its half-life, the open-shutter time should be twice the nominal time. Thus, if the recommended nominal time is 15 seconds, the open-shutter time should be doubled to 30 seconds.

XRFs typically use Cobalt-57 (with a half life of 270 days) or Cadmium-109 (with a half life of 464 days).

XRF Performance Characteristic Sheets typically report different inconclusive ranges or thresholds (see section IV.G, below) for different nominal times and different substrates. This may affect the number of paint-chip samples that must be collected as well as the length of time required for the inspection. Some XRF devices have different modes of operation with different nominal reading times. Inspectors must use the appropriate inconclusive ranges and other criteria specified on the *XRF Performance Characteristic Sheet* for each XRF model, mode of operation and substrate. For example, inconclusive ranges specified for a 30-second nominal reading cannot be used for a 5-second nominal reading, even for the same instrument and the same substrate.

D. XRF Calibration Check Readings

In addition to the manufacturer's recommended warm up and quality control procedures, the XRF operator should take the quality control readings recommended below, unless these are less stringent than the manufacturer's instructions. Quality control for XRF instruments involves readings to check calibration. Most XRFs cannot be calibrated on-site; actual calibration can only be accomplished in the factory.

1. Frequency and Number of Calibration Checks

For each XRF instrument, two sets of XRF calibration check readings are recommended at least every 4 hours. The first is a set of three nominal-time XRF calibration check readings to be taken before the inspection begins. The second occurs either after the day's inspection work has been completed, or at least every 4 hours, whichever occurs first. To reduce the amount of data that would be lost if the instrument

were to go out of calibration between checks, and/or if the manufacturer recommends more frequent calibration checks, the calibration check can be repeated more frequently than every 4 hours. If the XRF manufacturer recommends more frequent calibration checks, the manufacturer's instructions should be followed. Calibration should also be checked before the XRF is turned off (for example, to replace a battery or before a lunch break) and after it is turned on again. For example, if an inspection of a large house took 6 hours, there would be three calibration checks: one at the beginning of the inspection, another after 4 hours, and a third at the end of the inspection.

If the XRF is not turned off as the inspector travels from one dwelling unit to the next, calibration checks do not need to be done after each dwelling unit is completed. For example, in multifamily housing, calibration checks do not need to be done after each dwelling unit is inspected; once every 4 hours is usually adequate.

Some instruments automatically enter a "sleep" or "off" state when not being used continually to prolong battery life. It is not necessary to perform a calibration check before and after each "sleep" state episode, unless the manufacturer recommends otherwise.

2. Calibration Check Standard Materials

XRF calibration check readings are taken on the Standard Reference Material (SRM) paint film nearest to 1.0 mg/cm² within the National Institute of Standards and Technology (NIST) SRM used. These films can be obtained by calling (301) 975-6776 and referencing SRM 2579 (NIST is planning to release additional series of paint films in late 1997 or early 1998; the film nearest to 1.0 mg/cm² should be used for XRF calibration checks). The cost as of September 26, 1997, for the SRM 2579 set of five films, was \$320, including 2-day delivery. Calibration checks should be taken through the SRM paint film with the film positioned at least 1 foot (0.3 meters) away from any potential source of lead. The NIST SRM film should not be placed on a tool box, suitcase, or surface coated with paint, shellac, or any other coating to take calibration check readings. Rather, the NIST SRM film should be attached to a solid (not plywood) wooden board or other nonmetal rigid

substrate such as drywall, or attached directly to the XRF probe. The SRM should be positioned so that readings of it are taken when it is more than 1 foot (0.3 meters) away from a potential source of error. For example, the NIST SRM film can be placed on top of a 1 foot (0.3 meter) thick piece of Styrofoam or other lead-free material, as recommended by the manufacturer before taking readings.

3. Recording and Interpreting Calibration Check Readings

Each time calibration check readings are made, three readings should be taken. These readings should be taken using the nominal time which will be used during the inspection, selected from among those specified in the XRF's Performance Characteristic Sheet. The open shutter time should be adjusted, if necessary, to reflect the age of the radioactive source (see section IV.C, above). The readings can be recorded on the "Calibration Check Test Results" form (Form 7.2), on a comparable form, or stored in the instrument's memory, and printed out or transferred to a computer later. The average of the three calibration check readings should be calculated, rounded to the same number of decimal places as the XRF instrument displays, and recorded on the form.

Large deviations from the NIST SRM value will alert the inspector to problems in the instrument's performance. If the observed calibration check average is outside of the acceptable calibration check tolerance range specified in the instrument's *XRF Performance Characteristic Sheet*, the manufacturer's instructions should be followed to bring the instrument back into control. A successful calibration check should be obtained before additional XRF testing is conducted. Readings not accompanied by successful calibration checks at the beginning and end of the testing period are unreliable and should be repeated after a successful calibration check has been made. If a backup XRF instrument is used as a replacement, it must successfully pass the initial calibration check test before retesting the affected test locations.

This procedure assumes that the HUD/EPA lead-based paint standard of 1.0 mg/cm² is being used. If a different standard is being used, other NIST SRMs should be used to determine instrument performance against the different standard. At this time, however, no method for determining performance characteristics using different standards has been developed.

E. Substrate Correction

XRF readings are sometimes subject to systematic biases as a result of interference from substrate material beneath the paint. The magnitude and direction of bias depends on the substrate, the specific XRF instrument being used, and other factors such as temperature and humidity. Results can be biased in either the positive or negative direction and may be quite high.

1. When Substrate Correction Is Not Required

Some XRF instruments do not need to have their readings corrected for substrate bias. Other instruments may only need to apply substrate correction procedures on specific substrates and/or when XRF results are below a specific value. The *XRF Performance Characteristic Sheet* should be consulted to determine the requirements for a specific instrument and each mode of operation (e.g., nominal time, or time required for intended precision). XRF instruments which do not require correction for any substrate, or require corrections on only a few substrates, have an advantage in that they simplify and shorten the inspection process.

2. Substrate Correction Procedure

XRF results are corrected for substrate bias by subtracting a correction value determined separately in each house for each type of substrate where lead paint values are in the substrate correction range indicated on the *XRF Performance Characteristic Sheet*. In single-family housing, the substrate correction value is determined using the specific instrument(s) used in that house. The correction value (formerly called "Substrate Equivalent Lead" or "SEL") is an average of six XRF readings, with three taken from each of two test locations that have been scraped visually clean of their paint coating. The locations selected for removal of paint should have an initial XRF reading on the painted surface of less than 2.5 mg/cm², if possible. If all initial readings on a substrate type are greater than 2.5 mg/cm², the locations with the lowest initial reading should be chosen. Because available data indicate that surfaces with XRF readings in excess of about 3.0 mg/cm² or 4.0 mg/cm² are almost always coated with lead-based paint, and since bleed-through of lead into the substrate may occur, or pipes and similarly interfering building components may be behind the material being evaluated, locations with such high readings should be avoided for substrate correction.

After all XRF testing has been completed but before the final calibration check test has been conducted, XRF results for each substrate type should be reviewed. If any readings fall within the range for substrate correction for a particular substrate, obtain the substrate correction value.

On each selected substrate requiring correction, two different testing combinations must be chosen for paint removal and testing. For example, if the readings are inconclusive for some wooden baseboards, select two baseboards, each from a different room. If some wooden doors also require substrate correction, the inspector should take substrate correction readings on one door and one baseboard. Selecting the precise location of substrate correction should be based on the inspector's ability to remove paint thoroughly from the substrates, the similarity of the substrates, and their accessibility. The XRF probe faceplate must be able to be placed over the scraped area, which should be completely free of paint or other coatings.

The size of the area from which paint is taken depends on the size of the analytical area of the XRF probe faceplate; normally, the area is specified by the manufacturer. To ensure that no paint is included in the bare substrate measurement, the bare area on the substrate should be slightly larger than the analytical area on the XRF probe faceplate.

In all, six readings must be taken for each substrate type that requires correction. All six must be averaged together. Take three readings on the first *bare* substrate area. Record the substrate and XRF readings on the "Substrate Correction Values" form (Form 7.3) or a comparable form. Repeat this procedure for the second *bare* substrate area and record the three readings on the same form. Substrate correction values should be determined using the same instrument used to take readings on the painted surfaces. If more than one XRF model was used to take readings, apply the substrate correction values as specified on each instrument's *XRF Performance Characteristic Sheet*.

Compute the correction value for each substrate type that requires correction by computing the average of all six readings as shown below and recording the results on the "Substrate Correction Values" form. The formula given below should be used to compute the substrate bias correction value for XRF readings taken on a bare substrate that is not covered with NIST SRM film. A different formula should be used when SRM film must be placed over the bare substrate. The *XRF Performance Characteristic Sheet* specifies when this correction is necessary and provides the formula for computing the correction value.

For each substrate type requiring substrate correction, transfer the correction values to the "Single-Family Housing LBP Testing Data Sheet" (Form 7.1). Correct XRF readings for substrate interference by subtracting the correction value from each XRF reading.

Example: Suppose that a house has 50 testing combinations with wood substrates. The *XRF Performance Characteristic Sheet* states that a correction value for XRF results taken on those wood testing combinations that have values less than 4.0 mg/cm² must be computed. Select two test locations from the testing combinations that had uncorrected XRF results of less than 2.5 mg/cm².

Completely remove the paint from these two test locations and take three nominal-time XRF readings

on the bare substrate at each location. The six XRF readings at the two random locations are:

Selected Location	Reading (mg/cm ²)		
	First	Second	Third
Wood Master Bedroom Door	1.32	0.91	1.14
Kitchen Wood Baseboard (Room 4)	1.21	1.03	1.43

The correction value is the average of the six values:

$$\text{Correction value} = (1.32 + 0.91 + 1.14 + 1.21 + 1.03 + 1.43) \text{ mg/cm}^2 / 6 = 1.17 \text{ mg/cm}^2$$

In this same house, three different wood testing combinations were inspected for lead-based paint and the XRF results are: 1.63 mg/cm², 3.19 mg/cm², and 1.14 mg/cm². Correcting these three XRF measurements for substrate bias produces the following results:

$$\text{First corrected measurement} = 1.63 \text{ mg/cm}^2 - 1.17 \text{ mg/cm}^2 = 0.46 \text{ mg/cm}^2$$

$$\text{Second corrected measurement} = 3.19 \text{ mg/cm}^2 - 1.17 \text{ mg/cm}^2 = 2.02 \text{ mg/cm}^2$$

$$\text{Third corrected measurement} = 1.14 \text{ mg/cm}^2 - 1.17 \text{ mg/cm}^2 = -0.03 \text{ mg/cm}^2$$

The third corrected result shown above is an example of how random error in XRF measurements can cause the corrected result to be less than zero. (Random measurement error is present whenever measurements are taken). Note that correction values can be either positive or negative. In short, negative corrected XRF values should be reported if supported by the data.

Finally, suppose an XRF result of 1.24 mg/cm² has a correction value of negative 0.41 mg/cm². Subtracting a negative number is the same as adding its positive value. Therefore, the corrected measurement would be:

$$\text{Corrected result} = 1.24 \text{ mg/cm}^2 - (-0.41 \text{ mg/cm}^2) = 1.24 \text{ mg/cm}^2 + 0.41 \text{ mg/cm}^2 = 1.65 \text{ mg/cm}^2$$

3. Negative Values

If more than 20 percent of the corrected values are negative, the instrument's lead paint readings and/or the substrate readings are probably in error. Calibration should be checked and substrate measurements should be repeated.

F. Discarding Readings

If the manufacturer's instructions call for the deletion of readings at specific times, *only* readings taken at those specific times should be deleted. Similarly, readings between a successful calibration check and a subsequent unsuccessful calibration check must be

discarded. Readings should not be deleted based on any criteria other than what is specified by the manufacturer's instructions or the *HUD Guidelines*. For example, a manufacturer may instruct operators to discard the first XRF reading after a substrate change. If so, *only* the first reading should be discarded after a substrate change.

G. Classification of XRF Results

XRF results are classified as positive, negative, or inconclusive.

A *positive* classification indicates that lead is present on the testing combination at or above the HUD/EPA standard of 1.0 mg/cm². A positive XRF result is any

value greater than the upper bound of the inconclusive range, or greater than or equal to the threshold, as specified on the applicable *XRF Performance Characteristic Sheet*.

A *negative* classification indicates that lead is not present on the testing combination at or above the HUD/EPA standard. A negative XRF result is any value less than the lower bound of the inconclusive range, or less than the threshold, specified on the performance characteristic sheet.

An *inconclusive* classification indicates that the XRF cannot determine with reasonable certainty whether lead is present on the testing combination at or above the HUD/EPA standard. An inconclusive XRF result is any value falling within the inconclusive range on the performance characteristic sheet (including the boundary values defining the range). In single-family housing, all inconclusive results should be confirmed by laboratory analysis, unless the client wishes to assume that all inconclusive results are positive.

Positive, negative, and inconclusive results apply to the actual testing combination and to any repetitions of the testing combination that were not tested in the room equivalents. Positive results also apply to similar component types in room equivalents that were not tested. For example, suppose that one baseboard in a room equivalent is tested, and that the inspector decided that all four baseboards are a single testing combination. The single XRF result applies to all four baseboards in that room equivalent.

When an inconclusive range is specified on the *XRF Performance Characteristic Sheet*, XRF results are classified as positive if they are greater than the upper boundary of the inconclusive range, negative if they are less than the lower boundary of the inconclusive range, or inconclusive if in between. The inconclusive range on the *XRF Performance Characteristic Sheets* in Addendum 3 of these *Guidelines* includes its upper and lower bounds. Earlier editions of this guide and earlier *XRF Performance Characteristic Sheets* did not include the bounds of the inconclusive range as "inconclusive." This 1997 edition of Chapter 7 of the HUD *Guidelines* changes that system, but the specific XRF readings that are considered positive, negative, or inconclusive for a given XRF model and substrate remain unchanged, so previous inspection results are not affected.

For example, if the inconclusive range given in the *XRF Performance Characteristic Sheet* is 0.51 mg/cm² to 1.49 mg/cm², an XRF result of 0.50 mg/cm² is considered negative, because it is less than 0.51; a result of 0.6 mg/cm² is inconclusive; and a result of 1.5 mg/cm² is positive. A result of 0.51 mg/cm², 1.00 mg/cm², or 1.49 mg/cm² would be inconclusive.

Different XRF models have different inconclusive ranges, depending on the specific XRF model and the mode of operation. The inconclusive range may also be substrate-specific.

In some cases, the upper and lower limits of the inconclusive range are equal; that value is called the *threshold*. If the reading is less than the threshold, then the reading is considered negative. If the reading is equal to or greater than the threshold, then the reading is considered positive.

Use of the inconclusive range and threshold is detailed in the performance characteristic sheet. The categories include substrate-corrected results, if substrate correction is indicated. XRF's with *only* threshold values listed on the *XRF Performance Characteristic Sheet* are advantageous in that classifications of results are either positive or negative (no XRF readings are inconclusive).

H. Evaluation of the Quality of the Inspection

The person responsible for purchasing inspection services -- the homeowner, property owner, housing authority, prospective buyer, occupant, etc.; also known as the client -- should evaluate the quality of the work using one or more of the methods listed below. Evaluation methods include direct observation, immediate provision of results, repeated testing, and time-and-motion analysis. Direct observation of the inspection should be used whenever possible. The inspection contract should outline the financial penalties that will occur if an inspector fails to perform as contracted during any visit.

1. Direct Observation

An evaluation of a lead-based paint inspection is best made if a knowledgeable observer is present for as much of the XRF testing as possible. This is the only way to ensure that all painted, varnished, shellacked, wallpapered, stained, or other coated testing combinations are actually tested, and that all XRF

readings are recorded correctly. If possible, employ as the observer someone who is trained in lead-based paint inspection and who is independent of the inspection firm.

If it is not feasible for the client or the client's representative to be present throughout the inspection, that person should conduct unannounced and unpredictable visits to observe the inspection process. The number of unannounced visits will depend on the results of prior visits. When observing ongoing XRF testing, review the test results for the room equivalent currently being tested and for the previously inspected room equivalent. Even if the first visit is fully satisfactory, follow-up visits should be conducted throughout the inspection.

2. Immediate Provision of Results

The client, or a representative, should ask the inspector to provide copies or printouts of results on completed data forms immediately following the completion of the inspection or on a daily basis. Alternatively, visually review the inspector's written results to ensure that they are properly recorded for all surfaces that require XRF testing. If surfaces have been overlooked or recorded incorrectly, the inspection process should be stopped and considered deficient. Clients should retain daily results to ensure that the data in the final report are the same as the data collected in the home.

3. Repeated Testing of 10 Surfaces

Data from HUD's private housing lead-based paint hazard control program show that it is possible to successfully retest painted surfaces without knowing the exact spot which was tested.

Select 10 testing combinations at random from the already compiled list in the "Single-Family Housing LBP Testing Data Sheet" for retesting (see forms in Addendum 2 of this chapter). Observe the inspector during the retesting. If possible, the same XRF instrument used in the original inspection should be used in the retesting. If the XRF instrument used in the original inspection is not available and cannot be returned to the site, use an XRF of the same model for retesting. Use the same procedures to retest the 10 testing combinations. The 10 repeat XRF results should be compared with the 10 XRF results previously made on the same testing combinations.

The repeat readings and the original readings should not be corrected for substrate bias for the purpose of this comparison. The average of the 10 repeat XRF results should not differ from the 10 original XRF results by more than the retest tolerance limit. The procedure for calculating the retest tolerance limit is specified in the *XRF Performance Characteristic Sheet*. If the limit is exceeded, the procedure should be repeated using 10 different testing combinations. If the retest tolerance limit is exceeded again, the original inspection is considered deficient.

4. Time-and-Motion Analysis

Anyone who contracts for a lead-based paint inspection can also perform a simple check to determine if the inspector had sufficient time to complete the number of housing units reported as being tested in the time allotted. Usually, inspections require at least 1 to 2 hours per unit using existing technology. If the inspector's on-site time is significantly less than that, further investigation should be conducted to determine if the inspector actually completed the work in the report.

1. Documentation in Single-Family Housing

1. Data Forms

Data can be recorded on hand written forms, electronically, or by a combination of these two methods. XRF readings can be entered on handwritten forms, such as the set of forms (7.1, 7.1A, 7.2, and 7.3) provided at the end of this chapter (or comparable forms). Because handwriting can result in transcription errors, handwritten forms should be examined for missing data and copying errors.

2. Electronic Data Storage

Electronic data storage is recommended only if the data recorded are sufficient to allow another person to find the testing combination that corresponds to each XRF reading. Electronically stored data should be printed in hard copy either daily or at the completion of the inspection. The printout should be examined for extraneous symbols or missing data, including missing test location identification. In most cases, electronic data storage is supplemented by manual data recording of sampling location, operator name, and other information.

3. Final Report

The final report must include both a summary and complete information about the site, the inspector, the inspection firm, the inspection process, and the inspection results. The full report should include a complete data set, including:

- Housing unit identifiers;
- Date of the inspection;
- Identity of the inspector and the inspection firm and any relevant certifications or licenses held by the inspector and/or the firm;
- Building component and room equivalent identification or numbering system or sketches;
- All XRF readings (including calibration check readings);
- All paint chip analyses;
- Testing protocol used;
- Instrument manufacturer, model, serial number, mode(s) of operation and age of radioactive source;
- Information on the owner's legal obligation to disclose the inspection results to tenants and/or purchasers before obligation under 24 CFR part 35 and 40 CFR part 745 (published in the *Federal Register*, Volume 61, Number 45, March 6, 1996, starting on p. 9064; copies of the regulations and related materials can be obtained from the National Lead Information Center Clearinghouse, 1-800-424-LEAD); and
- Final classification of all testing combinations into positive or negative categories, including a list of testing combinations, or building component types and their substrates, that were classified but not individually tested. *(Note that the final report should not list inconclusive readings as a third category. If the client wishes to assume all inconclusive readings are positive, the report should state that assumption and present all readings and testing combinations for which the readings were inconclusive. It is not permissible to assume all inconclusive readings are negative. The report should include the actual readings for any testing combinations for which readings were inconclusive, but were classified as*

positive. Also note that final classifications are needed for building component types and their substrates that were not actually tested. For example, if the client wants to suspend testing on testing combinations that were found to be positive in the first five room equivalents and are assumed to be positive in the remaining rooms, the final report should list those testing combinations that are assumed to be positive).

The report should also contain a summary that answers two questions:

- (1) Is there lead-based paint in the house? *and*
- (2) if lead-based paint is present, where is it located?

The summary report should also include the house address where the inspection was performed, the date(s) of the inspection, the name, address and phone numbers of the inspector and inspection firm, any appropriate license or certification numbers, and the starting and ending times for each day when XRF testing was done. The summary should also contain language regarding disclosure, such as:

"A copy of this summary must be provided to new lessees (tenants) and purchasers of this property under Federal law (24 CFR part 35 and 40 CFR part 745) before they become obligated under a lease or sales contract. The complete report must also be provided to new purchasers and it must be made available to new tenants. Landlords (lessors) and sellers are also required to distribute an educational pamphlet and include standard warning language in their leases or sales contracts to ensure that parents have the information they need to protect their children from lead-based paint hazards."

Although 24 CFR part 35 and 40 CFR part 745 do not require that inspectors and owners keep copies of inspection reports for any specified period of time, future buyers are entitled to all available inspection reports, should the property be re-sold.

If no lead-based paint has been detected in the house, the summary should say so. The following language may be used:

"The results of this inspection indicate that no lead in amounts greater than or equal to 1.0 mg/cm² in paint was found on any building components, using the inspection protocol in Chapter 7 of the *HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (1997)*. Therefore, this dwelling qualifies for the exemption in 24 CFR part 35 and 40 CFR part 745 for target housing being leased that is free of lead-based paint, as defined in the rule. However, some painted surfaces may contain levels of lead below 1.0 mg/cm², which could create lead dust or lead-contaminated soil hazards if the paint is turned into dust by abrasion, scraping, or sanding. This report should be kept by the inspector and should also be kept by the owner and all future owners for the life of the dwelling."

Detailed documentation of the XRF testing should also be provided in the full report, including the raw data upon which it was based. The single-family housing forms provided at the end of this chapter or comparable forms would serve this purpose.

For a leased home, where no lead-based paint is identified during an inspection, the building owner is exempt from the requirements of the disclosure rule. However, when a housing unit with no lead-based paint is being sold, the owner still has responsibilities under the disclosure rule (e.g., providing a lead hazard information pamphlet to potential buyers). For selling and leasing properties where no lead-based paint is identified, it is strongly recommended that owners and inspectors retain inspection reports for the life of the building.

V. Inspections in Multifamily Housing

This section emphasizes the differences between single-family and multifamily housing paint inspections. The protocols mentioned in earlier sections are not repeated here. It will be necessary to read Section IV on single-family housing to implement the protocol for multifamily housing.

Use of the multifamily protocol is less time-consuming and more cost effective than inspecting all units in a given housing development or

building because in most instances a pattern can be determined after inspecting a fraction of the units. The number of units tested is based on the date of construction and the number of units in the housing development.

For purposes of this chapter only, multifamily housing is defined as any group of units that are similar in construction from unit to unit, with:

- 21 or more units, if any were built before 1960 or are of unknown age, or
- 10 or more units, if they were all built from 1960 through 1977.

Developments with fewer units should be treated as a series of single-family housing units.

A. Statistical Confidence in Dwelling Unit Sampling

The number of similar units, similar common areas or exterior sites to be tested (the sample size) is based on the total number units, similar common areas or exterior sites in the building(s), as specified in Table 7.3. Use the table for sampling each set of similar units, each set of similar common areas and each set of exterior sites. For pre-1960 or unknown-age buildings or developments with 1,040 or more similar units, similar common areas or exterior sites, test 5.8 percent of them, and round up any fraction to the next whole number. For 1960-77 buildings or developments with 1,000 or more units, test 2.9 percent of the units, and round up any fraction to the next whole number. For reference, the table shows entries from 1500 to 4000 in steps of 500. For example, in a development built in 1962, with 200 similar units, 20 similar common areas, and 9 similar exterior sites, sample 27 units, 16 common areas, and all 9 exterior sites.

If lead levels in *all* units, common areas or exterior sites tested are found to be below the 1.0 mg/cm² standard, these sample sizes provide 95 percent confidence that:

- For pre-1960 housing units, less than 5 percent or fewer than 50 (whichever is less) units, common areas or exterior sites, have lead at or above the standard; and
- For 1960 to 1977 housing units, less than 10 percent or fewer than 50 (whichever is less) units, common areas or exterior sites, have lead at or above the standard.

Refer to Appendix 12 of these Guidelines for the statistical rationale for this table. The Appendix shows the details of the calculation for pre-1960 housing; the calculation is the same for 1960-1977

housing, except for using the 10 percent criterion for 1960-1977 housing, rather than the 5 percent used for older housing.³

Table 7.3: Number of Units to be Tested in Multifamily Developments

Number of Similar Units, Similar Common Areas or Exterior Sites in a Building or Development	Pre-1960 or Unknown-Age Building or Development: Number to Test	1960-1977 Building or Development: Number to Test
1-9	All	All
10-13	All	10
14	All	11
15	All	12
16-17	All	13
18	All	14
19	All	15
20	All	16
21-26	20	16
27	21	17
28	22	18
29	23	18
30	23	19
31	24	19
32	25	19
33-34	26	19
35	27	19
36	28	19
37	29	19
38-39	30	20
40-48	31	21
49-50	31	22
51	32	22
52-53	33	22
54	34	22
55-56	35	22

Number of Similar Units, Similar Common Areas or Exterior Sites in a Building or Development	Pre-1960 or Unknown-Age Building or Development: Number to Test	1960-1977 Building or Development: Number to Test
57-58	36	22
59	37	23
60-69	38	23
70-73	38	24
74-75	39	24
76-77	40	24
78-79	41	24
80-88	42	24
89-95	42	25
96-97	43	25
98-99	44	25
100-109	45	25
110-117	45	26
118-119	46	26
120-138	47	26
139-157	48	26
158-159	49	26
160-177	49	27
178-197	50	27
198-218	51	27
219-258	52	27
259-279	53	27
280-299	53	28
300-279	54	28
380-499	55	28
500-776	56	28
777-939	57	28

Number of Similar Units, Similar Common Areas or Exterior Sites in a Building or Development	Pre-1960 or Unknown-Age Building or Development: Number to Test	1960-1977 Building or Development: Number to Test
940-1004	57	29
1005-1022	58	29
1023-1032	59	29
1033-1039	59	30
1500	87	44
2000	116	58
2500	145	73
3000	174	87
3500	203	102
4000	232	116

Although the data set used to develop sample sizes in multifamily housing⁴ was not randomly selected from all multifamily housing developments in the nation (no such data set is available), analyses drawn from the data are likely to err on the side of safety and public health for at least two reasons: First, the prevalence and amounts of lead-based paint are highest in pre-1960 housing developments. The sampling approach used here focuses inspection efforts on buildings where a greater chance of lead-based paint hazards exist.

Second, and perhaps more important, none of the 65 developments had lead-based paint in 5 to 10 percent of the units. That indicates lead-based paint in this range is likely to be quite rare and that plausible increases in sampling to improve detection in this range will fail to improve confidence in the results significantly. Most painting follows a pattern: Property owners or managers often paint all surfaces, all components within a room, or similar components in all rooms in a unit when there is tenant turnover. It is unlikely that lead-based paint distributions are completely random, as assumed in the 1995 edition of the *Guidelines*. From the available data, there appears to be no significant benefit to increasing the number of units to be sampled to detect a prevalence

rate of 5 to 10 percent, because few developments are likely to be in that range. In short, the sampling design presented here will yield a more targeted, cost-effective approach to identifying lead-based paint where it is most likely to exist.

B. Selection of Housing Units

The first step in selecting housing units is to identify buildings in the development with a common construction based on written documentation or visual evidence of construction type. Such buildings can be grouped together for sampling purposes. For example, if two buildings in the development were built at the same time by the same builder and appear to be of similar construction, all of the units in the two buildings can be grouped for sampling purposes. Units can have different sizes, floor plans, and number of bedrooms and still be grouped.

The specific units to be tested should be chosen *randomly* from a list of all units in each building or buildings. The "Selection of Units" form (Form 7.4) or a comparable form may be used to aid in the selection process. A complete list of all units in each group should be used and a separate identifying sequential number must be assigned to each unit. For

example, if apartment addresses are shown as 1A, 1B, 2A, 2B etc., they must be given a sequence number (1, 2, 3, 4, etc.).

Obviously, units without identifiers could not be selected for inspection and would thus bias the sampling scheme. The list of units should be complete and verified by consulting building plans or by a physical inspection of the development.

Specific units to be tested should be selected randomly using the formula below, and a table of random numbers or the random number function on a calculator. Tables of random numbers are often included in statistics books. Calculators with a random number function key can be obtained for less than \$20 and are easier to use than tables. Inspectors are, therefore, advised to use them to obtain the random numbers, which can then be used to select the specific numbered units. A unit number is selected by rounding up the product of the random number times the total number of units in the development to the *next* whole number. That is:

Housing Unit number = Random number *times* Total number, rounded *up*,

where:

Housing Unit number = the identification number for a unit in a list;

Random number = a random number between 0 and 1;
and

Total number = the total number of units in a list of units.

The same unit may be selected more than once by this procedure. Because each unit should be tested only once, duplicate selection should be documented and then discarded. The procedure should be continued until an adequate number of units has been selected.

The "Selection of Units" form (Form 7.4) is completed by filling in as many random numbers as are needed in the appropriate column. Numbers for the third column are obtained by multiplying the total development size by each random number. Numbers for the fourth column are obtained by rounding up from the previous calculation to the next whole number. If the whole

number in the fourth column has already been selected, that selection should not be entered again. The notation "DUP" should be entered to show that the selection was a duplicate. This process should continue until the required number of distinct sample numbers have been selected. Common areas and exterior room equivalents should be identified at this time, but they are not considered to be separate units.

C. Listing Testing Combinations

The "Multifamily Housing LBP Testing Data Sheet" form (Form 7.5) -- or a comparable form -- should be used to list the testing combinations in each unit, common area and exterior site that was selected for inspection. In multifamily housing, the inventory of testing combinations often will be similar for units that have the same number of bedrooms. The inspector should, however, list testing combinations that are unique to each tested unit. For example, some units may contain built-in cabinets while others do not. The selection of testing combinations should, therefore, be carried out independently in each inspected unit.

As in single family housing, take readings on all testing combinations in all room equivalents in each unit selected for testing.

1. Common Areas

Similar common areas and similar exterior sites must always be tested, but in some cases they can be sampled in much the same way that dwelling units are. Common areas and building exteriors typically have a similar painting history from one building to the next. In multifamily housing, each common area (such as a building lobby, laundry room, or hallway) can be treated like a dwelling unit. If there are multiple similar common areas, they may be grouped for sampling purposes in exactly the same way as regular dwelling units are. However, dwelling units, common areas and exterior sites cannot all be mixed together in a single group.

All testing combinations within each common area or on building exteriors selected for testing must be inspected. This includes playground equipment, benches and miscellaneous testing combinations located throughout the development. The specific

common areas and building exteriors to test should be randomly selected, in much the same way as specific units are selected using random numbers. (See Section IV.B, above).

The number of common areas to test should be taken from Table 7.3. In this instance, common areas and building exteriors can be treated in the same way as housing units (although they are not to be confused with true housing units).

D. Number of Readings on Each Testing Combination

The method for collecting XRF readings is identical for multifamily and single-family housing (see Section IV).

E. XRF Calibration Check Readings

The method for collecting and evaluating XRF calibration check readings is identical for multifamily and single-family housing (see Section IV.D).

F. Substrate Correction in Multifamily Housing

The method for correcting XRF readings for substrate bias is identical for multifamily and single-family housing (see Section IV.E) with one exception: For multifamily housing, randomly select two housing units to be used to collect substrate measurements for all substrates within the development that need correction, and use the results from those two units to perform substrate correction calculations in all tested units within the development or building. If substrates exist in common areas or on exterior sites that do not exist in residential areas, select two locations from these areas for substrate correction. Otherwise, the same substrate correction readings can be applied to dwelling units, common areas and exterior sites.

G. Classification of XRF Results in Multifamily Housing

The inspector should record each XRF reading for each testing combination on the "Multifamily Housing LBP Testing Data Sheet," (Form 7.5) or a comparable form, and indicate whether that testing combination was

classified as positive, negative, or inconclusive as described previously for single-family housing.

When the inspection is completed in all of the selected units and the classification rules have been applied to all XRF results, the "Multifamily Housing: Component Type Report" form (Form 7.6) or a comparable form should be completed. Building component types -- groups of like components constructed of the same substrate in the multifamily housing development -- are aggregated on this form. For example, grouping all interior walls would create an appropriate component type if all walls are plaster. Grouping all doors would not be appropriate, however, if some doors are metal and some are wood. At least 40 testing combinations of a given component type in a multifamily housing development must be tested to obtain the desired level of confidence in the results. (Refer to Appendix 12 of these *Guidelines* for the statistical rationale for this minimum number of component types to test.) If fewer than 40 testing combinations of a given component type were tested, test additional combinations of that component type. If less than 40 components of a given type exist in the units to be tested, test all of the components that do exist.

In some cases additional sampling of the specific component may not be necessary. If no lead at or above the standard is found on that component type, additional measurements should be taken in other units to increase the sample size to 40. However, if all or most of the sampled component types are positive, no further sampling is needed, provided that the building owner agrees with this reduction of testing. For example, if 20 out of 60 doors are tested, and the majority are positive for lead-based paint, all similar doors in the buildings may be presumed positive. Note, however, that all required XRF testing and laboratory analysis, if necessary, must be completed to conclude that all components included in a given component type are negative.

On the "Multifamily Housing: Component Type Report" form, the substrate, and component for each component type should be recorded under the heading "Description" (for example, wooden interior doors) as well as the total number of testing combinations included in the component type. In addition, for each component type, the aggregated positive, negative, and inconclusive classifications should be recorded as

described below. Record the number and percentage of testing combinations classified as:

- Positive for lead-based paint. This is based upon a positive XRF reading in accordance with the XRF's Performance Characteristic Sheet;
- Inconclusive and having XRF readings less than the midpoint of the XRF's inconclusive range ("low inconclusive");
- Inconclusive and having XRF readings equal to or greater than the midpoint of the XRF's inconclusive range ("high inconclusive"); and
- Negative for lead-based paint.

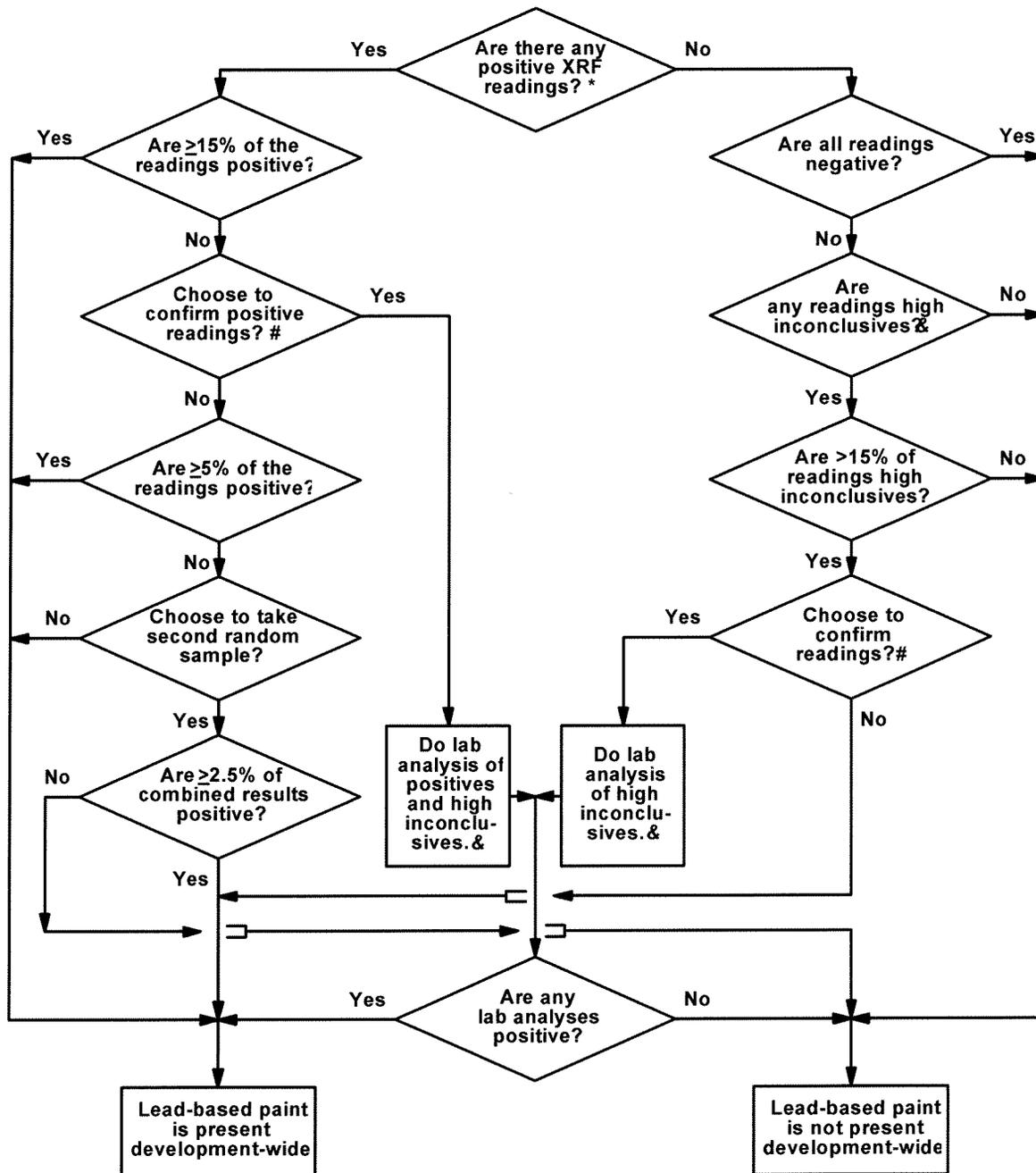
The "Multifamily Decision Flowchart" (Figure 7.1) should be used to interpret the aggregated XRF testing results in the "Multifamily Housing: Component Type Report" form. The flowchart is applied separately to each component/substrate type (wood doors, metal window casings, etc.) and shows one of the following results:

- **Positive:** Lead based-paint is present on one or more of the components.
- **Negative:** Lead based-paint is not present on the components throughout the development. (Lead may still be present at lower loadings and hazardous leaded dust may be generated during modernization, renovation, remodeling, maintenance, or other disturbances of painted surfaces.)

These results are obtained by following the flowchart. The decision that lead-based paint is present is reached with 99 percent confidence if 15 percent or more of the components are positive. (Refer to Appendix 12 for the statistical rationale for this percentage.) The decision that lead-based paint is not present throughout the development is reached if: (1) 100 percent of the

tested component types are negative, or (2) 100 percent of the tested component types are classified as either negative or inconclusive *and* all of the inconclusive classifications have XRF readings less than the midpoint of the inconclusive range for the XRF in use. Note that the midpoint of the inconclusive range is *not* a threshold; it is used only for classifying XRF readings in multifamily housing in conjunction with information about other XRF readings as described here. (See section 2 below for guidance on what to do when the percentage of positive readings is less than 5%). For cases with greater than or equal to 5% positives *and* less than 15% positives, as well as no positives but greater than 15% high inconclusives, some confirmatory laboratory testing may be needed to reach a final conclusion, unless the client wishes to assume the validity of the XRF results and that all inconclusives are positive. For each testing combination with an inconclusive XRF reading at or above the midpoint of the inconclusive range, a paint-chip sample should be analyzed by a laboratory recognized by the EPA National Lead Laboratory Accreditation Program. If all the laboratory-analyzed samples are negative, it is not necessary to test inconclusive XRF results below the midpoint of the inconclusive range. If, however, *any* laboratory results are positive on a component type, all inconclusives equal to or above the midpoint of the inconclusive range should be analyzed. Once all laboratory results have been reported, the "Multifamily Housing: Component Type Report" form should be updated to include the laboratory results and classifications (either positive or negative).

The "Multifamily Decision Flowchart" is based on data collected by EPA in a large field study of XRF instruments (EPA 1995). Percentages were chosen so that, for each component type, there is a 98 percent chance of correctly concluding that lead-based paint is either absent on all components or present on at least one component of a given



* "Positive," "negative," and "inconclusive" XRF readings are determined in accordance with the XRF instrument's Performance Characteristics Sheet as described in the HUD Guidelines for the Evaluation and Control of Lead Hazards in Housing, chapter 7.

& A high inconclusive reading is an XRF reading at or above the midpoint of the inconclusive range. For example, if the inconclusive range is 0.41 to 1.39, its midpoint (average) is 0.90; a reading in the range from 0.90 to 1.39 would be a high inconclusive reading.

Any paint or coating may be assumed to be lead-based paint, even without XRF or laboratory analysis. Similarly, any XRF reading may be confirmed by laboratory analysis.

Figure 7.1 Multifamily Decision Flowchart

type. Thus, the probability that a tested component type will be correctly classified is very high.

Percentages of positive or inconclusive results are computed by dividing the number in each classification group by the total number of testing combinations of the component type that were tested. For example, if 245 wooden doors in a multifamily housing development were tested and 69 were classified as inconclusive with XRF readings less than the midpoint of the inconclusive range, 28 percent [(69 / 245) x 100 percent = 28.2 percent] should be recorded on the form in the "<1.0 percent" columns under the heading "Inconclusive."

1. Unsampled Housing Units

If a particular component type in the sampled units is classified as positive, that same component type in the unsampled units is also classified as positive. For those cases where the number of positive components is small, further analysis may determine if there is a systematic reason for the specific mixture of positive and negative results.

For example, suppose that a few porch railings tested negative, but most tested positive. Examination of the sample results in conjunction with the building records showed that the porch railings classified as positive were all original and the railings classified as negative were all recent replacements. The records did not reveal which units had replaced railings, and due to historic preservation requirements, the replacement railings were identical in appearance to the old railings. Thus, all unsampled original porch railings could be classified as positive, and all unsampled recently replaced porch railings could be classified as negative if at least 40 of the replaced porch railings had been tested.

2. Fewer than 5% Positive Results

Where a small fraction of XRF readings, less than 5 percent, of a particular component type are positive, several choices are available:

- First, the inspector may confirm the results by laboratory analysis, which is considered definitive when performed as described in Section VI, below; a laboratory lead result of

1.0 mg/cm² or greater (or 0.5 percent by weight or greater) is considered positive.

- Second, the inspector may select a second random sample (using unsampled units only) and test the component type in those units. If less than 2.5% of the combined set of results is positive, the component type may be considered as not having lead-based paint development-wide, but, rather, having lead-based paint in isolated locations, with a reasonable degree of confidence. Individual components that are classified positive should be considered as being lead-based painted and managed or abated appropriately.
- Finally, if the client chooses not to confirm the results by laboratory analysis and not to take a second set of measurements, then the component type should be considered as having lead-based painted development-wide.

The inspector may wish to advise the client that the cost of additional XRF testing or laboratory analysis is usually much less than the cost of lead abatement or interim control projects, and that this is of particular interest in the situation where few results are positive, because there is a significant chance that the paint, development-wide, may not be lead-based.

Whatever approaches are used, all painted individual surfaces found to be positive for lead must be included in the inspection report, regardless of development-wide conclusions.

H. Evaluation of the Inspection

The methods for evaluating inspection services in multifamily housing are identical to those described for single-family housing (see Section IV.H) except for the retesting option: In multifamily housing, a total of 10 testing combinations should be selected for retesting in two units.

I. Documentation in Multifamily Housing

The method for documentation is identical for multifamily and single-family housing (see Section IV.I), with the following exception: Use forms 7.2

through 7.6 for multifamily housing (see Addendum 2) or comparable forms, not the single-family housing forms.

When lead-based paint has been found in some units it must be managed or treated as such in those units, even if the inspection indicates that it is not present development wide.

VI. Laboratory Testing for Lead in Paint

For inconclusive XRF results and areas that cannot be tested using an XRF instrument, a paint-chip sample should be collected using the protocol outlined here and in Appendix 13.2 of these *Guidelines*. The sample should be analyzed by a laboratory recognized under the EPA National Lead Laboratory Accreditation Program (NLLAP) using the analytical method(s) it used to obtain the laboratory's recognition. If a paint chip sample cannot be collected, the inspection report should include a list of surfaces where paint chip samples were needed but not taken (in this case, the client would assume that inconclusives requiring confirmation by laboratory analysis are positive).

A. Number of Samples

Only one paint-chip needs to be taken for each testing combination. Additional samples can be collected as a quality control measure, if desired.

B. Size of Samples

The paint-chip sample should be taken from a 4-square-inch (25-square-centimeter) area that is representative of the paint on the testing combination, as close as possible to any XRF reading location and, if possible, unobtrusive. This area may be a 2 by 2 inch (5 by 5 centimeter) square, or a 1 by 4 inch (2½ by 10 centimeter) rectangle, or have any other dimensions that equal at least 4 square inches (25 square centimeters). Regardless of shape, the dimensions of the surface area must be accurately measured (to the nearest millimeter or 1/16th of an inch) so that laboratory results can be reported in mg/cm². Results should be reported as percent by weight if the dimensions of the surface area cannot be accurately measured or if all paint within the sampled area cannot be removed. In these cases, lead should be reported in ppm or percent by weight, *not* in

mg/cm². Smaller surface areas can be used if acceptable to the laboratory.

The 4-square-inch (25-square-centimeter) area practically guarantees that a sufficient amount of paint will be collected for laboratory analysis. As a result, samples will sometimes weigh more than required for some laboratory analysis methods. Smaller-sized paint chips may be collected if permitted by the laboratory. (See ASTM E 1729). In all cases, the inspector should consult with the NLLAP recognized laboratory selected regarding specific requirements for the submission of samples for lead-based paint analysis.

C. Inclusion of Substrate Material

Inclusion of small amounts of substrate material in the paint-chip sample will result in minimal error if results are reported in mg/cm², but including any amount of substrate can result in less precise results, with worse effect as the amount of substrate increases. Substrate material may not be included if results are to be reported in weight percent (or ppm).

D. Repair of Sampled Locations

Areas from which paint-chip samples are collected should be repaired and cleaned, unless the area will be removed, encapsulated, enclosed, or repainted before occupancy. Repairs can be completed by repainting, spackling, or any other method of covering that renders the bare surface inaccessible. Cleanup should be done with wet wiping and rinsing, and it should be done on both the surface and the floor underneath the surface sampled. The new covering or coating should have the same expected longevity as new paint or primer. Repair is not necessary if analysis shows that the paint is not lead-based paint and leaving the damage is acceptable to the client and/or the owner.

E. Classification of Paint-Chip Sample Results

Any paint inspections may be carried out using only paint-chip sampling and laboratory analysis at the option of the purchaser of the inspection services. This option is not recommended because it is time consuming, costly, and requires extensive repairs. Paint-chip sampling also has opportunities for errors,

such as inclusion of substrate material (for results in weight percent), failure to remove all paint from an area (including paint that has bled into a substrate) and laboratory error. Nevertheless, paint-chip sampling generally has a smaller error than does XRF and is, therefore, appropriate as a final decisionmaking tool. Laboratory results of 1.0 mg/cm² or greater, or 0.5 percent or greater, are to be considered positive. If the laboratory reports both mg/cm² and weight percent for a sample, use whichever result is positive (if any) for final classification. In the rare situation where more than one paint-chip sample from a single testing combination is analyzed, the combination is considered positive if any of those samples is positive. All other results are negative. No inconclusive range is reported for laboratory measurements.

F. Units of Measure

Results should be reported in mg/cm², the primary unit of measure for lead-based paint analyses of surface coatings. Results should be reported as percent by weight only if the dimensions of the surface area cannot be accurately measured or if not all paint within the sampled area can be removed. In these cases, results should not be reported in mg/cm², but in weight percent.

Weight measurements are usually reported as micrograms per gram (μg/g), milligrams per kilogram (mg/kg), or parts per million (ppm) by weight. For example, a sample with 0.2 percent lead may also be reported as 2,000 μg/g lead, 2,000 mg/kg lead, or 2,000 ppm lead.

G. Sample Containers

Samples should be collected in sealable rigid containers such as screw-top plastic centrifuge tubes, rather than plastic bags which generate static electricity and make quantitative transfer of the entire paint sample in the laboratory impossible. Paint-chip collection should

$$\text{mg/cm}^2 = \frac{\text{weight of lead from subsample (in mg)} \times \frac{\text{total sample weight (in g)}}{\text{subsample weight (in g)}}}{\text{sample area (in cm}^2\text{)}}$$

To report results in weight percent, the following equation should be used:

include collection of all the paint layers from the substrate, but collection of actual substrate should be minimized. Refer to ASTM E 1729 and Appendix 13 of these *Guidelines* for further details on collection of paint-chip samples.

H. Laboratory Analysis Methods

Several standard laboratory technologies are useful in quantifying lead levels in paint-chip samples. These methods include, but are not limited to, Atomic Absorption Spectroscopy (AAS), Inductively Coupled Plasma-Atomic Emission Spectroscopy (ICP-AES), Anodic Stripping Voltammetry (ASV), and Potentiometric Stripping Voltammetry (PSV).

For analytical methods that require sample digestion, samples should be pulverized so that there is adequate surface area to dissolve the sample before laboratory instrument measurement. In some cases, the amount of paint collected from a 4-square-inch (25-square-centimeter) area may exceed the amount of paint that can be analyzed successfully. It is important that the actual sample mass analyzed not exceed the maximum mass the laboratory has successfully tested using the specified method. If subsampling is required to meet analytical method specifications, the laboratory must homogenize the paint-chip sample (unless the entire sample will eventually be analyzed and the results of the subsamples combined). Without homogenization, subsampling would likely result in biased, inaccurate lead results (see ASTM E 1645). See ASTM PS 87 for an ultrasonic extraction method for preparing paint samples for subsequent analysis for lead.

If the sample is properly homogenized and substrate inclusion is negligible, the result can be reported in either milligrams per square centimeter (mg/cm²; the preferred unit), percent by weight, or both. The following equation should be used to report the results in milligrams per square centimeter:

Weight percent = weight of lead in the subsample/weight of subsample x 100.

To report results in micrograms per gram ($\mu\text{g/g}$), the following equation should be used:

$$\mu\text{g/g} = \frac{\text{weight of lead from subsample (in } \mu\text{g)}}{\text{subsample weight (in g)}}$$

If the laboratory reports results in both mg/cm^2 and weight percent, and if one result is positive and the other negative, the sample is classified as positive.

Whatever the preparation techniques of paint-chip samples (including homogenization, grinding, and digestion), and instrument selection and operation selected, the inspector should verify, prior to the collection and submission of samples, that the laboratory is approved to perform the appropriate analytical methodologies. Methods should be applied to paint-chip materials of approximately the same mass and lead loading (also called area concentration, measured in mg/cm^2) as those samples anticipated from the field.

Because of the potential for sample mass to affect the precision of lead readings, laboratory analysis reference materials processed with field samples for quality assurance purposes should have close to the same mass as those used for paint-chip samples. Refer to ASTM E 1645 or equivalent methods for further details on laboratory preparation of paint-chip samples, and refer to ASTM E 1613, ASTM E 1775, ASTM PS 88, or equivalent methods on analysis of samples for lead.

I. Laboratory Selection

Only a laboratory recognized under EPA's National Lead Laboratory Accreditation Program (NLLAP) should be used for lead-based paint analysis. Such a laboratory is required to use the same analytical methods that it used to obtain accreditation. EPA established NLLAP to provide the public with laboratories that have a demonstrated capability for analyzing lead in paint chip, dust, and soil samples at the levels of concern stated in these *Guidelines*. In some states, an NLLAP laboratory *must* be used. To participate in NLLAP, a laboratory must:

- Participate successfully in the Environmental Lead Proficiency Analytical Testing Program (ELPAT). ELPAT is administered by the American Industrial Hygiene Association (AIHA) in cooperation with the Centers for Disease Control and Prevention (CDC), National Institute for Occupational Safety and Health (NIOSH), and EPA. The proficiency testing samples used in ELPAT consist of variable levels of lead in paint, dust, and soil matrices.
- Undergo a systems audit, including an on-site visit. The systems audit must be conducted by an accrediting organization with a program recognized by EPA through a Memorandum of Understanding (MOU). Laboratory accrediting organizations participating in NLLAP have accrediting program requirements that meet or exceed NLLAP laboratory quality system requirements stated in the MOU.

An up-to-date list of fixed-site and mobile laboratories recognized by the EPA NLLAP for analysis of paint-chip samples may be obtained from the National Lead Information Center Clearinghouse by calling 1-800-424-LEAD or from the Lead Listing at <http://www.leadlisting.org>. Since December 1993, the American Association for Laboratory Accreditation (A2LA) and AIHA have been recognized as laboratory-accrediting organizations participating in NLLAP. NLLAP specifies quality control and data reporting requirements, as described in "Laboratory Quality System Requirements," which can be found in Appendix A of the NLLAP Model MOU. The MOU can also be obtained by calling the National Lead Information Center Clearinghouse, at the number above. The evaluation approach in ASTM E 1583 may be considered in selecting laboratories to use

from among available NLLAP-recognized laboratories.

J. Laboratory Report

The laboratory report for analysis of paint samples for lead should include both identifying information and information about the analysis. At a minimum, this should include:

- Laboratory identifying information: including the laboratory's name, address, and phone number, and NLLAP and other applicable certification and accreditation information; similarly, the client and/or project's name and address should be provided.
- Analytical method information: including the information provided in accordance with NLLAP procedures, and ASTM E 1613, ASTM PS 88 or equivalent method(s) for analysis for lead.
- Sample information: including field sample number and any information (e.g., sample type and/or location) given to the laboratory about the sample, unique laboratory sample number, analytical method (including a description of any variations from the standard method), quality control/quality assurance results, date of analysis, operational or testing problems or unusual occurrences.

VII. Radiation Hazards

Portable XRF instruments used for lead-based paint inspections contain radioactive isotopes that emit X rays and gamma radiation. Proper training and handling of these instruments is required to protect the instrument operator and any other persons in the immediate vicinity during XRF usage. The XRF instrument should be in the operator's possession at all times. The operator should never defeat or override any safety mechanisms of XRF equipment.

A. XRF Use Licenses and Certification

In addition to training and certification in lead-based paint inspection, a person using a portable XRF

instrument for inspection must have valid licenses or permits from the appropriate Federal, State, and local regulatory bodies to operate XRF instruments because of radioactive materials they contain. All portable XRF instrument operators should be trained by the instrument's manufacturer (or equivalent). XRF operators should provide related training, licensing, permitting, and certification information to the person who has contracted for their services before an inspection begins. Depending on the State, operators may be required to hold three forms of proof of competency: manufacturer's training certificate (or equivalent), a radiation safety license, and a State lead-based paint inspection certificate or license. To help ensure competency and safety, HUD and EPA recommend that clients hire only those inspectors who hold all three.

The regulatory body responsible for oversight of the radioactive materials contained in portable XRF instruments depends on the type of material being handled. Some radioactive materials are Federally regulated by the U.S. Nuclear Regulatory Commission (NRC); others are regulated at the State level. States are generally categorized as "agreement" and "non-agreement" States. An agreement State has an agreement with NRC to regulate radioactive materials that are generally used for medical or industrial applications. (Most radioactive materials found in XRF instruments are regulated by agreement States). For non-agreement States, NRC retains this regulatory responsibility directly. At a minimum, however, most State agencies require prior notification that a specific XRF instrument is to be used within the State. Fees and other details regarding the use of portable XRF instruments vary from State to State. Contractors who provide inspection services must hold current licenses or permits for handling XRF instruments, and must meet any applicable State or local laws or notification requirements.

Requirements for radiation dosimetry by the XRF instrument operator (wearing dosimeter badges to monitor exposure to radiation) are generally specified by State regulations, and vary from State to State. In some cases, for some isotopes, no radiation dosimetry is required. Because the cost of dosimetry is low, it should be conducted, even when not required, for the following four reasons:

- XRF instrument operators have a right to know the level of radiation to which they are exposed during the performance of the job. In virtually all cases, the exposure will be far below applicable exposure limits.
- Long-term collection of radiation exposure information can aid both the operator (employee) and the employer. The employee benefits by knowing when to avoid a hazardous situation; the employer benefits by having an exposure record that can be used in deciding possible health claims.
- The public benefits by having exposure records available to them.
- The need for equipment repair can be identified more quickly.

B. Safe Operating Distance

XRF instruments used in accordance with manufacturer's instructions will not cause significant exposure to ionizing radiation. But the instrument's shutter should never be pointed at anyone, even if the shutter is closed.

The safe operating distance between an XRF instrument and a person during inspections depends on the radiation source type, radiation intensity, quantity of radioactive material, and the density of the materials being surveyed. As the radiation source quantity and intensity increases, the required safe distance also increases. Placing materials, such as a wall, in the direct line of fire, reduces the required safe distance. According to NRC rules, a radiation dose to an individual in any unrestricted area must not exceed 2 millirems per hour. One of the most intense sources currently used in XRF instruments is a 40-millicurie ⁵⁷Co (Cobalt-57) radiation source. Other radiation sources in current use for XRF testing of lead-based paint generally produce lower levels of radiation. Generally, an XRF operator conducting inspections according to manufacturer's instructions would be exposed to radiation well below the regulatory level (State of Wisconsin 1994). Typically, XRF instruments with lower gamma radiation intensities can use a shorter safe distance provided that the

potential exposure to an individual will not exceed the regulatory limit.

Persons should not be near the other side of a wall, floor, ceiling or other surface being tested. Verify that this is indeed the case prior to initiating XRF testing activities, and check on it during testing.

If these practices are observed, the risk of excessive exposure to ionizing radiation is extremely low and will not endanger any inspectors or occupants present in the dwelling.

VIII. REFERENCES

EPA 1995. "A Field Test of Lead-Based Paint Testing Technologies: Technical Report, EPA 747-R-95-002b, U.S. Environmental Protection Agency, Washington DC, May 1995.

EPA and HUD 1996. 24 CFR 35, subpart H, and 40 CFR 745, subpart F. Requirements for Disclosure of Known Lead-Based Paint and/or Lead-Based Paint Hazards in Housing. Published, along with their preamble, in the *Federal Register*, volume 61, pp. 9064-9088, March 6, 1996. Implements Section 1018 of Title X.

EPA 1996. 40 CFR 745, subparts L and Q. Requirements for Lead-Based Paint Activities in Target Housing and Child-Occupied Facilities. Published, along with its preamble, in *Federal Register*, volume 61, pp. 45777-45830, August 29, 1996. Implements Sections 402 and 404 of the Toxic Substances Control Act.

State of Wisconsin 1994. Wisconsin Department of Health and Social Services, memo from Mark Chamberlain dated April 28, 1994. Measurements showed that exposures to radiation during operation of a Scitec MAP 3 XRF were 132 $\mu\text{rem}/\text{day}$, which can be compared to about 1,400 $\mu\text{rem}/\text{day}$ from natural background radiation.

Addendum 1

Examples of Lead-Based Paint Inspections

A. Example of a Single-Family Housing Inspection

The inspector completed the "Single-Family Housing LBP Testing Data Sheet," recording "bedroom (room 5)" as the room equivalent and listing "plaster" as the first substrate. The completed inventory of testing combinations in the bedroom indicated the presence of wood, plaster, metal, and drywall substrates. Brick and concrete substrates were not present in the bedroom. Descriptions of all testing combinations in the bedroom were recorded. Completed Form 7.1 shows the completed inventory for all testing combinations in the bedroom. (Completed Forms are found in Addendum 3, after the blank forms.)

Before any XRF testing, the inspector performed the manufacturer's recommended warm up procedures. The film was placed more than 12 inches (0.3 meters) away from a painted or other surface. The inspector then took three calibration check readings (1.18 mg/cm², 0.99 mg/cm², and 1.07 mg/cm²) on the NIST SRM with a lead level of 1.02 mg/cm². Results of the first calibration check readings were recorded on the "Calibration Check Test Results" form (see Completed Form 7.2).

The inspector then averaged the three readings (1.08 mg/cm²), and computed the calibration difference (1.08 mg/cm² - 1.02 mg/cm² = 0.06 mg/cm²) and compared this to the calibration check tolerance shown in the *XRF Performance Characteristic Sheet* (see Completed Form 7.2). The calibration difference was not greater than the 0.20 calibration check limits around the NIST SRM standard of 1.02 mg/cm², that is, the difference was within the range of 0.82 mg/cm² to 1.22 mg/cm², inclusive. The instrument was considered in calibration, and XRF testing could begin.

The inspector recorded the results from the XRF testing in the bedroom on the "Single-Family Housing LBP Testing Data Sheet." At that point, the inspector was able to complete this form only through the XRF Reading column (see Completed Form 7.1). The remainder of the form was completed after the testing combinations in the house were inspected and correction values for substrate bias were computed. The inspector then moved on to inspect the next room equivalent.

The other bedroom, the kitchen, a living room, and a bathroom were also inspected. Three substrates -- wood, drywall, and plaster -- were found in these room equivalents. XRF testing for lead-based paint was conducted, using the same methodology employed in the first bedroom (room 5). After these five room equivalents were tested, the inspector noticed that all baseboards and all crown molding of the same substrate had XRF values of more than 5.0 mg/cm². The client had agreed earlier that testing could be abbreviated in this situation, so no further baseboard and crown molding testing combinations were tested in the remaining room equivalents. All similar remaining untested baseboard and crown molding with identical substrates were classified as positive in the final report based on the results of those tested. The raw data for the tested baseboards and crown moldings were also included in the final report.

Four hours after the initial calibration check readings, the inspector took another set of three calibration check readings. (If the inspection had taken less than 4 hours, as is common, the second calibration check test would have been conducted at the end of the inspection.) The readings were 1.45 mg/cm², 1.21 mg/cm², and 1.10 mg/cm²; the inspector recorded the results on the "Calibration Check Test Results" form (Completed Form 7.2). The inspector then averaged the three readings (1.25 mg/cm²), and computed the calibration difference (1.25 mg/cm² - 1.02 mg/cm² = 0.23 mg/cm²) and compared this to the calibration check tolerance shown in the *XRF Performance Characteristic Sheet* on Completed Form 7.2. The calibration difference exceeded the 0.20 calibration check tolerance. The inspector then marked "Failed calibration check" on the data sheets for those room equivalents that had been inspected since the last

successful calibration check test, and consulted the manufacturer's recommendations. After trying, the instrument could not be brought back into control. Consequently, the inspector began using a backup instrument, after performing a calibration check and manufacturer's warm up and quality control procedure. The calibration check test showed that the backup instrument was operating acceptably. The inspector used the backup instrument to reinspect the room equivalents checked with the first instrument, and then all the other room equivalents in the home. Next, because substrate correction was required for all results on wood and metal below 4.0 mg/cm² as specified in the *XRF Performance Characteristic Sheet* for the XRF model in use, the inspector prepared to take readings for use in the substrate correction computations. Using the random number function on a calculator and the list of sample location numbers, the inspector randomly selected two testing combinations each with wood and metal substrates where initial readings were less than 2.5 mg/cm², removed the paint from an area on each selected testing combination slightly larger than the faceplate of the XRF instrument, took three readings on the bare substrates, and recorded the readings on the "Substrate Correction Values" form (Completed Form 7.3). The inspector calculated the correction values for each substrate by averaging the six readings from the two test locations, rounded the result to the 2 places after the decimal point that the XRF instrument displayed, and recorded the information in the Correction Value row. The inspector then transferred the correction values to the "Single-Family Housing LBP Testing Data Sheet" for each corresponding substrate.

After the inspector had finished taking the readings needed to compute the substrate correction values, the inspector took another set of three calibration check readings. The inspector recorded the results on the "Calibration Check Test Results" form, under Second Calibration Check, for readings taken by the backup XRF instrument (Completed Form 7.2). The second (and final) calibration check average did not exceed the 0.20 calibration check tolerance. The inspector, therefore, deemed the XRF testing to be complete.

The inspector then calculated the corrected readings by subtracting the substrate correction value from each XRF result taken on a wood or metal substrate. The substrate correction value was obtained by averaging readings on bare surfaces that had initially measured less than 2.5 mg/cm² with the paint still on the surface (Completed Form 7.3). The inspector also used the inconclusive ranges obtained from the XRF Performance Characteristic Sheet (0.41 mg/cm² to 1.39 mg/cm²) for all substrates except plaster (inconclusive range 1.01 mg/cm² to 1.09 mg/cm²). Based on the valid window sill XRF readings, including substrate corrections for wood, there were initially 10 positive results, 2 inconclusive results, and 3 negative results in the bedroom. The two inconclusive results required paint-chip sampling with laboratory confirmation; this resulted in one positive and one negative result. The inspector then filled out the "Single-Family Housing: Component Type Report" (Completed Form 7.1A). A description of each component type was recorded in the first column, the total number of each tested component type was entered in the second column, and the number of testing combinations classified as positive for each component type from the "Single-Family Housing LBP Testing Data Sheet" (Completed Form 7.1) was calculated and entered in the third column. The inspector then did the same for the testing combinations classified as negative. Based upon the XRF results as modified by the laboratory confirmation of the two inconclusive samples, Completed Form 7.1A shows 11 positive and 4 negative results for wood window sills. The remaining component types were entered in a similar fashion.

B. Example of Multifamily Housing Inspection

This section presents a simple example of a multifamily housing development inspection. An actual inspection would have many more testing combinations than are provided here.

The inspector's first step was a visual examination of the development to be tested. During this pretesting review, buildings with a common construction and painting history were identified and the date of construction -- 1948 -- was determined. The construction and painting history of all the units was found to be similar, so that units in the development could be grouped together for sampling purposes. The inspector determined that the development had 55 units, and by consulting Table 7.3, determined that 35 units should be inspected.

The inspector used the "Selection of Housing Units" form (Completed Form 7.4) to randomly select units to inspect. The total number of units, 55, was entered into the first column of the form. The random numbers generated from a calculator were entered into the second column. The first random number, 0.583, was multiplied by 55 (the total number of units), and the product, 32.065, was entered in the third column. The product was rounded up from 32.065 to 33, and 33 was written in the fourth column, indicating that the 33rd unit would be tested. Other units were selected using the same procedure. When a previously selected unit was chosen again, the inspector crossed out the repeated unit number and wrote "DUP" (for duplicate) in the last column. The inspector continued generating random numbers until 35 distinct units had been selected for inspection. (In this case, it would have been faster to randomly determine the 20 units that would *not* be inspected ($55 - 35 = 20$) and then to select the remaining 35 units for inspection).

After identifying units to be inspected, the inspector conducted an inventory of all painted surfaces within the selected units. The inspector completed the "Multifamily Housing LBP Testing Data Sheet" for every testing combination found in each room equivalent within each unit. Completed Form 7.5 is an example of the completed inventory for the bedroom of the first unit to be inspected. The inventory showed that the bedroom was composed of four substrates and eight testing combinations of the following components: (1) one ceiling beam, (2) two doors, (3) four walls, (4) one window casing, (5) two door casings, (6) three shelves, (7) two support columns, and (8) one radiator. Where more than one of a particular component was present, except walls, one was randomly selected for XRF testing. Component location descriptions were recorded in the "Test Location" column. Drywall and brick substrates were not present in the bedroom.

Testing combinations not common to all units were added to the inventory list. The inspector also noted which types of common areas and exterior areas were associated with the selected units, identified each of these common and exterior areas as a room equivalent, and inventoried the corresponding testing combinations.

The inspector inventoried the remaining 34 units selected and their associated types of common areas and exterior areas before beginning XRF testing in the development. Alternatively, the inspector could have inventoried each room equivalent as XRF testing proceeded.

After completing the inventory, the inspector performed the XRF manufacturer's recommended warm up and quality control procedures successfully. Then the inspector took three calibration check readings on a 1.02 mg/cm² NIST SRM film. The calibration check was accomplished by attaching the film to a wooden board and placing the board on a flat wooden table. Readings were then taken with the probe at least 12 inches (0.3 meters) from any other potential source of lead. The following readings were obtained: 1.12, 1.00, and 1.08 mg/cm². These calibration check results were recorded on the "Calibration Check Test Results" form (Completed Form 7.2). The difference between the first calibration check average and 1.02 mg/cm² (NIST SRM) was not greater than the 0.3 mg/cm² calibration check tolerance limit obtained from the *XRF Performance Characteristic Sheet*, indicating that the XRF instrument was in calibration and that XRF testing could begin. (See the single-family housing example, in Section A, above, of this Addendum, for a description of what to do when the calibration check tolerance is exceeded).

The inspector began XRF testing in the bedroom by taking one reading on each testing combination listed on the inventory data sheet. XRF testing continued until all concrete, wood, and plaster component types were inspected in the bedroom. The XRF readings were recorded on the "Multifamily Housing LBP Testing Data Sheet" form (Completed Form 7.5). According to the *XRF Performance Characteristic Sheet*, the XRF instrument in use did not require correction for substrate bias for any of the substrates encountered in the development, so the XRF classification column was completed at that time. The inspector used single-family housing rules for classifying the XRF readings as positive, negative, or inconclusive. The inspector also used the inconclusive ranges obtained from the *XRF Performance Characteristic Sheet* (0.41 mg/cm² to 1.39 mg/cm²). The midpoint of the inconclusive range was then calculated to be 0.90 mg/cm² ($[0.41 \text{ mg/cm}^2 + 1.39 \text{ mg/cm}^2]/2 = 0.90 \text{ mg/cm}^2$). The results of the classifications were recorded in the Classification column of the "Multifamily Housing LBP Testing Data Sheet" form. Classifications for all testing combinations within the unit were computed in the same manner as for the bedroom.

Once inspections were completed in all of the 35 selected units of the development, the inspector completed the "Multifamily Housing: Component Type Report" form (Completed Form 7.6). A description of each component type was recorded in the first column, the total number of each tested component type was entered in the second column, and the number of testing combinations classified as positive for each component type from the "Multifamily Housing LBP Testing Data Sheet" (Completed Form 7.5) was calculated and entered in the third column. The inspector then did the same for the testing combinations classified as negative, that is, XRF readings up to and including 0.40 mg/cm², and for inconclusive classifications with XRF readings less than the midpoint of the inconclusive range, that is, XRF readings from 0.41 mg/cm² to 0.89 mg/cm², and for inconclusive classifications with XRF readings equal to or greater than the midpoint of the inconclusive range, that is 0.90 mg/cm² to 1.39 mg/cm². Using these readings and the total number of the component type sampled, the inspector computed and recorded the percentages of positive, negative, and inconclusive classifications for each component type.

After entering the number of testing combinations for each component type in the "Multifamily Housing Component Type Report" form, the inspector noticed that only 34 wood door casings had been inspected. Because it is necessary to test at least 40 testing combinations of each component type, the inspector arranged with the client to test six more previously untested door casings. Additional units were randomly selected from the list of unsampled units. An initial calibration check test was successfully completed and the six door casings were tested for lead-based paint. Another calibration check test indicated that the XRF instrument remained within acceptable limits. The inspector then updated the "Multifamily Housing: Component Type Report" form by crossing out with one line the row of the form that showed the original, insufficient number of component types for testing; the inspector then wrote the information on the full 40 wood door casings in a new row.

The inspector used the "Multifamily Decision Flowchart" (Figure 7.1) to evaluate the component type results. Because 100 percent of the plaster walls and metals baseboards tested negative for lead, the inspector concluded that no lead-based paint had been detected on any walls or baseboards in the development, including those in uninspected units, and entered "NEG" in the Overall Classification column. The inspector also observed that shelves, hall cabinets, and window casings had no positive results. For all of the other component types, 15% or more of the readings for each type were positive; after choosing *not* to perform additional XRF readings or laboratory analysis on those components, that is, to rely on the XRF readings, the inspector entered "POS" in the Overall Classification column for them. For the shelves, all the XRF results were negative or inconclusive and less than 0.90 mg/cm² ("low inconclusive") so the inspector, in accordance with the flowchart, entered "NEG" in the Overall Classification column. The hall cabinets and window casings were classified as inconclusive with some readings greater than or equal to 0.90 mg/cm² ("high inconclusive"). The inspector determined that over 15 percent of the readings taken on these component types were high inconclusives. The inspector chose to take additional samples for laboratory analysis, to see if any or all of the samples would be determined to be negative by laboratory analysis.

The inspector collected paint-chip samples from the inconclusive component types, but only from testing combinations where XRF readings were equal to or greater than 0.90 mg/cm², the midpoint of the inconclusive range. Paint-chip samples were taken from 32 sampling locations: 12 hall cabinets, 7 window casings and 13 metal radiators. The paint-chip samples were collected from a 4-square-inch (25-square-centimeter) surface area on each component. Each paint-chip sample was placed in a hard-shelled plastic container, sealed, given a uniquely-numbered label, and sent to the laboratory for analysis.

The laboratory returned the results to the inspector, who entered the laboratory results and classifications on the appropriate "Multifamily Housing LBP Testing Data Sheet" (Form 7.5). Laboratory results of all 5 paint-chip samples taken from the window casings were classified as negative. The laboratory results of 5 samples from the hall cabinets were classified as positive, and 7 as negative. The metal radiator results were classified as 9 positives and 4 negatives.

The "Multifamily Decision Flowchart" was applied to the results shown in the "Multifamily Housing: Component Type Report" to determine the appropriate classification for each component type. The inspector classified all shelves and

window casings as negative, based either on the XRF substrate-corrected readings or on laboratory confirmation analysis, respectively. Therefore, no further lead-based paint testing was required for the shelves and window casings. About 9.1 percent (none positive by XRF analysis and 5 positive by lab analysis of the 55 that were inspected) of all hall cabinets in the housing development had lead-based paint.

Final decisions made by the development client regarding the hall cabinets were based on various factors, including:

- The substantially lower cost of inspecting all hall cabinets in the development versus replacing all of those cabinets;
- Future plans, including renovating the buildings within three years; and
- The HUD/EPA disclosure rule requirements regarding the sale or rental of housing with lead-based paint.

In this case, the client arranged for testing hall cabinets in all of the unsampled units to determine which were positive, and which were negative. To verify the accuracy of the inspection services, the client asked the inspector to retest 10 testing combinations. The retest was performed according to instructions obtained from the *XRF Performance Characteristic Sheet*. The client appointed an employee to randomly select 10 testing combinations from the inventory list of 2 randomly selected units. The employee observed the inspector retesting the 10 selected testing combinations, using the same XRF instrument and procedures used for the initial inspection. A single XRF reading was taken from each of the 10 testing combinations. The average of the 10 repeat XRF results was calculated to be 0.674 mg/cm², and the average of the 10 previous XRF results was computed to be 0.872 mg/cm². The absolute difference between the two averages was computed to be 0.198 mg/cm² (0.872 mg/cm² minus 0.674 mg/cm²). The Retest Tolerance Limit, using the formula described in the *XRF Performance Characteristic Sheet*, was computed to be 0.231. Because 0.198 mg/cm² is less than 0.231 mg/cm², the inspector concluded that the inspection had been performed competently. The final summary report also included the address of the inspected units, the date(s) of inspection, the starting and ending times for each inspected unit, and other information described in Section V.I of Chapter 7.

At the end of the work shift, the inspector took a final set of three calibration check readings using the same procedure as for the initial calibration check. The following readings were obtained: 0.86, 1.07 and 0.94 mg/cm². The average of these readings is 0.97 mg/cm². The difference between 0.97 mg/cm² and the NIST SRM's 1.02 mg/cm² is -0.08 mg/cm², which is not greater in magnitude than the 0.30 mg/cm² calibration check tolerance for the instrument used. The inspector recorded that the XRF instrument was in calibration, and that the measurements taken between the first and second calibrations could be used.

Endnotes

1. Most XRF instruments detect K-shell fluorescence (X-ray energy), some L-shell fluorescence, and some K and L fluorescence. In general, L X rays released from greater depths of paint are less likely to reach the surface than are K X rays, which makes detection of lead in deeper paint layers by L X rays alone more difficult. However, L X rays are less likely to be influenced by substrate effects.
2. Westat, Inc. An Analysis and Discussion of the Single Family Inspection Protocol Under the 1995 HUD Guidelines: Draft Report. 1996.
3. Dixon, S., National Center for Lead-Safe Housing, Sample Size as a Function of Multifamily Development Size. 1997.
4. The statistical rationale and calculations used to develop sample sizes in multifamily housing is based on a data set which contains approximately 164,000 XRF readings from 23,000 room equivalents in 3,900 units located in 65 housing developments. Statistical and theoretical analyses completed for HUD are available through the Lead Clearinghouse and on HUD's World Wide Web Home Page.