

GENERAL SPECIFICATIONS AND REQUIREMENTS FOR SINGLE FAMILY HOME REHABILITATION

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JANUARY 2008

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NOTE: All jobs must meet IRC requirements and all job over \$10,000 must be registered with TRCC by the contractor. Failure to do so will result in ineligibility to bid on contracts. Any inspection failed with excessive items or unfinished items may result in a \$35.00 backcharge.

DIVISION 1-GENERAL CONDITIONS

The following, known as “General Conditions,” apply in full and equal force to every Contract or Subcontract, and are to be an inclusive part of every such Contract.

1.A. BIDDING PROCEDURE

All bids shall be returned to the bidding entity (referenced as Rehab Office in this document) at the address indicated on the bid cover letter.

Bids as received must be for the execution on the entire work as called for in the Specification forms provided. Each item is to be bid as a separate item, and the Rehab Officer or designee reserves the right to delete any line item.

Bids shall be returned on the sheets provided by the Rehab Office, in a sealed envelope and signed by the contractor. Bids must be received at the Rehab Office by 5:00 p.m. on the due date (or as required on the bid documents). Bids must be returned in neat, legible form.

Each bidder shall thoroughly examine and familiarize himself/herself with the drawings, specifications, all other contract documents, General Specifications, existing conditions, difficulties and restrictions involved with doing the work. The Contractor will not be relieved of his/her obligations because of failure to do the above when contracted to do the work. The Contractor shall make arrangements with the Rehab Office to do the inspection. Each bidder shall, upon discovery of any apparent error or omission in the bidding documents, notify the Rehab Office of such in writing.

The Rehab Officer or designee will consider alternates or suggested changes in the specifications, provided they accompany the bid on a separate sheet and are individually priced. Changes will only be considered if they improve the job. All bids shall be good for 90 days.

All sections of the general specifications, whether specifically cited on the bid sheet or not, shall apply to all work performed.

1.B. BID REJECTION

The bidding entity reserves the right to reject any and all bids, or any line item contained therein.

Bids shall be automatically rejected under the following conditions:

1. Failure to submit contractor’s application form.
2. Omissions of items or alteration of items on the Work Write-up/Bid Document.
3. Failure to include information requested in the bid packet.
4. Failure to adequately complete other projects in a timely manner.
5. Failure to perform the standard of quality of workmanship on other projects.

1.C. PERMITS, BONDS, LICENSES AND INSPECTIONS

Any and all permits, bonds or licenses necessary for the new construction or alterations to the structure must be obtained and paid for by the Contractor before starting work. Contractors and Subcontractors are responsible for obtaining any progress or final inspections from the Building Department. Failure to call for required inspections or proceeding without inspection may result in suspension from future bidding. A copy of all permits shall be publicly displayed at the job site for all interested parties concerned. The Rehab Office has the right to inspect work in progress. These inspections need not be announced in advance.

All damage uncovered during repairs shall be left uncovered until inspected by the Rehab office. Failure to notify the rehab office shall be deemed a default by the Contractor.

1.D. APPLICABLE LAWS AND CODES

All materials and equipment herein specified shall be installed in conformance with the latest existing laws, ordinances and codes, latest edition, as adopted by the local governing body. These include, but are not limited to, the (IRC) Building Code, Plumbing Code, Mechanical Code and the National Electrical Code.

1.E. INSURANCE REQUIREMENT

Each Contractor must carry adequate Liability Insurance (see below), for damages and accidents that may result directly or indirectly from the performance of work as called for in this Contract; either to the building or to the general public, or the surrounding property adjoining said premises, or to employees, laborers, mechanics, or other person.

1. Comprehensive General Liability Insurance in the following minimum amounts:
 - a. \$1,000,000 combined single limits on a per occurrence basis, subject to general aggregate \$2,000,000. Products and completed operations \$1,000,000 aggregate
2. Comprehensive Automobile Liability Insurance for all owned, non-owned and hired automobiles in the following minimum amounts:
 - a. \$1,000,000 combined single limits on a per occurrence basis.
3. Worker's Compensation Liability Insurance, if required by any law, for the term of the contract and any extension thereof and until all work required under the contract is complete.
4. The Contractor shall not commence work under this contract until he/she has obtained all insurance required and has submitted satisfactory evidence that all insurance is paid for in full to the Rehab Office, nor shall the Contractor allow any subcontractor to commence work on his/her subcontract until all similar insurance required of the subcontractor has been obtained and approved.
5. The Rehab Office shall be listed on all policies as an additional named insured. All insurance policies required herein shall provide for written notice to the Rehab Office of not less than thirty (30) days prior to any material change in or cancellation of the policies.

The Owner may carry Hazard and Fire Insurance on the property, but this insurance does not cover damages to or loss of Contractor's tools, equipment, or materials stored on the property. The Contractor shall defend, indemnify and hold harmless the Rehab Office and the Owner against any and all damages, injury, or accidents suffered and their claims thereof under this performance of this Contract or as a result of the storage of materials on the property.

Workman's Compensation - as required by State Law.

Automobile Liability Coverage - Contractor shall carry and maintain automobile liability coverage in accordance with State Law.

These coverage's are required to protect the Contractor and the Owner from any liability or damage for injury to or death of any of their employees; other persons, or property wherever located resulting from any action or operation under this Contract, or in connection with the work, including liability or damage which may arise by virtue of any statute or law in force or which may hereinafter be enacted.

1.F. NOTICE TO PROCEED

The Rehab Office will issue a written Notice to Proceed. **No work shall commence until such notice is issued.**

1.G. SAFETY

The Contractor shall exercise proper precaution at all times for the protection of persons and property, either on or off the site, from hazards which occur as a result of his or her prosecution of the work. The safety provisions of applicable laws and building construction codes shall be observed and the Contractor shall take or cause to be taken such additional safety and health measures as the Rehab Office may determine to be reasonably necessary.

1.H. CLEAN PREMISES

Each Contractor shall endeavor to keep the premises clean and orderly during the course of the work. Immediately at the end of the work the Contractor shall remove his rubbish, refuse, and unused materials from the premises and street to a code legal dump. Materials and equipment that have been removed and replaced as a part of the approved work shall belong to the Contractor, unless specifically noted in the Work Write-Up. These items shall be removed from the job site at no additional cost to the Owner.

1.I. CHECKING

Each Contractor and all Subcontractors are to examine the work performed by all other Subcontractors to assure that the dimensions, locations, etc., of the execution of previous work is according to the Specifications and Drawings contained herein before proceeding to perform his own portion of the work as each Contractor and his Subcontractors will be held responsible for the accuracy and quality of his portion of the work when completed.

1.J. LABOR, MATERIALS AND EQUIPEMENT

The Contractor shall furnish all materials, labor, equipment, etc., which may be necessary to the execution of the Contract at his expense. The materials used and installed must be new (or can be salvaged materials with the approval of the Rehab Office) and should be quality as specified, and the labor shall be performed by skilled and competent craftsmen. The Rehab Office reserves the right to cause personnel to be removed from the job who are not performing their services in a workmanlike manner. Any and all unused materials, salvage or scraps, shall belong to the Contractor unless otherwise stated.

1.K. SUBSTITUTES AND AMENDMENTS

It is not the desire of the Rehab Office to exclude any products or materials of equal or greater quality to those specified herein. Trade names used are designed to establish quality desired. Before any substitutions or amendments are made, the written consent of the Rehab Office must be obtained.

1.L. WARRANTIES/WORKMANSHIP

The Contractor shall warrant his work against faulty materials or workmanship for a period of ONE YEAR and replace same at the direction of the Rehab Office at no cost to the Owner or the Rehab Office. The one-year period shall begin on the date of the final acceptance for the completed job by the Rehab Officer or designee. The Contractor shall convey all manufacturers' warranties to the Owner.

The Contractor is to use skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the method needed for proper performance of the work of each section. Work shall be done in accordance with the Standards of Workmanship for the crafts involved and in conformance with the manufacturer's recommendation.

1.M. INSTALLATION

All work and materials must be applied or installed in accordance with the applicable manufacturer's latest instructions and specifications. Any variations to the instructions or specifications must be called to the Rehabilitation Officer's attention prior to application or installation. The Rehabilitation Officer or designee must approve such variation in writing.

1.N. EXTRAS

The Contractor shall not enter separate agreements with Owners and/or Owner's Agents for additional work or materials greater than or less than the original Contract. The Contractors' and Subcontractors shall not offer suggestions to Owners regarding changes in the Specifications. Such suggestions will be offered directly to the Rehab Officer or designee. Failure to comply may result in suspension from bidding.

1.O. UTILITIES

In occupied buildings, the Owners and/or Owner's Agents shall provide the Contractors with the services of water and electricity at no charge. During the cold weather season, the Owner and/or Owner's Agent shall provide and maintain adequate heating in work areas. Activating the above services in unoccupied buildings, unless otherwise specified, shall become the direct responsibility of the Owner and/or Owner's Agent during the course of the specified work. All incidental costs shall be borne by the Owner and/or Owner's Agent.

1.P. WORKING CONDITIONS

Where buildings to be remodeled are furnished and occupied by Owners or their tenants, the Contractors and Subcontractors shall make allowances in their bids for whatever inconvenience is incurred, i.e. working around furniture, adjusting working hours to accommodate Owner's or tenant's daily routines, etc. The Contractor shall cover all carpets and furniture in the work area with drop cloths. Passageways and hallways shall be kept clear of debris, lumber, or equipment. Bulk materials may not be stored inside

the building. The Contractor shall be responsible for moving Owner's possessions, and the Owner shall cooperate.

1.Q. DAMAGE BY CONTRACTOR

The Contractor shall be responsible for repairs of damage to surrounding work areas that were caused by the Contractor or Subcontractors. The Contractor shall take any and all precautions necessary to ensure that fixtures and materials, which are temporarily removed during any phase of construction, are protected from damages, vandalism and/or theft.

1.R. NOTIFICATION OF START OF WORK

The Contract shall give the beginning and completion dates for work.

1.S. CONFLICT BETWEEN GENERAL SPECIFICATIONS AND JOB SPECIFICATIONS

General specifications shall supersede the job specifications found in the Bid Document. In case of conflict, the job specifications shall supersede the drawings. Any notes added in the write-up will supersede note and specifications.

1.T. DISPUTES

Initial disputes, including problems over the terms of the contract, workmanship, contract amount and bid specifications, shall be resolved by the Rehab Officer. Disputes that cannot be resolved in this manner may be referred to the United States Department of Housing and Urban Development (HUD) representative.

1.U. COMPENSATION

Payments are made when the project reaches 100%. All requests for payment will first require an inspection of the completed work by the Rehab Office or their agent and the signature of the owner, inspector and the contractor. With progress payments a 10% retainage will be held out until the final inspection and payment is made. Payments are made by the Rehab Office at Rehab Office offices. Payments normally take thirty (30) calendar days from submission of request. Final payment will not be made until all contracted items are completed, all disputes are settled and all final inspections are made. In case of disputes, final inspection will not be made until the disputes are settled.

1.V. CONTRACTING/SUBCONTRACTING

All contractors and subcontractors will be subject to approval by the Rehab Office and HUD prior to the awarding of contracts. Contractors and subcontractors will be required to show proper licensing, bonding and insurance. They will also be required to show evidence of the ability to perform acceptable work. The General Contractor shall be responsible for the actions of their Subcontractors.

Repeated failed inspections may result in a fine or fee. For example a contractor calls in a final inspection and the paint is not touched up. The first time will result in delay of payment; the second time can result in a \$35.00 fine at the inspector discretion.

1.W. BASIC DEFINITIONS

1. Addenda:

Addenda are written or graphic instruments issued prior to the opening of Bids which clarify, correct, or change the Construction Documents.

2. Rehab Office or Rehab officer:

The designated representative of the bidding entity, whose responsibility is to provide administration of the Contract for construction.

3. Change Order:

A Change Order is a written or graphic instrument prepared by the Rehab Office and signed by the Rehab Office, owner and contractor stating their agreement to change the work, change the amount of the bid or change the time of completion. No change shall proceed without a signed change order.

4. Construction Documents:

The Construction Documents consist of the Agreement Between Owner and Contractor, General Specifications for Rehabilitation and Construction, Bid Document, Addenda, and Change Orders.

5. Contractor:

The Contractor is the person or entity with whom the bidding entity has entered into an agreement. The contractor is obligated to register his project with TRCC if work amount is over \$10,000.

6. Final Acceptance:

When all work that was completed is accepted and found to be satisfactory to the Rehab Office, and Code Inspector, if applicable. At this time the contractor may submit for payment.

7. Owner:

The Owner is the person or entity with ownership rights to the property on which the work will be performed.

8. Project:

The Project is the total Construction of which the work performed under the Construction Documents may be the whole or a part.

9. Subcontractor:

A Subcontractor is a person or entity who has a direct Contract with the Contractor to perform a portion of work on the Project.

10. Work:

The term Work means the construction, fixtures, equipment, and services required by the Construction Documents, whether completed or partially completed, and includes all other labor, materials, equipment, and services provided or to be provided by the Contractor to fulfill the Contractor's obligations. The work may constitute the whole or a part of the Project.

11. Grantee:

The local governmental entity receiving grant funds from the United States Department of Housing and Urban Development in which the project work is performed.

1.X. PROJECT CLOSE-OUT

1. Ground Repairs

A. All pavement or yards disturbed or damaged as a result of construction work under this Contract shall be repaired to the original or better condition.

2. Final Inspection

A. The Contractor shall notify the Rehab Office no less than two (2) days prior to the date of completion and Final Inspection. Final payment will not be made until the project has been fully accepted by the Rehab Office.

3. Guarantees

A. The period of the guarantee shall commence with Final Acceptance of the work.

B. The Contractor will furnish a package containing all written guarantees, warranties, and certificates to the Rehab Office at time of Final Completion.

1.Y. APPLICABLE STANDARDS

All work to be performed and materials to be supplied under this contract shall conform to the standards of the IRC Code book and the following professional societies:

1. Concrete work shall conform with the standards of American Concrete Institute (A.C.I.).

2. All masonry work shall be installed in accordance with the recommendations of the National Concrete Masonry Association.
3. Steel work shall conform to the standards and grading rules of American Steel Association.
4. Plywood shall conform to the standards and grading rules of American Plywood Association.
5. Lumber shall conform to the grading rules of the American Lumber Standards Committee.
6. Roof shingles shall carry an Underwriter's Laboratory Label for conformance to fire resistance standards, and shall conform to the standards of the Asphalt Roofing Manufacturer's Association.
7. Other materials shall meet the standards under the specification division as indicated.
8. All electrical work shall be installed in accordance with the requirements of the National Electrical Code.
9. All plumbing shall be installed in accordance with the local plumbing code.
10. All heating systems or parts thereof shall be installed in accordance with the recommendation of ASHRAE and the local building code.

1.Z. REASONS TO SUSPEND OR DEBAR CONTRACTORS

1. Contractor is included on the consolidated list of debarred, suspended and ineligible contractors and grantees printed and distributed quarterly by the Office of General Counsel, Department of HUD.
2. Failure to obtain and/or maintain necessary insurance throughout the full term of construction on work performed or to assure necessary insurance by subcontractors.
3. Refusing or failure to proceed with rehabilitation work after contract is awarded and signed and within the contractual time period specified.
4. Failure to complete job in the specified time when weather is not a factor.
5. Failure or inability to accomplish the required work in an acceptable workmanship like manner according to the specifications.
6. Failure or refusal to honor warranties on work performed for one (1) year.
7. Possession or use of illegal or controlled drugs and/or alcohol on the job, by the contractor, contractor's employees, or any subcontractors.
8. Falsifying or misrepresenting information on the Contractor Application form or any documents requests on the Contractor Application form.
9. Immoral or indecent behavior on the job by the contractor, their employees, or any subcontractor that transgress normally accepted moral behavior.
10. Starting a rehabilitation job before the contract is signed by all parties.
11. Failure or refusal to obtain necessary permits or licenses.
12. Other causes that are determined to be detrimental to the Homeowner.

DIVISION 2 - SITE WORK (SUBJECT TO DIVISION 1)

2.A. APPLICABLE DEMOLITION REQUIREMENTS

1. Safety conditions shall be maintained at all times, and the contractor shall use all precautions necessary, such as suitable guard rails, barriers, and warning lights necessary, especially at excavations, to provide necessary protection for the owner, the public, and inspectors visiting the site.
2. Debris control shall be maintained at all times, and the Contractor shall provide all necessary drop cloths, dust screens, chutes and water sprays necessary to maintain and limit dust to the lowest possible levels practical. Roofing membranes, shingles and other roofing debris shall be prevented from falling or being blown onto adjacent and neighboring properties. All debris shall be removed each day from the streets, adjoining walks and properties.
3. Disposal of debris shall be removed from the site in approved carrier to legal disposal sites all in accordance with local ordinances and applicable environmental regulations.
4. Adjacent properties and Owner's property shall be protected from damage at all times. All shrubbery and trees in working areas shall be protected by the use of appropriate barriers and/or guard shields of adequate strength to protect same. Contractor is to restore and correct all damage caused in the performance of his work using materials and workmanship matching the quality and type of the damaged area or item.
5. If possible, demolition is to begin at top levels and work down through the building. All items of demolition materials are to be broken down into appropriate sizes convenient for handling and removal. Demolition is to be executed in such manner as to provide clean substrates for new work, free of any obstructions or damage to work that is to remain. All areas that are involved in demolition shall be secured by a barrier (plastic) to prevent the spread of debris/dust into other locations.
6. Shoring is to be provided where demolition of existing (partition removal, masonry wall removal, stairs removal, floor removal) or other elements are required. Shoring shall be provided of adequate framing and timbers with loads spread adequately at the base to protect the existing structure from damage. Shoring is to remain in place until defective removed structural items are replaced with new materials.
7. Gut interior of structure: Remove all interior floor, wall and ceiling coverings down to framing. Remove all plumbing, electrical and HVAC components. Remove all cabinets, doors, windows and all items necessary to prepare entire interior for installation of new surface components. Dispose of all items in code legal dump.

2.B. EXCAVATION

1. Areas of new concrete (walk, ramp, stairs, basement floor, and grade slabs) are to excavated to a minimum depth of 4" and uniformly graded to receive gravel for base of new work. Install construction forms as needed and provide a compacted sub-base of gravel or crushed stones to a minimum depth of 8", if necessary, before pouring concrete. For concrete, see Division 3.
2. Excavation for areaway steps and window wells shall be to the depth required, and an allowance for 6" below concrete slabs is to be allowed for gravel fill. See Division 3 for concrete work.
3. Excavation (for pier footings, wall footings) shall be to a minimum depth of forty-two inches (42") or to a firm undisturbed soil base. Excavation shall be large enough to allow for the installation of concrete footings using the side of the excavation as the form, if soil is suitable, and allow adequate work room for installation of the work. See Division 3 for concrete masonry piers. If suitable bearing is not found at elevations indicated, contact the Building Department.
4. Excavation for fence posts shall be to a minimum depth of thirty inches (30") and auger diameter of ten inches (10"). Supporting posts for fence shall be imbedded in concrete a minimum depth of twelve inches (12") with proper post anchors to prevent movement of posts after concrete has set.
5. In the event of over excavation, compacted backfill or a continuous pour of concrete to the required grade shall be used.
6. If excavation disturbs soil within three (3) feet of a foundation or structure, the area excavated shall be treated for termites as specified in Section 2.Q of this division.

2.C. BACKFILL

1. Only materials free of roots, stumps, wood, cinders, trash, and stones larger than four (4) inches in diameter shall be used.
2. Fills shall be placed in successive layers not exceeding twelve (12) inches loose measure. Each layer shall be adequately and uniformly compacted.
3. All fill shall be thoroughly compacted to avoid damaging settlement to walks, driveways, lawns, and other site improvements.
4. Backfill shall not be placed upon muddy or frozen surfaces which contain frost or ice.
5. Settlement or washing that occurs in backfilled areas within one year of the acceptance of the work shall be repaired and grade re-established to the required elevation.
6. Rough grades shall be established at four (4) inches below the finish grade.

2.D. TOPSOIL

1. Topsoil shall be used to establish the finish grade except where a dust-free surface is required.
2. The topsoil shall be uniformly distributed on the designated areas and evenly spread to a minimum of four (4) inches for lawn areas to be seeded. Any irregularities in the surface resulting from topsoil or other operations shall be corrected in order to prevent the formation of depressions where water will stand.
3. Topsoil shall be fertile, easily crumbled, natural surface soil obtained from well-drained areas. Topsoil shall be free of subsoil, brush, organic litter, objectionable weeds, clods, shale, large stones, roots or other materials harmful to plant growth or hindrance to planting or maintenance.

2.E. LIME WASTE

1. Acceptable local materials, compacted to a depth as specified shall be used. Lime waste shall be free of clay, rock or gravel larger than two (2) inches in any dimension. It shall also be free of debris, waste, frozen materials, vegetable and other deleterious material.

2.F. GRADE WORK

1. Rough grade shall be to within four (4) inches of desired finish grade.
2. Grade shall slope away from building and be compacted.
3. Grade yard for water drainage
Remove dirt at designated locations to expose 6" of foundation (measured from the finished floor) while providing positive drainage away from foundation and carrying away from property. Seed and fertilize with St. Augustine or Bermuda as per 2.G.

2.G. SEEDING

1. The seed shall be uniformly distributed over the areas to be seeded at the rate of four (4) pounds per 1,000 square feet. The seed shall be lightly covered by raking and the surface rolled with equipment weighing 60 to 90 pounds per linear foot of contact surface.
2. All seed shall be new seed labeled in accordance with U.S.D.A. and the Rules and Regulations under the Federal Seed Act as to the manufacturer's guaranteed analysis. The seed shall be 95% pure. The germination rate shall be at least 85%.
3. When an area has been completed, the area shall be thoroughly cleaned. Debris, rubbish, subsoil and waste materials shall be cleaned-up and removed from the property.
4. Commercial fertilizer shall conform to all applicable State Fertilizer Laws. The fertilizer shall be delivered in bags fully labeled with the manufacturer's guaranteed analysis as follows: Nitrogen 12%, Phosphorous 12% and Potassium 12%. The fertilizer shall be evenly distributed at a rate of 10 pounds per 1,000 square feet.
5. The newly planted areas shall be watered to promote seed germination. The watering period shall extend through the contract period to the final inspection. At the time of final inspection, the homeowner will be responsible for continuing the watering. The ground surface shall be kept moist by sprinkling until a show

of green is obtained. Light sprinkling shall be performed in a manner that will not cause seed displacement and surface erosion.

2.H. SHRUBS

1. Digging Up, Wrapping and Handling:

Plants shall be dug and prepared for storage in a manner that will not cause any damage to the branches, shape, root system, and future development of the plants after replanting.

2. Protection Against Drying Out:

All plants shall be handled so that roots are adequately protected at all times from drying out and from other injury. They shall be protected with solid or other acceptable material.

3. Replanting Shrubs:

The shape of plant pits shall be circular with vertical sides and convex bottoms. The pit shall be of such a depth that the root system can sit in the center of the pit so that they bear the same relation to the level of the surrounding ground as they bore to the ground from which they were dug.

2.I. SOD

1. Sod shall be laid in areas shown on site plans and/or as specified in the Bid Document. Sod shall be rolled compact to assure bond with the topsoil. Sod shall be watered as necessary to maintain a proper moisture condition and assure rooting. Sod failing to become established at the end of one (1) month shall be replaced by the contractor at no expense to this contract or the homeowner. Sod shall be staked solid on slopes.

2.J. PARKING AND DRIVEWAY SURFACES - BITUMINOUS NEW/REPAIR/RESURFACE

1. Area shall be excavated to depth required. Earth subgrade shall be thoroughly compacted.

2. Four (4) inches of gravel shall be placed as base and compacted to two (2) inches below finish area.

3. A two (2) inch wearing surface of (hot plant mix) bituminous surface shall be placed flush with grade. Roll to slope ¼" per foot in direction of surface drainage flow as indicated on site plan and/or set out in the Bid Document.

4. Bituminous Repair:

Bituminous paving is to be repaired by removing all loose material and cleaning area with water or air pressure. Repairs are to be made with an asphalt patch material such as Traffix or written approved equal, following manufacturer's instructions for installation.

5. Existing blacktop driveway shall be resurfaced by installing and rolling 1½" of new ID-2 bituminous surfacing over existing sound base prepared as required by asphalt paving standards.

6. The application of prime and tack coats will be permitted only when the moisture content of the surface to be covered is such as to permit satisfactory penetration, and when the atmospheric temperature is above 60° F, except as follows: tack coat may be applied when the temperature is above 50° F and the weather forecast and conditions indicate that precipitation or lower temperatures are not expected before the air temperature rises to 60° F and providing that the surface to be covered is dry and is such as to permit satisfactory penetration.

7. Asphalt surface course shall be constructed only when the air temperature is at least 40° F, when the underlying base is dry, and when the weather is not rainy.

8. The required lines and grades, including crown and cross slope, shall be established and maintained for each course during construction operations.

2.K. PARKING SURFACES - CONCRETE REPAIR

1. Concrete paving is to be repaired by removing all deteriorated concrete to the nearest control or cut joint and replacing concrete with a mix producing a minimum strength of 4000 P.S.I. after 28 days. Concrete shall be a six bag mix and be reinforced with ½" rebar 2' o.c. installed within 2" of bottom of slab. Surface to match existing.

2. For new concrete surface - see Division 3.

2.L. FENCES AND WALLS

1. Wall, fence and screen work shall be accomplished as specified in the Bid Document. Before performing such work, the contractor must verify location of property lines. Contractor shall notify the Rehabilitation Officer of any apparent discrepancies before proceeding with work. Extreme care shall be exercised to protect adjoining property. Fence material shall be determined by the Bid Document. All debris from a deteriorated fence shall be hauled away from the premises to an appropriate landfill.
2. All fences shall be installed in accordance with the local Zoning Ordinance.

2.M. CHAIN LINK FENCE

1. 11½ gauge, 2" x 2" mesh chain link fencing shall be used. Posts to be 1-5/8" line and 2' corner or end (minimum) O.D. Galvanized iron, set in concrete. Top rail shall be 1-3/8" galvanized iron. All work to be plum and parallel with the surface and in accord with the Zoning Ordinance. Installation includes all accessories, standard gate (2), hardware and hinges, fork-type latch.
2. Contractor shall submit sketch showing fence installation, lot line, posts and number and location of gates, as required and shall have such sketch approved by the Zoning Administrator.

2.N. REMOVAL OF TRASH

1. All trash shall be disposed of in a proper manner. Area shall be left raked or swept clean and level with surrounding grade. Disposal shall be in accordance with the local ordinances.

2.O. TRIM TREES/SHRUBS

1. All branches either dead or alive that are detrimental to structure as determined by inspection made by the Rehabilitation Officer shall be trimmed. At a minimum, all branches within 3' of the structure shall be removed. Contractor shall remove all debris from premises. Wounds to be dressed with standard tree wound dressing compounds, applied according to manufacturer's printed directions.

2.P. FILLING AND SEALING CISTERN

1. Concrete bottom shall be broken, removed or cut. Tap lines leading from the cistern shall be sealed.
2. Cistern shall be filled to within four (4) feet of the surface using appropriate backfill material and methods (sand, lime waste and broken concrete pieces).
3. Top walls shall be broken out and removed from property. Backfill shall be continued to a rough grade, four (4) inches below the surface; filled with topsoil to a finish grade, seeded, fertilized and watered as provided by those sections of this document.

2.Q. TERMITE TREATMENT

1. The entire structure shall be treated in strict compliance and in accordance with the specifications of the Termite Control System, which will eliminate the present infestation. Treatment must be carried out by a certified applicator. Structural modifications, soil poisoning, drilling and flooding of masonry voids, which represent the major steps or fundamental principles and operations, shall be made according to the Termite Committee of the National Pest Control Association and approved by the U.S. Department of Agriculture Bureau of Entomology and Plant Quarantine. Treatment for carpenter ants shall be similar. All chemicals used shall be approved by the Environmental Protection Agency (EPA) as indicated.
2. Termite warranty shall be obtained from the qualified applicator, and presented to the Rehabilitation Officer, along with lien waivers, at the time of final payment.

2.R. TREE/SHRUB REMOVAL

1. Tree(s) shall be removed as set forth in the Bid Document.
2. Removal shall be by a professional experienced treeman and include stump removal to a minimum of 18 inches below grade. All limbs, branches, roots, leaves, etc. shall be removed from the premises.
3. Topsoil shall be used to fill the void and graded level with surrounding surface. Seed, fertilizer, and watering shall be applied as provided by those sections of this document.

2.S. RETAINING WALL

1. Excavate designated area as per Division 2. Install new retaining wall with material type and size as specified in the Bid Document. Wall shall step back into slope with sleepers installed at all joints to extend the full length of the retaining wall member. All work shall conform to local codes. It is the bidding contractor's responsibility to determine when code requires a wall design by an engineer.

DIVISION 3 - CONCRETE (SUBJECT TO DIVISION 1)

3.A. MATERIALS AND METHODS

1. Concrete shall not be placed when stormy or inclement weather prevents good workmanship. Adequate equipment shall be provided for heating concrete materials and protecting concrete during freezing or near-freezing weather. All concrete materials and all reinforcement, forms, fillers and ground with which concrete is to come in contact shall be free from frost. Frozen materials or materials containing ice shall not be used. During hot weather, proper attention shall be given to ingredients, production methods, handling, placing protection and curing to prevent excessive concrete temperatures or water evaporation that may impair required strength or serviceability of the member or structure.
2. Curing and protection shall be accomplished by preventing loss of moisture, rapid temperature change, and mechanical injury or injury from rain or flowing water for a period of seven (7) days. Curing shall be started soon after placing and finishing, and when free water has disappeared from the surface of the concrete. Expansion joints (e.j.) shall be placed at all locations where new paving abuts curbs or other structures, and in spans greater than 40 feet in length. All exterior concrete flat surfaces shall be cured within 12 hours with Kure & Seal or an written approved equal.

3.B. FOOTINGS/CONCRETE PIERS

1. Footings shall be set on undisturbed soil or compacted backfill, which is free of organic material. Poor bearing soil shall be removed to extent required for footing loads and replaced with a minimum of eight (8) inches of compacted backfill material. Side forms shall be used where soil will not retain shape.
2. Unless otherwise shown, footings shall be sized as per code requirements, centered directly under the wall and reinforced with two (2) #4 bars, two (2) inches up from bottom of excavation and two (2) inches away from side excavation. Bars shall be lapped 18 inches at splices and shall run continuously around corners.
3. Frost footings shall be a minimum of 8" deep (into undisturbed soil) and shall conform to the requirements of the local building code as adopted by the city in which the work takes place..
4. **Concrete Piers:** Concrete support piers shall be installed where called for in the Work Write-Up. Piers are to be a minimum of 8" x 8" x X"d (d=distance from bottom of sill to existing ground surface - minimum of 12") of poured concrete on a 18" x 18" x 8" concrete footing set in undisturbed soil. Piers shall be set after footing has cured to prevent "doughnutting" of pier into footing.

3.C. WALKS

1. City sidewalks to be as required by local governmental entity.
2. Unless otherwise specified, all exterior concrete walks and slabs on grade shall be a minimum of 4 inches thick. Sidewalks should be of the width as set forth in the Bid Document with expansion joints as shown or spaced not more than 4'.
3. Walks shall be sloped away from buildings a minimum of ¼ inch per foot and a maximum of 2¼ inches per foot. Float trowel to true surface and broom finish. Install ½" by depth required asphaltic strip or ½" redwood expansion joints at each end of walks which abut walks, curbs, steps, walls, etc.
4. During hot weather, concrete shall be cured by approved methods.
5. During wet weather, walks shall be covered with plastic sheet or waterproof paper or sheet burlap.
6. Until it is set, concrete shall be protected with barricades, fences or other means. Forms shall be removed after 24 hours and grade restored, allowing for grass turf to finish flush with top of walk.
7. Reinforcing shall be ½" rebar, if necessary, as determined by the Rehabilitation Officer over newly filled areas.
8. Walk shall be protected from freezing for at least two (2) days after placement. Concrete shall not be placed if temperature is below 40° Fahrenheit, unless special measures are taken. See the Building Code.

3.D. INTERIOR SLABS

1. When required by the Bid Document or Code, four (4) inches of lime waste or road stone, as needed, shall be placed on undisturbed or compacted fill. Rake sand level to a uniform thickness. Fill as needed base

course of clean graded gravel, no larger than two (2) inches and not smaller than ¼ inch. Excavation shall not be below exterior wall base or footing.

2. A continuous 6 mil membrane shall be installed on top of gravel. Precaution shall be taken so as not to tear the membrane during concrete placement.

3. Concrete slab to be constructed with 4000 lb. concrete with a 4-inch minimum thickness.

3.E. EXTERIOR SLABS

1. When required by the Bid Document or Code, area shall be filled with four (4) inches of sand or a mixture of sand and gravel uniformly compacted.

2. A four (4) inch slab with #3 rebar 18" o.c. shall be placed over fill. If applicable, see Drawings for slab detail. Control joints and expansion joints shall be used to divide slabs into approximate "squares" not exceeding 12 feet by 12 feet.

3.F. SLAB TOPPING

1. Existing slab shall be cleaned of all surface dirt and grease, and scrubbed thoroughly to provide a dust-free base for topping. Use a quality product manufactured specifically for this type of cleaning.

2. A minimum of two (2) inch concrete topping material with 6x6 10/10 welded wire shall be placed over slab. Trowel, slope and otherwise finish similar to regular slab work.

3.G. SPLASH BLOCK

1. Size shall be 12" x 18" minimum and may be either job site formed or precast. When job formed, make at least four (4) inches thick with concrete depression sloped away from building. Reinforce with wire mesh.

2. Existing splash blocks which have settled shall be reset to drain away from the building.

3.H. STEPS

1. **Concrete Steps** shall be formed to accurate profile with riser height not to exceed 7 inches and tread to be a minimum of 11 inches. Round all nosings and provide fillet on internal corners. Broom across direction of traffic. If applicable, see drawings or Bid Document for details of reinforcing.

2. **Precast Concrete Stairs** shall be of a minimum 4,000 P.S.I. strength and shall be supplied by a reputable precast concrete supplier. Precast concrete areaway shall be leveled, plumbed and braced solidly before commencing backfilling. Backfilling shall be done in 8" layers and compacted before next lift is replaced.

3. 4000 lb. air entrained concrete shall be used.

4. Protection shall be provided as required for sidewalks.

3.I. COLUMN FOOTINGS

1. Column footings shall be 12" x 12". Where concrete floor exists, cut openings as large or larger than column plate, then at a 45° angle. Dig footing to required base width. Fill opening with 3,000 lb. concrete. Anchor column to footing with a minimum of two (2) bolts. Add steel reinforcing bars as required.

3.J. PORCH PIER FOOTINGS

1. Post hole shall be 10" in diameter x 8 inches deep (into undisturbed soil). At the bearing level, flare out top at a 45° angle to the width and length of masonry pier being replaced.

3.K. DRIVEWAY APPROACH

1. Driveway approach shall be concrete with a three (3) foot radius as a minimum. Vertical transition shall prevent contact of car undercarriage or bumper with surface. Slab shall be a nominal six (6) inches or more in thickness with ½" rebar 2' o.c. All work and materials to conform to code.

3.L. DRIVEWAY

1. Furnish and install concrete driveway. Subgrade shall be well-drained, uniformly graded and compacted to prevent harmful differential settlement.

2. Concrete shall be four (4) inches thick minimum, with 6" x 6 number 10 welded wire fabric on 2" of cushion sand. Provide an expansion joint at public walk and/or curb, and at garage or carport slab. Use ½-inch thick asphalt impregnated material or ½" redwood expansion joints.
3. Finish to provide a smooth surface true to cross section and grade. Concrete to be cured with Kure & Seal or with written approved equal.
4. Where the width of the driveway exceeds twenty feet, center the expansion joint. Expansion joints cut completely through slab and finished with 3/8-inch dividing tool. If closer than three feet to adjoining property, install curb or slope to drain away from neighbors.
5. Crown or cross slope:
 - A. Minimum, ¼-inch per foot (1%).
 - B. Maximum, 5/8-inch per foot (5%).
6. All work and materials to conform to code.

3.M. CONCRETE REINFORCEMENT

1. Reinforced concrete work shall comply with building code requirements for reinforced concrete (ACI-318) of American Concrete Institute. Reinforcing material shall be new material conforming to the following:
 - A. Deformed Steel Bars - ASTM A-305.
 - B. Billet Steel Bars - ASTM A-15.
 - C. Welded Wire Fabric - ASTM A-185.

3.N. SUMP PUMP DRAIN

1. Furnish and install liner in cellar floor with gravel bottom for new sump pump. (See electrical and plumbing for sump pump.)
2. Location to be in utility area near sewer outlet. All concrete floors must slope to sump drain.

3.O. CONCRETE PORCH

1. Furnish and install concrete porch and step(s). Size to be as set forth in Bid Document.
2. Slab to be a minimum four (4) inch, 2500 lb. concrete on properly compacted earth and fill. Slab to be laid true and level and ¼" fall away from house. Install ½" rebars 2' o.c.

3.P. REPAIR CONCRETE STEPS

1. Cut out or otherwise remove all deteriorated concrete.
2. Thoroughly clean area, removing all loose particles. Dampen surface and apply heavy brush or slush coat of Thorite as manufactured by Standard Dry Wall Products, Inc., or equally prepared concrete patch mix, making certain all pores and voids are filled.
3. Screen off and steel trowel patch so that it is level with surface.

3.Q. PATCH CONCRETE DRIVE

1. Chip out all loose materials and disintegrated concrete on all deteriorated areas of drive. Clean off all oils, grease, dirt, salt deposits, etc.
2. Use prepared commercial cleaner, as set forth above.
3. Flush clean, then patch area with prepared concrete patch compound, following manufacturer's printed instructions. Do not apply at temperatures below 40° Fahrenheit, or if temperatures are expected to fall below 40° Fahrenheit within 48 hours.

3.R. POURED CONCRETE PERIMETER/PIER AND BEAM FOUNDATION

1. Tear out and replace complete foundation.
2. Minimum footing shall be 8" x 16" with two ½" re-bars. Waterproof to meet all applicable codes.

3. Install hinged access door using pressure treated materials. Door shall have a latch for use with paddle lock.
4. Remove all rubble, debris, etc., from the premises.
5. Replace any and all broken or damaged plumbing caused by the replacement of the foundation. Disconnect all sewer, water and gas lines as required. Provide for reinstallation of above services as necessary so that general contractor can hook up services where they enter the structure. If necessary, cap off any existing plumbing lines for facilities, unless new plumbing is required to be stubbed in.
6. Check to make sure that opening is left in walls to allow for replacement (if necessary) of service lines.
7. Backfill and tamp. Reset house. If required, reset porches to meet proper slope. Porches are to be adequately supported. Reset any and all steps to be properly functional.
8. Tamp and slope ground adjacent to foundation to proper grade.
9. Replace and/or patch all broken and/or damaged walks, service walks, patios, driveways, steps, etc., unless otherwise specified in general contract.
10. Regrade and seed as required under 2.G.
11. Repair and/or replace all broken and/or damaged materials on structure and/or outbuildings.
12. Remove and replace evergreens, shrubs, trees, etc., as set forth in Sections 2.H and 2.R. Check with homeowner for instructions on which items they want saved. Contractor shall exercise all caution and care in the removal and replacement of these items, but it is not required that the Contractor guarantee the replaced items to live after their replacement. The Contractor shall advise same to the homeowner.

3.S. HOUSE MOVING

1. Prior to any structure being raised off its foundation, it shall be vacated and shall remain so for the duration of being raised. A permit needs to be obtained from the local building department.

3.T. SLAB ON GRADE

1. New

All concrete slabs shall be poured monolithically and be a minimum of 4" thick. Reinforcing shall be 6" x 6" 10/10 gauge W.W.M. or #3 rebar 18" o.c. both ways. Top of slab poured on existing grade shall be a minimum of 6" above surrounding soil level. All beams shall conform to the requirements of city code.

Before concrete is poured, a slab inspection must be requested from the local building official and then pass inspection. All work shall meet the requirements of city code.

2. Repair

Foundation shall be properly supported at the designated locations through the use of piers or spread footings or other approved structural systems. The system shall be approved by a certified Professional Engineer skilled in foundation analysis. Plans shall be provided to the rehab office prior to commencement of repairs. All work shall comply with city codes and engineering specifications. Final result shall be a structurally sound system which shall be of sufficient design to support safely the loads imposed as determined from the character of the soil and prevent further structural damage and excessive differential movement for a period of 1 year.

3.U. REPLACE PIER AND BEAM FOUNDATION

Leveling shall be done in such a manner as to be permanent and shall be completed before other work begins. All utilities shall be disconnected and protected from damaged. Structure shall be raised to a minimum distance of 15" from the bottom of the lowest wood component. Install footings, piers and wolmanized triple 2"x 6" girders, as needed, at no less than 6' on center. Poured concrete footing shall have 5/8" steel dowel placed in an "H" pattern. Footing shall be no less than 18" x 18" x 8" and set on firm soil at least 9" below existing ground level. Open cell concrete blocks, filled with concrete, shall be placed on footing as a pier and tied to footing with (1) 5/8" steel dowel. Girders shall have staggered splices (all splices shall rest on a pier)

attached to piers with hurricane straps at intervals determined by city code but no less than one strap per perimeter pier. Girders shall be at least double 2" x 6" .

When leveling is complete, doors, windows, and openings shall be reasonably plumb, level, and fully operational. Skirting shall extend 4" below and at least 18" above grade and be lapped and fastened under siding on the same horizontal line of the entire wall or "side" of building. Skirting shall have ventilation openings a minimum of 4' from each corner, and no less than every 8'. Vent openings should be covered by louvered screened vents and should be a minimum of 50 square inches. Skirting shall be galvanized weatherboard metal foundation skirting fastened with self tapping sheet metal screws. Skirting shall be treated as per paint manufacturer specifications then painted to match exterior of house with an all purpose exterior latex enamel unless noted otherwise in the bid document.

3.V. INSTALL CONCRETE BLOCK FOUNDATION

Replace existing foundation with a new concrete block foundation. Concrete block piers shall be placed every 6' on center below entire structure. Level structure as much as possible without structural damage. Remove and replace flooring as needed to access foundation where crawlspace is not sufficient. New piers shall be solid 8" x 8' concrete or precast round concrete of the same size. Concrete footings for new piers shall be 16" x 16" x 8" set a minimum of 4" into undisturbed soil. Joint between footing and first pier and joints between each additional pier shall be mortared. Hollow concrete blocks may be used if filled with concrete and hurricane straps inserted to attach to girders at all perimeter piers. If solid concrete blocks are used mobile home type anchors shall be installed around perimeter of structure at 6' intervals with steel straps attached to exterior girder beam, Install 6" x 6" (triple 2" x 6") pressure treated girders where missing or damaged. Replace all damaged sills and joisting not noted in bid document.

When leveling is complete, doors, windows, and openings shall be reasonably plumb, level, and fully operational. New skirting shall extend 4" below and at least 18" above grade and be lapped and fastened under siding on the same horizontal line of the entire wall or "side" of building. Skirting shall have ventilation openings a minimum of 4' from each corner, and no less than every 8'. Vent openings should be covered by louvered screened vents and should be a minimum of 50 square inches. Skirting shall be galvanized weatherboard metal foundation skirting fastened with self tapping sheet metal screws. Skirting shall be treated as per paint manufacturer specifications then painted to match exterior of house with an all purpose exterior latex enamel unless noted otherwise in the bid document.

3.W. TAKE SHAKE OUT OF FLOORS

Install piers as detailed in 3.V. where needed to take shake and bounce out of floors throughout the structure or at location specified in the bid document. Hardwood shims shall not exceed 2" from top of pier to bottom of beam.

DIVISION 4 - MASONRY (SUBJECT TO DIVISION 1)

GENERAL

This section covers all work, labor, materials, accessories, scaffolding and appliances necessary for the completion of all brick, block, anchoring, reinforcing and miscellaneous masonry work.

Repair: includes replacement of loose, missing or deteriorated elements, as identified by area in the Bid Document.

Install: includes all work necessary to provide complete masonry wall or veneer as identified by area or detail in the Work Write-Up.

4.A. PRODUCT DELIVERY, STORAGE AND HANDLING

Store materials under cover in a dry place and in a manner to prevent damage or intrusion of foreign matter. During freezing weather, protect all masonry units with tarpaulins or other suitable materials. Store concrete masonry units under covers that will permit circulation of air and prevent excessive moisture absorption. Concrete masonry units shall be protected against wetting prior to use.

4.B. JOB CONDITIONS

Masonry shall be kept to temperatures above freezing until mortar has attained sufficient strength and set so that it will not be damaged by freezing. Warm all materials in freezing weather to a minimum of 40° F and protect work by appropriate covering to prevent damage from freezing. The ambient temperature in the sheltered area shall not be less than 40° F for a minimum of 48 hours.

Protect walls against staining and keep top soils of walls covered when work is not in progress. Use non-staining, waterproofed covers, overhanging walls at least two feet.

4.C. MATERIALS

Masonry Mortar - ASTM C-270 Types S and N components a) Portland Cement - Type I ASTM C-150, b) Masonry Cement ASTM C-91, c) Quicklime ASTM C-5, d) Hydrated Lime ASTM C-207, e) Water shall be clean and potable, and f) Sand shall conform to ASTM C-144.

Concrete Masonry Units, ASTM C-90-64 T (Load bearing). ASTM C-129 (Non-Load bearing) - Grade A, to be modular in size as set forth in the Work Write-Up.

Brick, Common: ASTM C62, grade MW.

Brick, Face: ASTM C216, grade SW, Type FBX, size and color and texture to match existing.

All stored materials at the job site will be under cover and in a dry place. All concrete masonry units shall be covered at all times. During erection, all walls shall be kept dry by covering at the end of each day or shut down period with a strong water-proof membrane, and the membrane will be securely anchored so that it will remain in place during high winds or inclement weather.

Masonry Wall Reinforcing - Wall reinforcing shall be standard grade of truss design, galvanized and shall be one of the following at the Contractor's option: "Dur-O-Wal," "Blok-Mesh," or "Wal-Truss" or written approved equal. Cement block walls shall have reinforcing every sixteen inches (16") in height. Anchors and ties shall be zinc coated cold drawn steel, consisting of two or more nine gauge longitudinal and cross wires, meeting ASTM A-153 or A-116 and installed at 24" o.c., each way.

4.D. CONCRETE BLOCK (PORCH SUPPORTS)

1. Use standard weight 8" x 16" face size, with wall thickness as required by Code. Use concave ends for all block within the length of the wall, and either square ends or corner block for all corners. Lay running bond in full joints of mortar. Strike all joints and rod slightly concave on exterior to form a tight seal of mortar to block.

2. Reinforcing shall be as required in the Building Code.

3. Provide for proper ventilation.

4.E. BRICK (BRICK VENEER OVER FRAME CONSTRUCTION)

1. Face brick shall be of size and texture to match existing surface or as designated in the Bid Document. Duplicate the existing pattern or construct as designated in the Bid Document.

2. Provide a corrosion resistant metal base flashing. Extend over the top of foundation wall from approximate outside of the wall and not less than six (6) inches up on sheathing. Provide weep holes 2'0" on center.
3. Provide water resistant building paper over sheathing.
4. Provide one (1) inch air space between veneer and sheathing. Galvanized metal ties shall be installed in every sixth course (vertical distance not to exceed 24 inches) and at every third brick (horizontal distance not to exceed 26 inches). There shall be one metal tie for not more than 4½ square feet of wall area. Ties shall be vertically staggered. The ends of ties shall be bent to 90 degree angles to provide hooks not less than two (2) inches long. Additional ties shall be provided at all opening spaces, not more than three (3) feet apart around such opening and within 12 inches of the opening.

4.F. MORTAR

1. Mortar to be type S mortar of an approximate mixture of one part Portland Cement, one-half part lime, and five parts sand, maximum. Vary as required by the Building Code.
2. Tint mortar to match existing if required.

4.G. TUCKPOINTING/REPAIR BRICK WALL

1. Remove and replace all deteriorated masonry or stone units which are no longer securely held with mortar.
2. Remove all deteriorated mortar from stone/block/brick surfaces back to a depth of at least ¾-inch. Brush out joints free from dust and moisten slightly. Force mortar into joint, strike or rake and tool to match existing conditions. Tint mortar, if required, to match existing as closely as possible. Parge, if required, as set forth in Bid Document.
3. Do not apply to frozen or frost filled masonry or when temperatures are below 40° Fahrenheit.

4.H. ANCHOR BOLTS

1. Set sill plate anchor bolts ½" x 8"; space not more than six feet on center. Fit anchor bolt with washer or hook and anchor into grout.

4.I. LINTELS

1. All concrete lintels shall be reinforced with a minimum of two rods, sized as loading and Code requires.

4.J. TEMPERATURE

1. When the air temperature is expected to be below 40° Fahrenheit during the placing of concrete, or within 24 hours thereafter, the temperature of the concrete as placed shall be not lower than 50° Fahrenheit, and protected after placement during freezing or near freezing weather.
2. Do not work below 40° Fahrenheit unless special precautions are provided.
3. Use of anti-freeze agents or calcium chloride in mortar and concrete is allowed as per manufacturer's instructions.

4.K. CONCRETE BLOCK WALL

1. Remove existing deteriorated wall.
2. Replace with 8" concrete blocks with ½" vertical rebars at 4'0" on center. Set rebars in concrete footings.
3. Set new wall on 8" x 16" concrete footings. Fill void between new wall and existing foundation wall or firm soil with rubbish free dirt or sand. Tamp firm and level.
4. Place a minimum two-inch concrete cap, reinforced with four-inch/20 gauge wire mesh on top of wall.

4.L. PARGE COAT FOUNDATION - INTERIOR - EXTERIOR

1. Parging (Foundation repairs) - Remove loose mortar, dust, loose finishes, loose cementations coatings and all other loose materials to expose sound portions of walls. Fill and point all obvious cracks,

holes, and sources of water seepage. Prior to parging, clean areas with a commercial cleaning agent such as Thoro Clean, or written approved equal. Apply a liquid bonding agent, such as Thorobond, or written approved equal on all repair areas prior to refacing. Parge all repair areas using a mix of one (1) part cement to three (3) parts sand, and apply smooth finish to blend in with existing surfaces. Patching mortar coatings to be applied to a maximum thickness of ½", and allow 24 hours curing time between coats in bringing wall surfaces to required level plane. Parging shall be started a minimum six inches (6") below grade, and excavation shall extend approximately eight inches (8") below grade minimum.

4.M. STUCCO

1. Stucco mixes shall conform to local building code requirements.
2. Expanded metal lath shall weigh not less than 1.8 pounds per square yard.

4.N. CHIMNEY - REMOVAL/REPAIR/NEW

1. Chimney Removal:
 - A. Remove brick to 18 inches below the roof, cover stack with three (3) layers of roofing paper and cap with a tight fitting 26 gauge galvanized cover. Use caulking to seal tight.
 - B. Fit support framing so as to provide a solid support for ½-inch exterior plywood sheathing. Use 15 lb. asphalt-saturated felt. Piece in new roofing material to match as closely as possible.
 - C. Shingles used for the repair shall match as closely as possible the color, style and quality of the existing roof.
 - D. The Contractor shall be responsible for any repair due to damage resulting from the removal of materials, and labor involved in the removal and/or restoration of the chimney.
2. Repair Chimney:
 - A. Tear down and remove deteriorated masonry units to solid and sound material.
 - B. Rebuild chimney using all new material. New chimney shall match as closely as possible the color, size, and style of previous chimney.
 - C. The Contractor shall be responsible for any repair due to damage resulting from the removal of materials and labor involved in the removal and/or restoration of the chimney.
3. New Chimney:

New Chimney (Block or brick [see Bid Document]) - Rebuild chimney from foundation to at least two feet (2') above any roof ridge within ten feet (10') of new work. Chimney is to be built of (16" x 16" chimney block) (2¼" x 4" x 8" brick) (select one) and lined with vitreous clay flue liner of minimum 64 square inches cross sectional areas, linear to extend at least four inches (4") above chimney cap. Bird screen shall be securely fastened into mortar. All masonry work to be level and plumb with all masonry embedded in full mortar joints. Place and set chimney cap on top of chimney and set joints. Set with slope of surface to drain water away from flue liner. Saddle to be installed at slope side of roof, and chimney to be flashed at roof line with approved flashing. Flashing shall be carried up the chimney a minimum of eight inches (8"), and a minimum of four inches (4") on the roof under the roofing. All flashing to be embedded one inch (1") into chimney masonry and adequately held with mortar and lead wool. All wood framing and sheathing around chimney to be adequately secured, and defective pieces replaced prior to flashing. New chimney to have 8" x 8" clean out door installed at its base. Clean out to be of heavy gauge iron or steel and of manufacturer's standard design. New firebox shall use code approved materials. Wire mesh fireplace screen shall be installed at completion.
4. Clean Out Chimney:

Furnish and install all labor and materials necessary to clean out chimney. Contractor to ensure premises are kept clean at all times. Any damage that may be caused will be the responsibility of the Contractor.

4.O. CHIMNEY CAP

1. Remove old cap and check all masonry units for tightness. If loose, restore to a sound condition.

2. Lay a mortar wash of Portland cement from outer most edge of brick to within two inches of the flue liner top.
3. Use a steel trowel at a 45° angle to assure fast runoff. Make sure there is a watertight seal between the flue liner and the mortar.

4.P. FOUNDATION WALLS - NEW

1. Foundation Walls (new) - Install new (8", 12" brick, concrete masonry unit or stone wall) to configuration as described under attached Bid Document. Walls to be laid up plumb and true, with courses level and accurately spaced. Coordinate with other work that may be needed and incorporated into the wall such as pipe sleeves, chases, and anchoring to other work. All joints to be approximately 3/8", and block and brick to be laid in running bond pattern unless otherwise indicated. If necessary to stop off a horizontal run of masonry, rack back at each course. Tothing will not be permitted. New masonry to be keyed into existing masonry walls a minimum half unit length every third course vertically. New masonry walls are to be bonded with continuous wire joint reinforcement spaced not more than sixteen inches (16") vertically. Joint reinforcing shall also be used eight inches (8") above and eight inches (8") below wall openings, extending twenty-four inches (24") beyond opening on both sides of wall. All necessary ancillary materials such as flashing, anchors, and reglets shall be installed according to manufacturer's instructions and the standard practices of the trade. All joints to be tooled, except where walls are to be stuccoed or parged, and shall be cut flush. Exterior foundation walls are to be waterproofed below grade with an appropriate asphalt base sealant. See Division 7. All masonry work is to be executed in a workmanlike manner and in conformance with the standards of the trade and local building code.
2. Foundation Wall Repair - Remove deteriorated and disintegrated (brick, block, stone) as specified in Bid Document from adjacent sound surfaces of wall and lay new matching (brick, block, stone) in wall. Prior to repairing wall, clean area with water under pressure. All new repair work to run true and level with coursing pattern and with existing sound surfaces of the wall and to match existing work as nearly as possible.

4.Q. MASONRY PIERS

1. Construct new piers for porch. If footings do not extend below frost line, excavate and pour new footings at required depth. All work shall conform to Code.

4.R. STONE STEP REPAIR

1. Stone Step Repairs - Existing stone stairs are to be raised and reset to proper lines and levels. Where required, install new foundations to prevent movement to stairs. Exercise care in disassembling stairs to prevent damage to existing parts. Reset using stone settings mortar with latex additive.

Repair Stone Work - Repair spalls in existing stone work as required using matching stone materials, and appropriate mortars and cement. Use special cement commercially prepared for that purpose. If repair calls for build-up of missing parts or mortar patching, provide aggregate in mortar to produce matching color of existing stone as nearly as possible. Use stainless steel anchors and non-staining bonding agents in repairing stone work.

DIVISION 5 - METALS (SUBJECT TO DIVISION 1)

Includes lintels, foundation access doors, anchors, stairs and railings, foundation vents, liners, and siding.

Dissimilar metals are approved if proper protection against galvanic action is used through the establishment of a Dielectric Isolator union.

5.A. STRUCTURAL

1. Structural steel members shall be sized and installed as specified in the Bid Document.

5.B. WINDOW WELLS

1. Window wells shall be made of galvanized steel or aluminum and be a minimum of 20 gauge if steel.
2. Wells to be of sufficient height, securely anchored to foundation and caulked to prevent water entry and to ensure proper window protection against earth wash. Top height to be three inches above finished grade.
3. Installation shall include four inches of crushed gravel in the bottom to help promote drainage and hinder vegetation growth.

5.C. RAILINGS - HANDRAILS

1. Railings and component parts shall be fabricated from mild steel or assembled and installed as per manufacturer's directions. All joints must be welded and ground smooth.
2. Wrought iron handrails and railings shall be of ½" square balusters at 6 inches on center, and ¾" newels on 1" x 3/8" channel. Height of handrail/guardrail shall be determined by the local building code for height and openings.

5.D. PORCH IRONWORK COLUMNS

1. Corner and flat iron columns shall be sized, positioned and spaced to carry required load. Columns to be plum and resting on sound plates. Attached to floor and ceiling with approved flanges.

5.E. STEEL COLUMNS

1. Columns shall be 3" in diameter, steel adjustable, with bearing plates at top and bottom. Columns shall be positioned and spaced to carry the required loads. Provide concrete footings of width and depth necessary to conform to Code. **USED PIPE WILL NOT BE ACCEPTABLE.**
2. Anchor both top and bottom plates to structure with a minimum of two (2) bolts or lag screws of designated size.

5.F. METAL STORAGE BUILDING

1. Furnish and install metal storage building approximately 9'6" x 9'6" x 6'8" high. Double ribbed steel panels, heavy duty bottom frame, reinforced entry mid-wall bracing. Anchor to full coverage 4" concrete slab. Furnish all anchors, set level and true.

5.G. FOUNDATION VENTING

1. Allow 288 square inches of vent area for each 100 linear feet of building perimeter, plus one square inch of vent area for each two feet of enclosed ground area. All vents to be aluminum, installed with caulking and galvanized nails into prepared opening cut with close tolerance.

5.H. SIDING

1. Siding is to be installed where indicated and called for in the attached Bid Document. Prior to installation of siding, all defective siding shall be removed and loose sheathing and siding replaced to match existing. When matching products are unavailable and weather tightness cannot be restored by using other products, the entire wall area shall be covered with new siding or trim.
2. Metal siding: Metal siding shall be either steel (as manufactured by U.S. Steel or equal) or aluminum (as manufactured by Alcoa or equal) as indicated in job specifications and shall be installed as per manufacturer's directions.
 - A. Use lapped siding with box corners. Color to be chosen by owner.
 - B. Siding shall be a minimum of .024" thick with backer.

- C. Siding must have a two (2) coat baked on finish; must be non-chalking and textured or as stated in Bid Documents.
- 3. Backerboard:
 - A. Use backerboard having a minimum of 3/8" thickness, meeting or exceeding FHA and all other applicable standards.
- 4. Breather Foil:
 - A. None required unless specified.
 - B. If required, must have a minimum of 64 perforations per square inch.
- 5. Nailing:
 - A. All existing loose nails must be driven in and all deteriorated existing boards must be replaced so as to present a solid nailing surface for the new siding.
 - B. All nailing is to be done in slots provided and drawn up snug, but not tight, to provide for expansion and contraction.

NOTE: DO NOT USE STAPLES.

- 6. Accessories:
 - A. Any style metal accessory, including nails, provided for installation must be in matching metals.

5.I. FLUE LINERS

- 1. Furnish and install prefabricated metal liners as provided by the Mechanical Code.
- 2. Liners shall be installed according to manufacturer's specifications to within six inches above top of exterior brickwork. All work shall comply with all applicable codes.

5.J. ROOF VENTING

- 1. Roof vents shall be aluminum, installed so that the net free ventilating area shall be not less than 1/150 of the area of the space ventilated, except that the area may be 1/300, provided at least 50% of the required ventilating area is provided by ventilators located in the upper portion of the space to be ventilated, at least three feet above eave or cornice vents, with the balance of required ventilation provided by eave or cornice vents. See 14.D.1-4.
- 2. All vents to be installed with caulking and galvanized nails into prepared openings cut with close tolerance to ensure watertight fit. All work shall comply with all applicable codes.
- 3. Roof vents shall be installed when new roofs are called for in the Bid Document.
- 4. Ridge vent shall be installed according to the manufacturer's instructions and used in conjunction with proper soffit vents.

DIVISION 6 - CARPENTRY AND MILLWORK (SUBJECT TO DIVISION 1)

GENERAL

Rough carpentry: All framing, furring and sheathing shall be completed with rough hardware and installed in conformance with the Codes.

Repair: Patches and scabs shall be installed in conformance with the Codes.

Replacement: Complete removal of damaged material and all associated construction as required and the installation of all new construction shall be in conformance with the Codes.

6.A. PRODUCTS

All products shall be grade marked according to the industry standard. Framing lumber shall be kiln dried, straight and solid.

Lumber shall be sized to accommodate adjacent construction and shall conform to the requirements of span tables for the product and governing code.

Plywood subflooring shall meet the requirements of Product Standard PS-1 for softwood plywood and shall be DEPA Standard grade. Panel thickness shall be as noted in the Bid Document.

Exterior sheathing shall meet the requirements of Product Standard PSI for softwood plywood and shall be DEPA Standard grade with exterior glue. Panel thickness shall be as noted in the Work Write-Up.

Fiberboard wall sheathing shall comply with ASTM C-208, Class E and shall be asphalt impregnated or coated to render it water resistant.

Lumber and plywood shall be pressure treated in accordance with American Wood Preservers Standard LP-2. Pressure treated lumber and plywood shall be installed where wood is in contact with masonry, concrete, within 15" from the earth, or is exposed to exterior.

- A. All cut joints shall be treated.
- B. Wood infill subflooring shall be 1" No. 2 pine set parallel to existing sheathing.

6.B. EXECUTION OF WORK

1. Framing shall be straight, level or plumb with all joints accurately cut and neatly fitted and securely nailed or bolted. Splices shall occur only over bearing.
2. Sheathing shall be sound and shall be applied with bearing on blocking at all edges. (Clips may be used in roof deck.) Panels shall be continuous across at least two spans of framing members. Stagger joints at floor and roof decking.
 - A. Sheathing clips shall be Model #PSC as manufactured by Simpson or an written approved equal.
3. All members shall be securely anchored in accordance with manufacturer's recommendations for intended uses and good construction practice.
4. New wall framing and rafters shall be sixteen (16) inches on center unless noted otherwise.
5. Exterior Steps: All new exterior or hatchway wood steps shall be constructed with clear redwood, cedar, or treated lumber, with sawed stringers. Risers shall not exceed 7" in height. Treads shall be no less than 11". The product of riser height and tread width shall be no less than 70 and no greater than 75. There shall be no variation exceeding 3/16 of an inch in the depth of treads or in the height of risers in any flight of stairs. The length and width of landings shall not be less than the width of the stairs. The vertical clearance above any tread, measured at the nosing and above each landing, shall not be less than 6 feet 8 inches.
6. Cellar Door frame to be a minimum 2 x 6 redwood, cedar, or treated lumber, securely fastened to concrete or block with 3/8" bolts set in concrete, or with 3/8" self-drilling concrete anchors. Void between frame and concrete shall be grouted and caulked to provide watertight seal.
 - A. Sill plate insulation shall be installed between frame and concrete or grout. Galvanized flashing and storm seal shall be installed to adequately drain moisture away from opening. Door shall be minimum of 3/4" exterior grade plywood type AC. Oxboard or particle board will not be accepted. Blocking, cross bracing, and end caps shall be glued and nailed in place. Door shall be

held in place with minimum of three 6" heavy duty, galvanized "T" hinges. Iron door pulls and padlock hasp to be heavy duty, galvanized or cadmium plated. All hardware to be screwed and bolted as may apply. Bolted hardware to have nuts placed inside of door, bolts shortened and battered to prevent removal.

6.C. FRAMING

1. General

A. Framing lumber shall be kiln dried, construction grade.

B. Framing work shall be accomplished in a level, straight, plumb and true manner. Notching and cutting of framing members shall be done in accordance with the local building code.

2. Exterior Walls

Exterior walls shall be constructed to match the dimensions of the walls of the existing house. Studs shall be placed 16" o.c. A single bottom plate and double top plate shall be used. Where headers are required, they shall be doubled 2x12. Walls shall be sheathed on the exterior with 7/16" wafer board, or with sheathing to match the existing house. The wall shall be insulated with fiberglass insulation to R-13 and have a 4 mil poly vapor barrier on the interior side. Bottom plates shall be pressure treated #2 yellow pine.

3. Interior Partition Walls

Partition walls shall be 2x4 studs 16" o.c. with a single bottom plate and a single top plate. A double top plate shall be used if it's a bearing wall. If the bottom plate is set on a concrete floor it shall be treated lumber. ½" drywall shall be applied to both sides of the wall, taped, sanded and textured ready for paint. Where required by code or otherwise specified in the bid document, 5/8" drywall shall be used.

4. Wall Repair

Expose damaged area and remove carefully all interior and exterior wall covering (salvage as much as possible); remove all rotted or damaged material and replace with new materials. Install new R-13 wall insulation to exterior and garage walls. Use pressure treated #2 yellow pine for exterior wall base plate. Completely finish inside and out to match existing. Wall at final shall be structurally sound and weathertight.

6.D. FLOORING AND FLOORING REPAIR

1. Subflooring may be plywood or 1" nominal boards.

2. Plywood shall be Douglas Fir; minimum of ½-inch where 25/32 inch finished wood floor is to be laid; minimum of 5/8-inch where resilient flooring is to be laid and joists are not over 16 inches on center. (Ext. Grade plywood shall be used in kitchen, bath and utility room.) ¾-inch T & G plywood may be used in lieu of above. Glue and nail all plywood. Provide 15 lb. felt between subfloor and finish floor.

3. Nail subfloor to joists at intervals required by Code with 8d coated or 6d ringshank nails spaced six inches on center along all edges and ten inches on center along intermediate members. Other Code-approved fastening systems are allowed.

4. Common boards used as subflooring shall not be over 8 inches wide or less than ¾-inch thick when laid on joists spaced 16 inches on center.

5. Nail boards with 8d coated or 6d ringshank nails. Provide two nails in 4-inch or 6-inch boards and three nails in 8-inch boards at each joist.

6. Wood Flooring Repairs: Replace cracked, defective or warped wood flooring with flooring of like type and size. Secure any loose submembers and replace defective pieces with like materials. Adequately fit and nail new flooring into place with manufacturer's recommended nails. New installation is to be finished to match existing.

6.E. ROOF SHEATHING

1. Plywood Sheathing, Underlayment and Building Panels

A. Roof and Wall Sheathing shall be installed with face grain perpendicular to support with adjacent panel joints being staggered and located over support framing. Sheathing shall be installed continuously over a minimum of three (3) spans. Allow minimum space of 1/16" between side joints and 1/8" at end joints of plywood panels for expansion and contraction of panels. Support edge

joints by use of ply clips. Nail 6" o.c. along panel edges and 12" o.c. at intermediate supports. Use 6d nails for 1/2", and 7d for 3/8" plywood sheathing.

B. Plywood Subfloor Underlayment: Shall be installed in the same manner as roof and wall sheathing except nails shall be annular or spiral thread type 8d nails.

6.F. UNDERLAYMENT

1. Underlayment shall be required whenever vinyl sheet goods or vinyl tile is installed over wood subfloors. It shall be of a type recommended by the manufacturer of the floor covering, and installed in such a way as to maintain the guarantee of the floor. 3/8-inch underlayment grade plywood may be used as underlayment with the approval of the Rehab Office. In no case will particle board be approved.

2. Underlayment shall be stapled whenever possible. The staples shall be approved for underlayment and provide a minimum penetration of one inch to the subfloor. When nails are used they shall be 1 1/2 inch ring shank underlayment nails. Nails or staples shall be installed two inches o.c. at all edges, and four inches o.c. over the face of each piece. All staples or nail heads shall be countersunk below the surface of the underlayment.

3. Underlayment shall be installed just prior to laying the finished floor. All panels shall have the end joints staggered in respect to each other, and in respect to the joints in the subfloor. Panel end joints shall be spaced 1/32 of an inch to allow for expansion and contraction. All staples, nailheads, dimples, depressions, joints, damaged areas, etc., shall be filled with a compound designed specifically for this purpose. Underlayment may be installed over the old floor with the approval of the owner, installer and rehab office.

6.G. JOIST FRAMING

1. Where required, to be installed with crown edge up and to have minimum bearing of 1 1/2" on wood and 4" on masonry and spaces 16" o.c. minimum.

6.H. BRIDGING

1. To be 1" x 3" wood (#3 grade) or standard metal bridging and installed at a maximum spacing of 8'0".

6.I. RAFTERS

1. New - To be spaced a maximum of 24" o.c. and to be notched to fit exterior wall plates as required. Double rafters are to be used at roof dormers and openings, headers and trimmers shall be supported with metal hangers. All rafter cuts at hips, ridges, and valleys to be made in accordance with local building code.

2. Repair - Furnish and install all labor and materials necessary to repair rafter system. Contractor shall verify appropriate method of repair with the local building inspector. All work shall conform to Code.

3. Bracing- Install purlin bracing as close to center of rafters as possible. Purlin shall be constructed with 2" x 4" flat against rafter with 2" x 6" attached to the 2" x 4" perpendicular to rafter. Install 2" x 4" bracing notched into 2" x 4" at rafter and ending at load-bearing wall (every 4' O.C.). Collar ties (1" x 4") shall be installed at 1/3 of the rafter length down from ridge at alternate rafters or as specified in the work write-up.

6.J. BEAM AND GIRDERS

1. Are to be installed with crown edge up and are to have minimum bearing of 4" on walls or partitions. Size of beams and girders are to be as indicated in attached Work Write-Up, or as indicated on the drawings.

Do not cut, notch, or bore framing members for the passage of pipes or conduits without the concurrence of the Building Inspector. Reinforce members where damaged by cutting.

6.K. SLEEPERS

1. Are to be of 2" x 4" wood stock, pressure treated with a water borne preservative, installed over existing concrete floors. A plastic or asphalt paper barrier is to be installed between concrete floor and sleepers. Sleepers are to be installed 16" o.c. with a plus or minus 1/4" tolerance of level.

6.L. TRUSSES

1. Are to be gang nailed prefabricated wood trusses. Trusses shall be installed in complete accordance with manufacturer's recommendations, and shall meet National Forest Products Association "National Design

Specifications for Stress Grade Lumber and its Fastenings.” Specifications are to be provided to the Rehab Office.

6.M. FINISH WOOD FLOORING

1. New

Material: Hardwood.

Minimum Thickness: Over subfloor 5/16”, direct to joists 25/32”.

Maximum Width: 2¼”.

Material: Softwood.

Minimum Thickness: Over subfloor 5/8”.

Maximum Width: 3¼”.

(Unless otherwise approved by the Rehab Officer.)

Nailing: Shall be as recommended by flooring manufacturer. Blind nail tongue and groove flooring, driving nail at an approximate 45° angle.

2. Repair - Provide and install hardwood/softwood floor to patch damaged or deteriorated flooring. Wood species and finish shall match existing as closely as possible. Patch must be made to blend with existing work. The use of salvaged floor is permitted with prior approval of the Rehab Office and owner.

6.N. FINISH LUMBER

1. Finish lumber shall be of a species suitable for its intended use, kiln dried #1 dimensional, free from tool marks and other objectionable defects.

2. Interior Trim: Shall be as called for in Bid Document and/or shall match, as closely as possible, existing adjacent work in design and dimension. If matching trim is not available, written approval from the Rehabilitation Officer is needed.

6.O. CABINET WORK AND REPAIR OF CABINETS

1. Replacement

See Bid Document for type of exposed wood of existing cabinets. Doors may be flush type ¾” lumber core. Shelves, bottom, and top shall be ¾” solid stock or plywood with front nosing; dividers to be ¾” solid stock; backs, Douglas fir AC plywood. See Division 10 for hardware. Counter tops and backsplash (minimum 4” high) shall be ¾” thick particle board. Cover all exposed surfaces and edges with laminated plastic (Formica or equal). Butt internal and external corners. Fabricate all elements of cabinets which abut walls to permit a scribe fit. Cabinet fabricator shall cut opening for sink from template obtained from plumbing contractor. The Rehab Office shall select color and finish of prefinished cabinets or cabinets finished on site. Cabinet finishing shall be responsibility of contractor performing interior construction. All cabinets shall be type specified in Bid Document. When counters and/or cabinets are specified, the removal and reinstallation of any built-in fixtures shall be included. Any interfaces with pre-existing surfaces shall be treated so as to leave a finished appearance when the new cabinets have been installed, i.e. paint shall match, brick veneer or tile shall fit, voids filled up or covered or with soffit work in case ceiling height cabinets pre-existed.

2. Cabinet Repairs: Repair shall be made with matching materials and workmanship of the original work. Repairs to countertops must restore the sanitary conditions to original condition, and if this cannot be accomplished, then a new countertop must be installed. Remove all pull hardware: repair doors, drawers and shelves to work properly: replace any missing or damaged parts: anchor units as needed: clean inside and outside surfaces to receive paint or stain: **INSTALL NEW HARDWARE, WHERE MISSING, TO MATCH EXISTING.** Use Americo hardware or written approved equal. Final work shall result in a uniform appearance and proper working cabinets where paint does not stick or peel. Interior of cabinets shall be painted and exterior cabinet finish shall match existing.

3. Refinishing: Remove all hardware, wash off all heavy dirt accumulations using a solution of trisodium phosphate in water. Strip all paint/varnish from all surfaces. Lightly sand and hand-wipe to remove all dust particles. Hand-wipe stain (chosen by Rehab Officer). All nail holes to be filled with stain-based wood putty. Apply two coats of premium quality polyurethane varnish. Varnish coats will be sanded with 220 sandpaper between coats. Finished surface shall be smooth. Install all hardware.

4. Countertop: Furnish and install all labor and materials for plastic laminate over particle board. Top shall have 4" backsplash. Seams shall be straight with no open gaps. Adhesive is to be that recommended by the laminate manufacturer's instruction. Edges shall be covered by the same laminate material and neatly trimmed. Pattern and color to be chosen by owner. End splashes shall be installed where the countertop butts the wall.

5. Magazine Rack: Construct and install a magazine rack at the designated location. Materials shall be paint grade wood unless specified stain grade in the bid document. Trim to match existing surfaces and hide all damaged surfaces.

6.P. EXTERIOR SURFACES

1. Exterior surfaces such as cornices, walls, soffits, rake board and molding, etc., shall be repaired, removed and/or replaced to match existing as called for in the Bid Document.

2. Surfaces to be repaired shall have all decayed or deteriorated parts removed and replaced with new parts, matching original work as closely as possible, as approved by the Rehabilitation Office. Backup framing shall be repaired to permit this work.

3. Where cornices, roofs, porches or other building parts are to be removed, the Bid Document will describe the treatment of the wall exposed by such removal.

4. New fascia or frieze shall be #2 white pine, spruce or redwood. Material to be back-primed before installing and nailed with rustproof nails. Renail all remaining loose fascia and/or frieze where required.

5. Note: Good salvaged materials may be used by approval from the Rehab Office.

6.Q. REPAIR INTERIOR STAIRS

1. Renail all loose, springy or squeaking treads, risers and stringers. Restore to tight, sound and safe condition. When replacement is required, use same species and size as original, unless specified otherwise in the Bid Document. All work to conform to Code.

6.R. EXTERIOR WOOD STAIRS

1. Stairs shall be three feet (3'0") wide minimum with two end stringers and a center carriage, if necessary. Stringer and carriages shall be cut from 2x12 stock with an effective depth of stringer and carriage being not less than 4½". All exterior stair framing shall consist of 2" nominal stock, pressure treated with water borne preservatives. All stair treads shall be a minimum 2" stock. All posts shall be a minimum 4x4 stock. Handrails and guardrails shall conform to local code. All vertical posts shall be securely attached to framing with corrosion resistant fasteners. Supporting posts for stairs and landings shall be a minimum 4x4 stock and shall be installed on a frost footing with a minimum depth of 8". Stringer spans shall not exceed 6'0" measured on the horizontal without the installation of intermediate posts. All exposed surfaces shall be treated with a waterproofing product recommended for pressure treated wood.

6.S. REPLACEMENT OF CELLAR STEPS

1. Remove existing cellar steps, install new wooden open riser steps at required width and height. Treads to be 2" x 10" fir; stringers to be 2" x 12" fir, resting on sound concrete footing. All work shall conform to all applicable Codes.

6.T. ATTIC STAIRWAY

1. Construction to be housed out pine stringers, 1-1/8" pine treads, ¾" pine risers. Provide solid bearing at top and bottom. A center stringer shall be installed when the distance between stringers is greater than 2'6".

2. Factory-built stairs having wedged and glued treads and risers may be supported by two (2) stringers provided width of stairs does not exceed 3'6". Furnish and install all stock fir handrail and hanger brackets. Installation shall be in complete conformance to all applicable Codes.

6.U. MAIN INTERIOR STAIRS

Furnish and install shop-made or site-built interior stair system. Construction to be oak or fir treads and risers, stringers to be housed out pine. Provide solid bearing at top and bottom. A center stringer shall be installed when the distance between stringers is greater than 2'6". Factory-built stairs having wedged and glued treads and risers may be supported by two (2) stringers provided that the width of stairs does not exceed 3'6".

6.V. EXTERIOR HANDRAIL AND GUARDRAIL

New exterior handrail and guardrail shall be constructed using an approved exterior wood, such as redwood, cedar, or pressure treated yellow pine. All handrails and guardrails shall conform to the local building code. When the height of the deck is 30" or more, the guardrail shall be a minimum of 42" high. Handrail on steps shall be between 30" and 38" high, and an approved gripping surface shall be supplied. The design of the railing or guardrail shall be approved by the rehab office. The spacing of balusters or intermediate guardrails shall be such that a sphere 4 inches in diameter cannot pass through.

6.W. INTERIOR HANDRAIL AND GUARDRAIL

1. Interior handrail and guardrail shall conform to the local building code. Handrails shall be of standard pine handrail stock with standard mounting brackets. It shall be installed 30" to 38" above the tread nose, and shall be returned to the wall. Railing shall be sanded smooth of all tool marks, and finished with a stain color approved by the rehab office and two coats of good quality varnish. Guardrail and handrail balusters shall be such that a sphere 4 inches in diameter cannot pass through. The guardrails shall not be less than 42" in height.

2. Custom-Made Handrail: Handrail shall be custom made rail system, including starting newel, birch handrail, newel cap, and pine balusters placed 4" on center. Installation shall conform to all applicable Codes.

3. Repair Handrail/Guardrail: Furnish and install all labor and materials necessary to restore existing handrail/guardrail to sound condition. Handrail ends shall be returned to the wall or terminated at a newel post and be protected with paint or varnish. All work shall conform to Code.

6.X. STAIRWELLS TO BE CLOSED

1. Remove existing stairs and railings in their entirety, and close up floor opening with joists of matching depth using joist hangers and/or ledgers for joist bearing. Install new subfloor and flooring level with adjacent floor, and match existing as nearly as possible.

6.Y. ENCLOSE AREA AROUND FLUE (BOX IN)

Box around flue pipe using 2' x 4' studs, 16" on center maximum. Allow space around pipe to meet Code requirements. Cover with ½" drywall, taped, sanded and finished ready to accept paint or other finishing materials. Patch any scarring or holes resulting from removal of chimney.

6.Z. CLOSET SHELF AND ROD

1. Wood Shelving:

Provide and install shelf for designated closet. Shelf shall be a 1" x 12" (or to fit closet), securely anchored to wall. Rod shall be wood with required holders. Minimum clearance above shelf shall be 8". Shelf to be painted same color as walls.

2. Wire Grid Shelving:

Provide and install new wire grid shelving as required in the Bid Document. Shelf shall be 12" in depth complete with all mounting and support hardware. Installation shall conform with manufacturers instructions. Use Closet Maid or written approved equal.

6.AA. REPAIR FENCE

Repair existing fence. Repairs to restore fence to a tight and secure condition shall be in accordance with all applicable codes.

Wood fence shall be protected from weather with paint, sealer, or other approved protective coating. Match existing as closely as possible.

6.BB. CROWN MOLDING

Furnish and install all labor and materials necessary to install new crown molding, including all fasteners. Nail holes shall be filled and finished. Molding shall have same finish as existing casings. Surface shall be smooth.

6.CC. REFINISH CROWN MOLDING

Remove existing crown molding and pull all nails through board from reverse side. Strip all paint/varnish. Lightly sand, then clean. Hand-wipe stain, then reinstall in original order. Apply two coats of premium

quality varnish. All nail holes to be filled with stain-based wood putty and varnished coats to be sanded with 00 sandpaper between coats. Finish to be smooth.

6.DD. NEW ADDITIONS

This section is intended to provide guidelines to the contractor when bidding new construction.

1. The specifications are meant to include a complete enclosed watertight structure ready, including electrical equipment, to be lived in. Work shall include, but not necessarily be limited to:
 - A. 2' x 4' stud walls, 16" on center.
 - B. ½" drywall, interior, tape, bedded and textured to match existing, ready to accept paint or other finishing materials. Ceiling required to have ½" drywall or as specified.
 - C. ½" plywood or fiber board (with proper bracing) sheathing exterior.
 - D. Building paper.
 - E. Fascia, soffit, downspouts, gutters (at all drip edges), and gutter apron.
 - F. Siding to match existing as closely as possible or as specified.
 - G. Ceiling joist with ½" drywall, tape, bedded and textured to match existing, ready to accept paint or other finishing materials.
 - H. Roof rafters with ½" plywood sheathing. Approved truss roof may be used.
 - I. Shingles to match existing as closely as possible or as noted.
 - J. Attic vents.
 - K. R-30 (minimum) in ceiling with vapor barrier.
 - L. 3½" batt insulation in wall with vapor barrier. R-15 minimum.
 - M. Floor joists, plates and subflooring.
 - N. Underlayment and floor covering as noted.
 - O. Base and all trim.
 - P. Windows as noted. (To include screens.)
 - Q. Doors and frame as noted. (To include screens.)
 - R. Closet (2' x 4') with 2' x 6' 8" interior, pre-hung door. shelves and closet rod.
2. Foundation shall be pier and beam with poured concrete footings (place steel dowel in "H" pattern), 18" x 18" x 8" set on firm soil at least 9" below existing ground level (undisturbed soil). Open cell concrete blocks (or formed cylinders), filled with concrete shall be placed on footings as a pier and tied to footing with (1) 5/8" steel dowel. All wood frame members shall be a minimum of 15" above ground surface. Piers shall be placed 6' (or less) on center throughout structure. Girders shall be at least triple 2" by 6" with staggered splices attached to piers with hurricane straps at intervals determined by city code. All work shall comply with local city code.
3. Reinforced concrete foundation walls for brick veneer or wood frame dwellings of 1½ stories or less shall be a minimum of 8" wide, must be designed with sufficient rebars to give wall adequate strength to resist lateral pressure from adjacent earth and vertical loads.
4. Skirting shall be 18 gauge metal roll flashing set at least 4" into soil. Framing shall be pressure treated wood.

6.EE. NEW BATHROOM

1. The specifications are meant to include all components, including plumbing and electrical, necessary to completely finish out a newly dried-in or existing structure to provide a 3 fixture bathroom which complies with all codes for new construction. Work shall include, but not necessarily be limited to:
 - A. Bathtub - tub/shower combination with shower valve as specified in Division 13.

- B. Lavatory, faucet and Vanity - 30" vanity (paint grade finish unless noted in the bid document) with cultured marble top with built-in sink. Faucet as specified in Division 13.
- C. Toilet - as specified in Division 13.
- D. Flooring - underlayment grade 3/8" plywood with sheet vinyl as specified in Division 6 & 9.
- E. Electrical - complete installation of (1) GFI outlet, (1) vent fan, (1) ceiling fixture, (1) decorative wall fixture.
- F. Wall finish - Sheetrock, tape bed and texture all walls and ceiling. Greenrock shall be used at shower area. Tub surround shall be 1 piece or 3 piece plastic with styrofoam backing. **No 5 piece kits shall be used.** Bracing shall be installed as per Division 11.A.3. where grab bar installation is called for in the Bid Document. Wall cavity shall be insulated to R-11, ceiling area to R-30.
- G. Door and trim - install one 2' x 6' 8", interior, hollow core, pre-hung unit complete with all hardware and lockset. Base trim to match existing.
- H. Rough-in plumbing - as needed to install specified fixtures and connect to existing system.
- I. Rough-in electrical - as needed to install specified fixtures and connect to existing system.
- J. Window - as specified in the bid document.
- K. Medicine cabinet - install one as specified in Division 10.

6.FF. NEW OR REPLACEMENT DECKS

All new or replacement decks shall conform to the local building code. The design shall be approved by the, Rehab Office, and the local building inspector.

Footings shall be of sufficient number to conform to the Code, and shall be 8" deep x 10" in diameter. They shall be capped with a 12" x 12" x 4" pad to raise the bottom of the post above-grade.

All framing lumber shall be pressure-treated southern yellow pine. Support posts shall be 6x6 pressure-treated southern yellow pine. All fasteners and hardware shall be galvanized steel. Support beam shall be of sufficient size to carry the load of the deck. It is suggested that it be a double 2x10 either bolted to both sides of the 6x6 posts, or notched and bolted to the posts. Carriage bolts shall be a minimum 1/2" x a sufficient length to bolt through the material. It is suggested that the joists be 2x8's 16" o.c., toe-nailed to the top of the beam. The ledger board shall be bolted to the house with two fasteners every 16" on center. Fasteners to be of proper type for the material being fastened into. The floor joists shall be fastened to the ledger board with galvanized joist hangers.

Flooring shall be either 5/4 x 6 cedar decking, or 5/4 x 6 pressure-treated southern yellow pine, owner's choice. It shall be fastened with 2-3/4" galvanized deck screws, two per joist. Screws shall be counter-sunk to a sufficient depth so that when the wood shrinks, the screw head will remain below the surface.

The steps and handrail/guardrail shall conform to the local building codes and be of a design approved by the Rehab Office.

All exposed parts of the deck shall be sealed with a product suitable for the type of wood used. Consult with the Rehab Office before applying.

6.GG. CONVERT EXISTING GARAGE TO BEDROOM

Convert existing garage into a bedroom as specified in 6.DD.1.

6.HH. CONSTRUCT CLOSET

- 1. Clothes Closet

Construct new clothes closet at designated location. Size shall be 28" (depth) x 4' (length) or as designated in the bid document. Wall framing shall be 2" x 4", walls shall be of 1/2" drywall finished to match existing surfaces (including tape, bed, texture and paint). Install a 30" x 6' 8" pre-hung door including hardware and all trim (painted to match existing). Include base trim inside and out to match existing (include paint). Install 1" x 12" shelving on three sides (with bracing). Install clothes rod of wood (stained) or metal.

2. Water Heater Closet

Construct a new water heater closet at designated location. Wall framing shall be 2" x 4", walls shall be of ½" drywall finished to match existing surfaces (including tape, bed, texture and paint). Install a pre-hung door including hardware and all trim (painted to match existing). Size of door shall be sufficient to allow future replacement of water heater without removal of door. Include base trim inside and out to match existing (include paint). Install all required ventilation to new code standards. Plumbing items shall be detailed at that section of the work write-up.

3. Linen Closet

Construct a new linen closet at designated location. Size shall be 18" deep x 30" wide or as designated in the bid document. Wall framing shall be 2" x 4", walls shall be of ½" drywall finished to match existing surfaces (including tape, bed, texture and paint). Install a pre-hung door including hardware and all trim (paint to match existing). Install 5 shelves 18" deep x full width using BCX plywood. Fill all holes/crack in plywood and front edge with putty and sand and paint.

4. Utility Closet

Construct new clothes closet at designated location. Size shall be a minimum of 36" (depth) x 6' (length) or as designated in the bid document. Wall framing shall be 2" x 4", walls shall be of ½" drywall finished to match existing surfaces (including tape, bed, texture and paint). Install a 60" x 6' 8" pre-hung bi-fold door including hardware and all trim (painted to match existing). Include base trim inside and out to match existing (include paint). Install 1" x 12" shelving on three sides (with bracing). Install clothes rod of wood (stained) or metal. Electrical and plumbing items shall be detailed in those sections of the work write-up.

6.II. INSTALL BEAM

Install beam to size and location specified in the bid document. Install with crown up and nailed in triangular pattern. Remove all existing surfaces necessary to fit into wall and repair all surfaces to original or better condition (match existing surfaces as closely as possible). Install double 2" x 4" cripple under each end (if installed in wall) or 4" x 4" post. Finish and paint to match existing.

6.JJ. DEMOLISH AND REBUILD ENTIRE ROOF SYSTEM

Remove entire roof system including but not limited to roofing, decking, lathing, bracing, soffit, fascia, porch overhangs and all other roof and trim components necessary to rebuild entire roof system.

New framing shall be to new code requirements as specified in the local building code.

Decking shall be OSB and installed as per local building code and the requirements of Division 6.E.

Roofing design shall be as specified in the bid document with pitches that conform to local building code requirements but cannot be less than 4/12.

Overhang shall be a complete soffit and fascia system that will enclose the entire overhang and extend at least 12" past exterior wall.

Paint all new materials to match existing as per Division 9.N.

6.KK. WOOD POSTS OR COLUMNS

1. Columns shall be sized as required by the Bid Document with metal bearing plates at bottom. Columns shall be positioned and spaced to carry the required loads. Provide concrete footings of width and depth necessary to conform to Code.
2. Anchor both top and bottom plates to structure with a minimum of two (2) bolts or lag screws of designated size.

DIVISION 7 - MOISTURE PROTECTION (SUBJECT TO DIVISION 1)

7.A. ROOFING

1. Materials:

NOTE: FULL HIP ROOFS SHALL INCLUDE A MINIMUM OF TWO (2) TURBINE VENTS. SEE BID DOCUMENT FOR ADDITIONAL VENTING.

- A. Roofs with slopes of 3/12 or greater: 220 lb. minimum (20 year warranty), self-sealing shingles. Roofs with slopes of 2/12 or less: modified membrane roofing. Shingles shall carry National Underwriters Class C label. **Where dimensional shingles are called for in the bid document use Owens Corning Oakridge II or written approved equal.**
- B. Saturated felts to be 15 lb. asphalt saturated felt for roof surfaces and 30 lb. saturated felt for base sheet.
- C. Edge strip: Galvanized starter strip or aluminum drip edge.
- D. Modified membrane roofing shall be installed in strict conformance with the manufacturer's instructions. It may be installed with a cold process method, or a heat welded method, at the discretion of the roofer in consultation with the rehab office.
- E. Plywood Roof Sheathing: ½", APA Grade, CDX exterior plywood or Oriented Strand Board (OSB).
- F. Flashing: Flashing shall be 26 gauge painted valley tin or aluminum. Counter flashing or weathering with siding or shingles required.
- G. Roof Sheathing Board: To be #2 common or better pine with no loose knots or written approved equal.
- H. Nails: Galvanized roofing nails shall be 11 or 12 gauge barbed shank galvanized or aluminum.
- I. Plastic Cement: Plastic roof cement (for edge, seal before nailing flashing).
- J. All roofing materials must be new and fulfill the requirements of the local building code.
- K. Pneumatically driven nails (NO staples) shall conform to the roofing manufacturer's directions and requirements of the local building code.

2. Installation:

- A. Examine roof sheathing, cornice and eave edges prior to starting work. Notify the Rehab Office of any defects, and do not proceed until such have been corrected. When sheathing is bad, call the Rehab Office for inspections unless otherwise stated in Bid Documents. The term "RE-ROOF" shall include all porches, additions, and structures attached to the main structure (house) unless otherwise stated. Vents shall be installed as stated in Division 5.J.1.
- B. One layer of 15 lb. felt shall be installed over the decking following manufacturer's instructions.
- C. Install metal drip edges.
- D. Nail each shingle in accordance with manufacturer's instructions for nailing.
- E. Lacing, metal valleys, or "California" valleys may be used, provided they comply with all applicable codes and are acceptable to the Rehab Office.
- F. Form ridges and hips with preformed shingles, 5" exposure and with a minimum of two (2) nails per shingle.
- G. All roof jacks at projections and galvanized metal flashings shall be installed in accordance with roofing manufacturer's directions and the local building code.

3. Warranty:

- A. Roofing contractor shall furnish a one (1) year written warranty to Rehab Office on workmanship and materials other than shingles, shingles have a minimum 20-year warranty.

7.B. REPAIR ROOFING

1. Repair existing roof. All replacement materials shall match existing as closely as possible, and shall be installed according to manufacturer's directions and all applicable codes.
2. This includes any broken, damaged, missing, or rotted sheathing, fascia, rake, cornice, soffit flashing, etc., as specified in the Bid Document. Sheathing shall be replaced with full pieces/sheets only.

7.C. STRIP ROOF

1. Strip existing roof, removing all shingles and felt.
2. Make repairs to the existing roof rafters where required to provide adequate strength and a true and level surface.
3. Remove all warped and deteriorated decking and replace with like kind.
4. Fill in all spaces between boards with securely nailed wood strips of the same thickness as the old deck, OR, if necessary, resheath over existing roof boards with CDX plywood or OSB, ½" minimum. Plywood is to be installed with outer plies at right angle to rafters and staggered so that end joints in adjacent panels break over different supports.
5. Sink all protruding nails and renail sheathing securely at all locations. All large cracks, slivers, knot holes, loose knots, pitchy knots and excessively resinous areas are to be covered with 26 gauge sheetmetal securely nailed to sheathing.
6. Before shingling, sweep roof thoroughly to remove all debris.
7. Remove all roofing materials, debris, etc., from premises and leave in a clean condition.

7.D. MODIFIED MEMBRANE AND ROLL ROOFING

1. Strip existing roofing, removing all rolled roofing, shingles, and felt areas.
2. Make repairs to the existing roof framing as required to provide adequate strength and a true and level surface.
3. Remove all warped and deteriorated decking and replace with like kind.
4. Fill in all spaces between boards with securely nailed wood strips of the same thickness as the old deck, if necessary, resheath over existing roof boards with CDX plywood or OSB, 3/8" minimum.
5. Sink all protruding nails and renail sheathing securely at all locations. All large cracks, slivers, knot holes, loose knots, pitchy knots and excessively resinous areas are to be covered with 26 gauge sheet metal securely nailed to sheathing.
6. Furnish and install new modified membrane roofing, as required, installed according to manufacturer's directions - using either cold process adhesive or heat welded process.
7. Furnish and install metal edging and new 90 lb. rolled roofing or selvage edge with a 19" lap according to manufacturer's directions.

7.E. BUILT- UP ROOF

1. Remove gravel, debris and roofing.
2. Replace all rotten decking.
3. Base sheet shall be GAF GAFGLAS #75 asphalt coated glass mat or written approved equal. The base sheet shall be nailed using not less than one fastener for each 1 1/3 square foot. Apply a three ply mop of 15 pound felt over base sheet. Apply 20 pounds of hot asphalt to each square. Install gravel guard on all exposed edges of roof. Install flashing where necessary. Surface is to be covered evenly with 400 pounds of gravel or 300 pounds of crushed slag per square over 60 pounds of hot mopped asphalt per square.
4. Contractor shall provide a 10 year warranty against leaks.

7.F. METAL WORK, GUTTERING

ALL GUTTERING SHALL INCLUDE DOWNSPOUTS (EVERY 10') AND SPLASH BLOCKS.. LINEAL FOOT MEASUREMENTS ON THE BID DOCUMENT REFLECT DRIP EDGES ONLY. BIDDERS

SHALL INCLUDE THE ADDITIONAL COST OF DOWNSPOUTS AND SPLASH BLOCKS AT ALL LOCATIONS INDICATED ON THE BID DOCUMENT.

1. Materials: Unless otherwise specified, all sheetmetal work on exterior of building shall be galvanized metal and shall be at least 26 gauge. Screws, bolts and other accessories shall also be galvanized.
2. Cleaning: Flux for soldering shall be thoroughly washed off after soldering is completed.
3. Delivery: All flashing materials required to be built into other construction (such as chimney, roofing, etc.) shall be furnished, delivered and/or installed in sufficient time so as to be properly installed in the normal progress of work.
4. Finish: Treat all chimney galvanized metals with rust-preventive primer (Rustoleum or approved substitution) according to manufacturer's directions. Follow with one coat of first quality paint as specified in Division 9.N. Aluminum metals, where approved, shall be treated with Zinc Chromate Primer. Painting is not required on galvanized roof edge starter strips or on galvanized gutters unless specified in Bid Documents.
5. Seamless gutters shall be installed having a 4" minimum width at top and shall be supported with 1" x 3/16" hangers or spikes at a maximum spacing of 2'0". Place gutter a minimum of 1/2" below slope line in roof. Slope to downspouts at a rate of 1/16" per foot.

Do not allow contact between galvanized and copper or aluminum, this includes dissimilar nails. Partial replacement or repair shall match existing as closely as possible as to materials, finish, size and shape. Minimum thickness for gutters shall be .027".

6. Downspouts shall be a minimum of 2" x 3" aluminum, secured to building with aluminum metal straps at a maximum of 6'0" spacing. Fit with elbows to divert water into splashblocks.
7. May use galvanized metal (1/2 round) in place of aluminum for gutters and downspouts if specified in Bid Document.

7.G. CAULKING

1. Materials:
 - A. Caulking compound shall consist of material which will not harden, crack or flow under extreme weather conditions. It shall be free of oils or other ingredients which will stain.
2. Preparation and Application:
 - A. Joints, spaces, and surfaces to be caulked shall be dry, clean, and free from dust.
 - B. Prime according to manufacturer's directions.
 - C. Pack deep joints and cracks with backup filler within 1/2" of surface before caulking.
 - D. Apply caulking with gun having proper size nozzle; fill joints and spaces solid, remove excess compound; leave surface smooth and clean.
 - E. Apply caulking before final coat of paint.
 - F. Set thresholds in full bed of caulking.
 - G. Caulk 1/4" bead around all bathtubs with caulking. Verify with Rehab Office if caulking is to be painted. Caulk shall be mildew-resistant siliconized acrylic.

7.H. WATERPROOFING

1. New exterior foundation walls are to be damp-proofed by applying one trowelled-on coating of asphalt bitumen emulsion in accordance with the manufacturer's instruction. Apply emulsion from the footing to a line that will correspond to a new finish grade. Back filling shall be so installed as to prevent damage to water proofing. Membrane protection is to be supplied where backfill contains stones or gravel that would damage damp-proofing.
2. New foundation walls shall be tiled with perforated PVC drainage tile laid tight to the wall at the footing line. Tile shall be covered with 6 inches of 2" washed river rock or 2" ballast before backfilling.

DIVISION 8 - DOORS, WINDOWS, GLASS (SUBJECT TO DIVISION 1)

8. GENERAL

1. Doors shall be 1-3/4" minimum thickness for exterior main entrance doors unless specified differently on the Bid Document. Exterior flush type doors shall be of mahogany, birch or oak finish (or equal) solid core construction.
2. All other exterior pane doors shall be 1/4" minimum thickness, white pine or equal with glass, unless specified differently on the Bid Document.
3. Interior doors shall be minimum 1-3/8" thick wood, hollow core or panel, stock sizes and design unless otherwise specified in the Bid Document.
4. Where 20-minute fire doors are called for, they shall be flush type, 1-3/4" thick solid core or flush steel door, or equivalent, equipped with self-closing device and all other necessary hardware.
5. The term door unit shall mean the installation of jambs, casing (both sides) if needed, butt hinges, lock set and the door, including aluminum or wood threshold and peep hole (height determined by the Rehab Office) in exterior openings.
6. The choice of door, including glass requirements, shall be made by the Rehab Office.
7. All exterior doors shall have a dead bolt lock (turn button) and three hinges.
8. When pre-hung metal clad doors are to be installed, the price shall include all needed modification to opening, trims, moldings, repair to exterior and interior wall surface. Replacement metal clad door may be substituted with written approval.
9. All exterior doors shall be made weathertight. A watertight threshold shall be provided. Doors shall be weather-stripped to prevent infiltration of dust, snow, and weather.
10. All new doors shall be finished inside and out with two coats of paint or stain and varnish at owner's option unless specified in the painting portion of the Bid Document.

8.A. DOORS - METAL/WOOD

1. Materials
 - A. Insulated Steel Entry Door (Exterior) - shall be 3'0" x 6'8" x 1-3/4" embossed 20 gauge steel door with polyurethane foam insulation mounted on Ponderosa Pine frame and trim or written approved equal. Door shall come pre-fit complete with aluminum or oak sill, and all necessary hardware such as hinges, locksets, deadbolt and weather stripping and peep hole (height determined by Rehab Office). Door shall be as manufactured by Stanley, or written approved equal. Style to be selected by Rehab Office.
 - B. Wood Entry Door (Exterior) - shall be 3'0" x 6'8" x 1-3/4" pre-hung fir or Ponderosa Pine panel doors. Frame shall be 5/4" pine frame complete with 1/2" x 6-3/4" oak sill, trim, and all necessary hardware such as hinges, locksets, deadbolt and weather-stripping. Door shall be as manufactured by Morgan Building Products or written approved equal (solid door).
 - C. Interior Wood Doors - to be 1-3/8" pre-finished hollow core lauan or birch, with solid wood stiles and rails adequate for a minimum two-inch reduction in height without impairing the strength of the door. Where called for, doors to come pre-hung complete with hardware and jamb trim. If door needs to be cut down to fit opening more than allowed by the stile, the original stile shall be cleaned and reinstalled in the door bottom with glue, and clamped overnight.
 - D. Cellar Door Wood - where called for to be wood matched tongue and groove fir or yellow pine. Door to be constructed of 1" x 4" boards mounted on 1" x 6" wood cross braced frame. Door to be installed with all necessary hinges, surface mounted lock and strike, and aluminum metal threshold. Treated lumber shall be used.
 - E. Cellar Areaway Hatch Door - to be an all-steel door of appropriate size to fit areaway opening leading to cellar. Door shall be 12 Bilco or written approved equal.
 - F. Bi-Fold Closet Door - to be 1-3/8" flush hollow core mahogany veneer with complete Stanley bi-fold hardware kit provided or written approved equal.

G. Sliding Closet Door - to be 1-3/8" flush hollow core lauan or mahogany veneer with Stanley sliding hardware kit provided, or written approved equal.

H. Note: a salvaged door may be used upon approval by the Rehab Office.

2. Installation

A. Wood Doors (exterior, interior) - shall be installed with door and frame set plumb, straight and true. All doors shall be undercut, including closet doors 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 templates 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. One screw at each hinged shall be replaced with a screw capable of penetrating 1" into framing.

B. Insulated Steel Doors and Frames - Remove existing exterior entry door and jambs and replace with new insulated steel door and frame. Door and frame to be installed plumb and true and to come complete with three (3) hinges, entry locks and keyed dead bolts. Doors and frames shall come primed, and shall be finished with two coats of paint. Door and frame shall be installed in complete accordance with manufacturer's instructions. Knocked down metal frames, where used, shall be installed with tightly fitting corners, and with close fit where they abut other finished surfaces. 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 instruction. One screw at each hinged shall be replaced with a screw capable of penetrating 1" into framing.

C. Wooden basement hatch door - Remove deteriorated door and frame to basement and install new framing of 2" x 6" dimension lumber and secure frame to existing wall with anchoring that will hold frame firmly in place. Repair any defective wall area where frame is to be installed to allow for an airtight frame. Caulk after installation. Door frame to have saddle installed T. & G. wood floor boards mounted on 1" x 6' wood rail and cross brace framing. Hinges to be 3"-6" Stanley Tee hinges or written approved equal, and lockset to be keyed entry surface mounted lock, complete with knobs and surface mounted enclosed strike. Mount door and hardware so door shall swing freely without binding of door. Treated lumber shall be used.

D. Metal basement hatch door - Areaway hatch door to basement to be Bilco or Gordon, and shall be installed in complete accordance with manufacturer's instructions. Repair any defective areaway walls where metal door framing is to be affixed to wall prior to installing new areaway door. Caulk perimeter upon completion of installation.

E. Special doors, such as closet bi-fold doors, sliding doors, and garage doors are to be installed in complete accordance with instructions supplied by door and hardware manufacturer. All doors are to be installed with door and frame set plumb, straight and true and to come with all necessary hardware and accessories for a complete and smooth operating installation.

F. Keyless bolting device-Install a keyless bolting device at each location designated in the Bid Document. Use "The Original Door Lock" or written approved equal .

A "keyless bolting device" means a door lock not in the door knob that locks by a drop bolt system operated by placing a central metal plate over a metal doorjamb restraint that protrudes from the doorjamb and that is affixed to the doorjamb frame by means of three case-hardened screws at least three inches in length. One half of the central plate must overlap the doorjamb when the plate is placed over the doorjamb restraint. The drop bolt system must prevent the door from being opened unless the central plate is lifted off of the doorjamb restraint by a person who is on the interior side of the door.

The "keyless bolting device" must be installed at a height not lower than 36 inches from the floor and not higher than 48 inches from the floor.

8.B. METAL/WOOD STORM DOORS

Doors, frames, trim, threshold, and hardware, unless otherwise specified in the Bid Document, shall be extruded metal or wood and shall conform to the following standards:

1. Materials

- A. Doors shall be equipped with glass and screen inserts and shall match existing opening unless Bid Document states otherwise. Extruded door frame construction shall be a minimum of 1" thick. Door shall be insulated self-storing with safety or Plexiglas glazing.
 - B. Metal door color to be baked enamel or mill finish as specified in the bid document.
 - C. All hardware, including hydraulic door closer, storm chain, and weather-stripping to be furnished by contractor and shall be included in this installation.
 - D. Wood storm door to be primed and painted with two top coats. All six sides shall be painted.
2. Installation
- Metal Insulated Storm Door - shall be installed with door and frame set plumb, straight and true. Door shall be installed in complete accordance with manufacturer's directions, and shall come complete with adjustable frame, continuous hinge, closers, latch and chain stop.
3. Repair
- Existing storm door shall be repaired with matching parts and hardware as required to restore weather integrity, soundness and smooth operation. Repair storm inserts with safety glazing. Install new chain guard. Broken joints shall be doweled, glued and clamped.

8.C. GARAGE DOORS

- 1. Doors shall be steel, product of Overhead Door, Stanley, Clopay or written approved substitution or equal.
- 2. If wood doors are specified, doors shall be stock wooden overhead doors, 4-paneled, 1-3/8" Hemlock or written approved equal having 1/4" exterior grade hardwood panels and factory installed glass, unless otherwise specified in the Bid Document. Wood shall be guaranteed for life of door against splintering or cracking due to weather conditions. Bottom rails shall include weather-stripping. Door to be complete with all necessary operating hardware, brackets, latches and key locking hardware.
- 3. Furnish and install 2" x 6" to side of each jamb and across head; allow for door to overlap 1" on each side. Suspend tracks from overhead framing with metal angles. Brace rigidly and adjust vertical track to wedge door tightly against rough buck. Apply 1" x 2" stops at jambs and head. Furnish and install additional framing as required to accomplish installation.
- 4. Door shall be finished if not bid as part of the painting section of this contract. The door shall be protected with one (1) coat of primer and two (2) coats of finish exterior paint to match structure and/or trim at owner's option.

8.D. REPAIR EXISTING DOOR

Remove deteriorated stops, casing, trim, and jambs, and replace with new (as required in the bid document). Repair and/or replace damaged door and missing hardware (as required in the bid document) with materials of matching design and finish, or existing hardware. Install new locksets at existing exterior doors, over old cutouts with new cover escutcheon plates (as required in the bid document). Rehang door (as required by the bid document) with new hardware and new bronze tension type weather-stripping to provide a tight fit and smoothly operating doors.

Where casing trim is to be retained, remove existing deteriorated finishes, sand surfaces, and fill holes and dents to provide a smooth surface ready for new paint. Provide new weather-stripping at exterior door.

- 1. Repair sliding glass door:
 - Remove operable section, clean rollers (replace defective parts) and track and properly lubricate. Re-install door and adjust for proper operation. Install new screen door to match existing and adjust for proper operation. Install a slide lock or locking bar (metal/fully installed). Contractor must determine if drilling a hole for a slide lock will damage the glass or the operation of the door.
- 2. Adjust door:
 - Adjust door to open, close and lock properly. Trim any edges necessary for even reveal or fit. Adjust latch keeper (plug and re-drill old holes as needed). Sand and touchup affected surfaces to match existing.

3. Door stops:

Install new rubber tipped bumpers to all doors. Use appropriate bumpers (solid or hinged brass) for door location. All bumpers to be screwed in and not driven. **WORK SHALL INCLUDE PLACEMENT OF BRASS PLATES AT DOOR LOCATIONS PREVIOUSLY DAMAGED BY HINGE STOPS.**

8.E. REHANG DOOR

Rehang existing door(s), location as set forth in Bid Document. Restore to sound, free operating condition. Cut and plane as necessary. Adjust jambs, head, and threshold as required.

8.F. THRESHOLD & WEATHERSTRIPPING

1. Thresholds for wood doors shall be aluminum or pre-cut hardwood in full bed of caulking, shimmed level and secured with a minimum of four (4) countersunk brass flat head woodscrews. If hardwood is used, threshold shall be painted.

2. Weather-stripping for wood doors shall be extruded aluminum with neoprene or felt insert, surface mounted on frame or stop. Spring bronze in door opening is acceptable or as specified in Bid Document.

3. Thresholds for wood doors shall have a rubber neoprene insert.

4. Weather-stripping for metal doors shall be furnished by the door manufacturer.

8.G. WINDOWS

1. General - The term window unit shall mean the installation of frame, sill, sash, trim, hardware, screens, and repair to interior and exterior wall surfaces.

A. All window units shall be set plumb and level, finished and trimmed as required.

B. New window units shall be of quality, type and size as called out in the Bid Document. All frames, sashes, stops and exterior casings shall be of clear pine.

C. Exterior side of all wood surfaces shall be painted with one (1) coat of primer sealer before installation, and after installation shall be painted with two (2) finish coats of exterior type paint to match structure and/or trim.

2. WINDOW TYPES

A. Double Hung Wood Windows - to be as manufactured by Shelter, Semco, Crestline, or written approved equal. Windows shall be of 1-3/8" thick pine sash, with pine frames, shall be primed, glazed and puttied, and shall contain spring, spiral, or unique corrosion-resistant balances. Windows to have brass metal lifts and locks. Style shall match existing or be selected by owner. Window to be free operating, containing double strength glass not less than B quality.

B. Casement or Sliding Windows - to be as manufactured by Shelter, Semco, Crestline or written approved equal. Window to be 1-3/8" thick or greater pine, and shall be primed before installation and then furnished with two coats of exterior paint to match structure. Window to be factory glazed, secured properly to the frame, and level.

C. Basement Window - to be wood awning type. Unit to be prime coated before installation and then furnished with two coats of exterior paint to match structure. Window to be factory glazed, secured to the frame, and level.

D. Aluminum Window - Single hung/single glazed-Complete with screen-Frame depth shall be a minimum of 1 3/4" (minimum thickness .062). Exposed surfaces of all aluminum members shall be extruded of Class I finish material with no serious defects or blemishes. All joints shall be neatly fitted and securely screwed together and made watertight. Operating sashes are to be properly weather-stripped to minimize entrance of air and moisture. Window shall conform to AAMA (ANSI) 101 Specifications. Croft Series 20 or written approved equal. If unable to obtain aluminum units same size as windows to be replaced, it shall be the contractor's responsibility to reframe opening to fit new window.

E. Aluminum Storm Window - Exposed surfaces of all aluminum members shall be extruded of Class I finish material with no serious defects or blemishes. All joints shall be neatly fitted and

securely screwed together and made watertight. Croft Series 84 or 88, or written approved equal. All glass shall be thoroughly cleaned before storm windows are installed.

F. Skylight – Replacement skylights shall match existing as closely as possible. Work shall include removal, repair of opening and adjacent surfaces and installation of new skylight.

3. REPAIR EXISTING WINDOWS

A. Wood windows

Remove and replace all broken sash cords and replace with new sash cords at all double hung windows. Where windows are not equipped with sash cords, new CBW aluminum friction sash balances are to be installed. All deteriorated or damaged stops, sills, aprons, parting stop sash and frame trim are to be replaced. Replace all deteriorated sash with matching units.

Replace all cracked, broken and missing lights with double strength “B” quality glass, or glass of thickness as recommended for size of light. Reset loose glass, remove bad glazing, apply new glazing to make airtight seal. Install new sash lifts and locks where missing or broken.

Clean and prep window, inside and out, for new paint. Apply two coats of latex paint to interior and exterior as per Division 9.

All units at final shall be weathertight, operable and lockable.

B. Aluminum windows

Free lower sash so that it opens properly; replace broken glass; reset loose glass; remove bad glazing; apply silicone sealant between frame and glazing; apply new glazing (vinyl) to unit(s) to make airtight seal; replace all rotted sills, casings, framing members, and trim both inside and out; install new lock and sash stop if existing is not present or cannot be repaired to operate; prep and paint all finish surfaces; all materials shall match existing. All windows shall be cleaned prior to final. All units shall at final be weathertight, operable and lockable.

4. REPAIR EXISTING STORM WINDOWS

Repair storm windows with matching parts and hardware as necessary to restore window to weather tightness and operating condition. Repair storm inserts with the proper thickness of glass. Repair screen inserts with new coated aluminum screening.

5. REPLACE EXISTING STORM WINDOWS

Remove and properly dispose of existing storm window and provide and install a new double track storm window in existing opening. Rehab Office shall choose color. Window to be measured at the blind stop.

8.H. GLASS & GLAZING

Glass shall be of a strength required for the size of light as recommended by glass manufacturer, and shall be free from flaws and distortion. In no case shall the glass be less than “B” strength.

Glass shall be sized to set free in the wood opening and shall be secured with metal glazing points before glazing compound is applied. Glazing compound shall be applied neatly and have a smooth appearance. It shall be painted when properly cured. See 8.k.

Aluminum windows shall have the glass set free in metal opening, secured and sealed with silicone before installation of vinyl glazing materials (to manufacturer’s directions).

8.I. RESCREEN & REPAIR WOOD AND ALUMINUM SCREENS (WINDOWS & DOORS)

A. Wood screen

Remove all torn or rusted screening along with the wooden screen molding. New screening shall be 16 x 16 x 14 mesh, aluminum wire. Screening shall then be stretched taut and securely fastened to frame with metallic staples and screen molding. Replace split or broken wooden screen

mold, along with any broken framing as required. Broken joints to be doweled, glued, and clamped overnight. Metal "L" brackets are not allowed.

B. Aluminum screen

Remove existing screen material. New screens shall be of standard design and construction with aluminum cross rail and frame width of ¾" minimum, and thickness of 3/8" and wired with 18/16 mesh aluminum screen wire.

8.J. REMOVE WINDOW & CLOSE OPENING

Remove existing window as indicated in Bid Document. Close in opening with studding to match thickness of existing wall, 16" o.c., with plywood sheathing to match existing thickness. Finish interior and exterior to match existing surfaces. Prime and paint new surfaces.

8.K. REPUTTY WINDOWS/REPLACE VINYL GLAZING BEAD

1. Reputty:

Remove all dried, deteriorated, broken, and cracked sections of putty from windows. Sweep clean and back putty with glazing compound in strict adherence to manufacturer's instructions. Before glazing compound is applied, area shall be primed, and all glazing points secure. Windows to be reputtied prior to painting exterior final coat.

2. Vinyl glazing bead:

Seal window to frame with continuous bead of silicone caulk. Replace all deteriorated vinyl glazing bead with new bead properly trimmed to opening.

8.L. REPLACE SASH CORDS

Open window frame and remove existing sash weights. Re-cord with #8 sash cord. Replace weight, frame, sash and stop as required, to assure a smooth operating window. Dress window framing free of unsightly scarring caused by repair work. Clean surface prior to job completion, refinish to match existing. Some windows have an access opening located between the window stops.

8.M. WINDOW SASH LOCK

Furnish and install new brass-plated sash lock, securely and properly fastened to upper and lower sash to window.

Note: A salvaged lock may be used upon approval by the Rehab Office.

8.N. WINDOW SASH LIFT

Furnish and install new brass-plated sash lift, securely and properly fastened to the lower sash of the window.

Note: A salvaged lift may be used upon approval by the Rehab Office.

8.O. UNDERCUT DOOR

Remove and undercut door to allow a full swing without drag on floor surface or covering. Dress cut edge free of all tool marks. Re-mount door and adjust to a good working condition. Hinges and lockset shall be tightened if loose. Seal bottom of door before rehanging. If cutting a hollow core door, refer to Division 8.A.1.C.

8.P. HARDWARE

Shall be good residential quality and shall be suitable for use intended and installed as per manufacturer's printed instructions. Lock sets shall be Wiser, or Kwikset, or written approved equal. Window curtain rods shall be Kirsch or written approved equal. Hinges, pushes or pulls shall be National, Amrock, or Stanley.

8.Q. DOOR/WINDOW CASINGS

Furnish and install new casings as specified in Bid Document. Casings are to match those in the structure. All nails are to be set, holes to be filled, stained or painted.

Note: A salvage casing may be used upon approval by the Rehab Office.

8.R. WINDOW SILL/STOOL

Replace Window Sill/Stool: Remove and properly dispose of existing window sill/stool as specified in Bid Document. Ensure no damage is caused to other window members. Provide and install all new window sill/stool of matching dimension.

8.S. BASEMENT WINDOW, HEADER, JAMB, SILL

Remove all deteriorated jamb, sill and header parts where specified in Bid Document. Replacement materials to be pressure treated lumber and same size as those removed. Secure frame members to existing foundation and repair any defective wall area where replacement materials are to be secured. Installation shall be air tight. Caulk after installation.

8.T. BASEMENT EGRESS WINDOW

Install egress window in basement. Brand of window to be chosen by owner. Installation shall conform to the local building code, and shall include a window well. The window shall have a net clear openable area of 5.7 square feet with a minimum net clear openable height of 24", and a minimum net clear openable width of 20". It shall be installed with a finished sill height of not more than 44" above the floor. The window well retaining wall shall be constructed of material acceptable to the Rehab Office. The inside dimension of the window well shall extend 36" out from the foundation wall. It shall include 4" of crushed gravel in the bottom to help promote drainage. If the depth of the window well exceeds 30", an approved guardrail shall be installed along with a method of fire escape acceptable to the Rehab Office and Building Official.

8.U. NEW WOOD STORM AND SCREEN WINDOWS

New storm or screen windows shall be constructed to match windows on existing house as closely as possible. Clear pine or clear redwood of the proper dimension shall be used. Windows shall be primed with an oil based primer, and painted to match existing windows. All joints shall be properly doweled, and only exterior grade glue shall be used.

8.V. NEW ALUMINUM WINDOW SCREENS

Screens shall be of standard design and construction with aluminum cross rail and frame width of ¾" minimum, and thickness of 3/8" and wired with 18/16 mesh screen wire.

8.W. NEW MINI-BLINDS

Install new vinyl mini-blinds to all windows. Color to be creme (unless otherwise noted in work write-up). All blinds shall fit entire window opening and be securely mounted to manufacturer specifications.

8.X. BURGLAR BARS

Burglar bars are to be remove and not replaced if they interfere with rehab work.

8.Y. PULL DOWN ATTIC STAIR

Install a pre-fabricated pull down attic stair at location indicated on the Bid Document. Secure between joists (reframe as needed) and install as per manufacturers recommendation. Move all wiring and other obstructions to proper installation. Repair all affected areas to match adjacent surfaces. Install trim pieces, prime and paint to match existing. Installation shall result in a safe, operable stair capable of carrying the designed loads.

8.Z. REMOVE WINDOW/DOOR AND FINISH OPENING

Remove window/door at location indicated on the Bid Document. Frame opening and finish both sides of wall to match existing surfaces. Work shall include drywall installation including tape, bed, texture and paint. Exterior finish shall include sheathing, siding and paint to match existing. Insulate exterior wall to R-13.

DIVISION 9 - FINISHES (SUBJECT TO DIVISION 1)

9.A. GENERAL

The work covered by these specifications include furnishing all labor, materials, tools, and equipment required for installation of finishes as enumerated in the attached Bid Document.

9.B. MATERIALS

1. Stucco - to be factory prepared stucco as manufactured by U.S.G. or written approved equal.
2. Plaster - to be factory prepared plaster as manufactured by U.S.G. or written approved equal. (A and B above to be of type satisfactory for intended use.)
3. Water - clean and potable free of substances harmful to stucco.
4. Admixture - "Thorougard" by Standard Dry Wall Products or written approved equal.
5. Metal Lath - 3.4 lb. diamond mesh galvanized.
6. Casing bead - 24 ga. galv. expanded flange.
7. Expansion Joint - 24 ga. galv. expanded flange.
8. Outside Corners - #1. A. exp. corner bead.
9. M.R. Gypboard - shall be ½" moisture resistant gypboard as manufactured by Gold Bond, USG, or written approved equal.
10. Standard Gypboard - shall be ½" Gypboard as manufactured by Gold Bond, USG or written approved equal.
11. Rock Lath - to be as manufactured by USG, Gold Bond, or written approved equal.
12. Ceramic Tiles - to be manufactured by Monarch, American Olean Tile Company, or written approved equal.
13. Ceiling Tiles - to be 12" x 12", 24" x 24" or 24" x 48" (see Bid Document) mineral fiber type III, class 25, LR grade 1. White finish fissured texture, square edge as selected by Rehab Office.
14. Suspension System - to be exposed Tee Grid, semi-recessed Tee Grid, or concealed accessible grid system (see Bid Document) as manufactured by Conwed, Alcan, Armstrong or written approved equal. Where suspension system is exposed type, members are to have low-sheen satin white enamel finish.
15. Vinyl Sheet Flooring - to be .070" thick as manufactured by Armstrong, Congoleum, or written approved equal. Color to be selected by Rehab Office from samples submitted. Minimum 5 year warranty.
16. Vinyl Tile Flooring - to be .080 thick in gauge and 12" x 12", 9" x 9" in size and shall be as manufactured by Armstrong, Congoleum or written approved equal. Minimum 5 year warranty.
17. Composition Flooring - shall be .070" thick and shall be Congoleum Builder floor or written approved equal. Minimum 5 year warranty.
18. Rubber Sheet and/or Rubber Tile Flooring - to be as manufactured by Flexco, Division of Textile Rubber Co. or written approved equal. Rubber sheet and tile to be 3/32" thick.
19. Molded Rubber or Vinyl Base - to be four (4") inches high and to be as manufactured by Armstrong, Flexco or written approved equal.
20. Rubber or Vinyl Stair Treads - to be 1/8" gauge as manufactured by Blexco, Division of Textile Rubber Co. or written approved equal.
21. Paints - manufacturer Kelly-Moore, Sherwin Williams, Behr or written approved equal. To be of type and grade as recommended by the manufacturer for the kind of surface on which it is to be installed.

No lead-base paints are to be used.

22. Wall Coverings (Vinyl) - to be DuPont, Genon, Flex-wall, or written approved equal. Additional wall coverings of grass cloth and paper will be submitted for approval prior to use.

COST PER DOUBLE ROLL = \$18.00 TO \$20.00

23. Flashing must be high grade and rust resistant.
24. All carpeting for residences shall conform to HUD Bulletin No. UM44-D and shall individually meet the flammability requirements of the Department of Commerce Standard DOCFF1-70.
Nylon (continuous filament) pile yard fiber shall be a minimum of 27.9 oz./sq. yd., density of 4000.
Polyester (staple) pile yard fiber shall be a minimum of 27.9 oz./sq. yd., density 4000.
ALL CARPET SHALL BE CLEARLY MARKED AS CONFORMING TO HUD BULLETIN NO. UM44D.
ALL CARPET PAD SHALL BE A MINIMUM THICKNESS OF ½”.

9.C. LATH & STUCCO REPAIR

1. Where existing surfaces are to be patched, area shall be cleaned thoroughly and checked for sound condition. Install metal lath over areas that need support.
2. Dampen area to reduce absorption from plaster or stucco.
3. Apply scratch and brown coats in portions as recommended by manufacturer.
4. Apply finish coat of factory prepared material, adding water only, and bring plaster to a thickness flush with surrounding surface.
5. Protect adjacent finished surfaces by covering with plastic or tarps. Cover floors with building paper. Upon completion of work, remove all temporary coverings and clean smears caused by plastering.
6. Provide a good rigid, slack free backing, taking extra care in developing at least a 1” lap at metal edges, securely wired together and staggered.
7. All materials must be clean and free from any oil or foreign matter.
8. Where existing surfaces are to be patched, inspect all areas of building for cracked, loose, and/or poor bonded stucco. Remove any such stucco, replace and/or secure lath as required to conform with code.
9. If existing stucco is painted (other than with a cement base paint), such surfaces must be wire brushed or sandblasted, depending on the existing textures, and refinished with new cement base paint or dash coat.
10. A good bonding agent and an air temperature of 40° Fahrenheit or above must be present before any stucco application may be attempted.
11. When nailing gypsum lath, use 12 or 13 gauge lathing nails having approximate 3/8” heads, with nails spaced not more than three nails to each bearing on the vertical, and four nails to each bearing on the ceiling. Length of nail shall be that which will provide at least 1” penetration in horizontal supports, and ¾” penetration into vertical supports. Metal lath for corner reinforcing shall be provided. The maximum gap without reinforcing not to exceed ½”.

9.D. DRYWALL (GYPSUM BOARD)

Gypsum board, when applied to ceiling framing shall be ½” thick. Use Goldbond, USG or written approved equal. When applied as a ceiling overlay it may be either 3/8” or ½” thick, as specified in the bid document. Gypsum board, when applied to wall framing shall be ½” minimum thickness. When applied as a wall overlay it may be either ½” or 3/8”, as specified in the bid document. Type “X” fire rated shall be used when required by the building code. Type “M” moisture resistant gypsum board shall be used around all bathtubs, unless otherwise specified in the bid document.

All gypsum board shall have tapered or beveled edges.

Screws shall be driven with their shanks perpendicular to face of board as follows:

SIZE	CEILING	SIDEWALLS
3/8” & ½”	7” to 8” o.c.	1¼” GWB Annular ring flat head ¼” diameter
5/8”	6” to 7” o.c.	1/7/8” GWB Annular ring flathead ¼” diameter

All joints and corners shall be taped. Sand and feather edges after each coat. Inside corners shall be reinforced with tape. Outside corners shall be protected by metal molding or metal corner reinforcement.

All tape and metal accessories shall be imbedded in thin layer of joint cement.

Cement three (3) coats over all nails and tape. Sand and feather edges after each coat.

INSTALL WATER RESISTANT GYPSUM BOARD IN TUB OR SHOWER AREA ONLY. Seal edge at butt joint to tub.

All new drywall shall be primed and painted in accordance with Division 9.N.

1. REMOVAL OF EXISTING WALL/CEILING SURFACES

Remove all surfaces as indicated on Bid Document. Removal shall be without damage to adjacent existing work. Contractor shall properly dispose of all surfaces that are removed.

2. REPAIR EXISTING DRYWALL

Cut out all damaged drywall to the nearest appropriate studs. If necessary, install backing for horizontal joints. Install drywall patch of like thickness to the wall with appropriate drywall nails or screws. Tape, finish, and texture patched area to match wall. Spot prime patched area to be ready for paint.

9.E. CERAMIC TILE REPAIR

1. Ceramic tile repairs are to be made to all walls and floors where tiles are loose, cracked, or missing. Repairs shall be made with near matching materials, or where not available by removal of all portions of the defective tile and replacing with a type readily available.

2. Remove all deteriorated joints and regrout with special grout patching mix.

3. Replace broken or cracked tile accessories such as grab bars, soap dishes, towel bars, tumbler holders, with suitable accessories of close matching design. Anchor with mortar set, organic adhesive, or anchoring device that will firmly attach accessory to wall.

4. Caulk all edges in contact with adjacent surfaces (remove old caulk). Color to match adjacent surfaces as close as possible.

9.F. PLASTER REPAIR

Remove all loose, spalling, or damaged plaster and lathing materials. At areas of loose plaster and exposed wood lath, carefully cut out damaged or loose pieces of wood lath without damage to existing sound areas of lath and plaster. In damaged areas install new 2.5 lb. wire lath anchoring firmly to existing sound lath and framing to provide backing for plaster repair. Apply plaster in three (3) coats, scratch and brown with white coat finish, allowing at least 24 hours curing between brown and finish coat.

Provide backing at holes and large cracks prior to filling and finishing. Cracks are to be repaired by widening existing cracks to form a "V" groove. Use patching plaster at crack repairs when appropriate. Spackle minor cracks and fissures as required to provide surface ready for painting.

9.G. TUB WALL KIT/TUB SURROUND

1. Tub wall kit shall be 3 piece or 1 piece plastic and applied to wall surface in manner as prescribed by manufacturer. (Color and style to be chosen by Owner).

2. Preparation of all existing surfaces receiving tub wall kit is the responsibility of the contractor. Tub wall kit shall only be applied over new greenrock. Remove all materials down to stud walls. Furring strips shall be installed on walls if and where required. Bracing shall be installed as per Division 11.A.3. where grab bar installation is called for in the Bid Document. Install new greenrock as per manufacturer's recommendations.

9.H. CERAMIC WALL TILE

Ceramic tile shall be standard grade 4¼" x 4¼". All tile shall be set true, level and plumb. Standard wall tile adhesive shall be used unless otherwise specified. Wall surface shall be free of defects before applying tile, and surface preparation shall conform to manufacturer's specifications. All tile around bathtubs or shower stalls shall be installed over ½" light weight concrete board or greenrock.

9.I. PLASTIC COVERED HARD BOARD

All hard board shall be installed as recommended by manufacturer. Moldings, edges, fillers, fasteners, and adhesive shall be as recommended by manufacturer. Molding strips for use between panels shall be of same material, color and design as panel.

Where wood molding strips are installed, they shall be either painted (color to be chosen by Rehab Office) or stained and/or varnished.

Pattern, color, design to be chosen by Rehab Office.

9.J. ACOUSTICAL SUSPENDED CEILINGS

Acoustical suspended ceilings shall be installed level and true in complete accordance with manufacturer's instruction. Use Armstrong or written approved equal. Hanger wires to be minimum 12 ga. galvanized soft annealed steel wire spaced as required by manufacturer's instructions with lag hangers only. Layout of ceiling to be started at center of room to provide like sizes at room perimeter for uniform appearance and balance. Ceiling panels to be 2' x 2' or 2' x 4". Installation in high moisture areas shall be scrubbable vinyl coated type. Finished ceiling height, installation and materials shall conform to code. Fill any holes in plaster with sheetrock or plaster before installing suspended ceiling. Remove all loose plaster.

9.K. FURRED CEILING WITH ACOUSTICAL CEILING TILE

Ceilings shall be furred down with 1" x 3" wood furring strips spaced and leveled uniformly to receive new acoustical tile ceiling. Ceiling to be trimmed at perimeter after tile installation. Layout for installation of ceiling acoustical tiles shall be started at center line of room from both axis of room walls. Ceiling grids and/or furring strips shall be laid out to conform to size of tile specified. Tiles shall be installed square and true as required and recommended by tile manufacturer. Rehab Office to select tile finish from samples submitted by contractor.

Repairs to existing acoustical tile ceilings and suspension systems are to be made using like and matching material.

9.L. HARD SURFACE FLOOR COVERINGS

1. Installation:

MINIMUM 5 YEAR WARRANTY ON ALL HARD SURFACE FLOOR COVERINGS.

Sheet vinyl shall meet minimum FHA requirements, in 6' or 12' wide sheets, as manufactured by Armstrong, Congoleum or written approved equal manufacturer.

Vinyl asphalt tile shall meet minimum FHA requirements and be 12" x 12" square tile as manufactured by Armstrong, Congoleum or written approved equal manufacturer (1/8" composition tile). Adhesive shall be waterproof type as recommended by manufacturer.

Vinyl base shall be 4" high, .085" gauge with curved top and cove base. Furnish with pre-formed inside and outside corners. Install underlayment grade plywood or equal underlayment. Fill minor voids with patching compound recommended by manufacturer.

Final job shall have smooth and even finished surfaces, tightly joined and accurately formed. All work shall be done in accordance with manufacturer's installation directions. Maintain a temperature of 65° Fahrenheit during installation and for a minimum of 24 hours after installation. All surfaces must be clean and dry and free of excess adhesive. Clean with cleaner as recommended by floor covering manufacturer.

Undercut doors as needed (maximum gap shall be 3/4").

When necessary for proper installation, all existing floor covering and underlayment shall be removed before installation of new underlayment and floor covering, or as indicated in Bid Documents.

When existing quarter round, shoe molding or base are removed to install floor covering, new of the same style shall be installed and have same finish.

When installed over concrete, all old adhesive shall be removed, and floor prepared so there is a smooth and sound surface. When cutback adhesive was used for old floor, manufacturer's recommendations shall be followed for installation of new flooring.

If quarter round, shoe molding or base are missing before installation, then new of the same style shall be installed. Vinyl base may be installed in lieu of missing base with the written approval of the Rehab office. When replacing bathroom floor, the contractor shall include in the cost of the new floor the cost to pull and reinstall all plumbing fixtures necessary to install the new floor, except when the Bid Document calls for replacement or pulling and resetting of plumbing fixtures as a separate line item. All floor covering to be installed by trained and competent workmen.

2. **FLOOR TILE REPAIR** - Furnish all labor and materials necessary to repair existing floor tile. All surfaces shall be clean, dry, and free from excessive adhesive. Surfaces shall be smooth and straight.

3. **FLOOR CLEANING** - Furnish and install all labor and materials necessary to clean floor, base, and/or vinyl base. Cleaning products shall not be abrasive as to damage surface, or hazardous to the applicator or residents. Surfaces shall be clean of grease, dirt, and residue.

9.M. CARPETING

1. INSTALLATION

The contractor shall install carpet as required under other articles of these specifications and as hereinafter specified. Work shall include furnishing and installing all necessary installation accessories, irrespective of whether they are mentioned herein or not, but all as necessary to meet the actual installation conditions of each location in which carpet is required so as to produce a first class workmanlike secure installation in the opinion of the Rehab Office.

General broom cleaning of surfaces which support the carpeting will be done by General Contractor. Before starting any carpeting operations in any one location, the Carpet Subcontractor shall remove from the surfaces supporting the carpeting all dust, dirt, debris, oil, grease, or other substances which may in any manner affect the satisfactory execution and serviceability of the carpeting. Debris resulting from the installation operations shall be promptly removed from the site and none shall be left under any carpet.

Carpet shall be installed only after all other work in a given location has been completed. Carpets shall be laid with the seams running in the same direction, or as directed in the field by the Inspector. All seams shall be made so that pile of adjoining pieces has the same directional run, and so as to be practically invisible in the opinion of the Rehab Officer. Each run of carpet located between the adjoining parallel seams shall be a single piece of carpet without any piecing out.

All doors shall be cut off where necessary to clear the new carpet.

Carpet shall be carefully stretched to a uniform tautness until perfectly smooth and even as well as free from ripples, sags, or buckles.

A decorative flat bar (color choice by owner) shall be installed to protect carpet/vinyl intersections at the direction of the Rehab Office.

2. PROTECTION & CLEANING

The contractor shall take all necessary precautions to protect the existing construction and finishes of the building against any damage due to the carpeting operations. The contractor will be responsible for the cost of such damages, which shall be repaired to the satisfaction of the Rehab Office.

The contractor shall take all necessary security measures to protect the stored and installed items of carpeting against theft or damage until accepted by Rehab Office.

After completion of carpeting operations in an area, contractor shall remove all waste and surplus items of carpeting. Salvage, except for unused rolls, shall be the property of the Rehab Office, if wanted.

9.N. PAINTING/LEAD-BASED PAINT HAZARD REDUCTION

1. General

Unless specifically noted elsewhere in the bid document, all repairs to interior and exterior surfaces shall be included in the bid for painting unless specifically noted in the Bid Document. All new drywall surfaces must be thoroughly clean, dry, and completely cured. New surfaces shall also be primed. Paint material shall be applied in a consistency adequate enough to give thorough and acceptable coverage. All materials shall be completely free of all lead or lead compounds.

2. Materials

All materials shall be of best quality (see Division 9.B.21). **Deliver all materials in original containers bearing manufacturer's labels.**

Interior Paint: Walls: Kelly-Moore 1650 Acry-Plex Semi-Gloss Enamel or written approved equal.
Trim: Kelly-Moore 1685 Dura-Poxy Acrylic Semi-Gloss Enamel or written approved equal.
Cabinets: Kelly-Moore 1680 Dura-Poxy High Gloss Enamel or written approved equal.

Exterior Paint: Kelly-Moore 1245 Acry-Velvet Acrylic Low Sheen or written approved equal.

Exterior/Interior Floor Paint: Kelly-Moore 1300 Industrial maintenance Alkyd Floor Enamel or written approved equal.

Stain: Kelly-Moore 2152 Stainz-Rite interior wiping stain or written approved equal.

Varnish: Kelly-Moore 21 Kel-Thane Polyurethane Gloss Varnish or written approved equal.

Follow manufacturer's label instructions completely.

3. Interior Work

ALL WALL AND CEILING SURFACES, AT FINAL, SHALL HAVE A UNIFORM TEXTURE. IF EXISTING SURFACES ARE NOT UNIFORM, A LIGHT COAT OF TEXTURE SHALL BE APPLIED TO ALL WALL AND CEILING SURFACES.

A. Keep premises as clean and orderly as possible, and well ventilated. Remove waste daily and at completion of job. Protect all adjoining surfaces by covering or moving.

B. Wash all surfaces with a solution of trisodium phosphate (or equal) in water. Prior to painting, all surfaces shall be free of dirt and grease.

C. Sand enamels and varnishes with 220 or finer sandpaper between coats.

D. Coat all knots, gaps, streaks, or stains, with one (1) coat of shellac based primer or other approved sealer before painting.

E. Putty nail holes, cracks and blemishes after primer coat has been applied, but before application of finish coats.

F. All coats are to be thoroughly dry before applying succeeding coats.

G. Where painting is required on concrete and masonry surfaces, it shall be done on a clean, dust and scale free surface, (wire brushed) and in full compliance with specifications of manufacturer of finishing material.

H. UNLESS OTHER WISE SPECIFIED, ALL INTERIOR WALL SURFACES SHALL BE SEMI-GLOSS.

I. CABINETS SHALL BE GLOSS ENAMEL.

J. Existing paneling shall be painted unless otherwise noted.

K. Interior trim and doors shall be painted in a contrasting color.

L. Spackle and spot prime walls as necessary.

M. All interior closets and storage areas shall be painted with interior painting unless otherwise noted.

4. Exterior Work

A. Wash off heavy dirt accumulations with water and tri-sodium phosphate.

B. Clean up and remove all debris daily and at completion.

C. Allow solvent-thinned paints to dry 24 hours or longer between coats.

D. Coat all knots, gaps, streaks, or stains, with one (1) coat shellac-based primer or other approved sealer before painting.

- E. Putty nail holes, cracks, and blemishes after primer coat has been applied, but before application of finish coats.
- F. Where storm windows exist, the contractor shall remove all storm windows, prepare surface, back putty as required, replace broken glass, paint main window and trim, and reinstall storm window.
- G. Remove scale or rust from metal surfaces by wire brushing, scraping, or sandblasting, down to bright metal, and prime as soon as possible with rust preventative paint. Remove oil and grease with mineral spirits.
- H. Old painted surfaces on wood shall be wire brushed or sandpapered, and where scaling, scraped or loose paint removed. Hard, glossy, and non-chalking surfaces should be dulled, and surfaces washed or rinsed.
- I. Exterior painting is not to be done during or immediately following foggy, rainy or frosty weather, OR WHEN THE TEMPERATURE IS LIKELY TO DROP BELOW 40° FAHRENHEIT. Avoid painting surfaces while they are exposed to the hot sun.
- J. All coats are to be thoroughly dry before applying succeeding coats in accordance with manufacturer's recommendations.
- K. Where painting is required on concrete and masonry surfaces, it shall be done on a clean, dust and scale free surface (wire brushed) and in full compliance with specifications of manufacturer of finishing material.
- L. Unless otherwise set forth in the Bid Document, all painting shall include any number of coats needed to achieve good cover and hide.
- M. ALL EXTERIOR PAINT SHALL BE SEMI-GLOSS. PROVIDE TWO COLORS (CHOICE BY OWNER).

5. Paint Porch Floor

Scrape all loose paint from porch floor. Sand to feather edges. Sweep area free of dirt, dust and debris.

Paint with two (2) coats of quality oil-based exterior floor and deck enamel. Use Kelly-Moore 1300 or written approved equal.

First coat to be thinned according to manufacturer's directions. Second coat to be applied 24 hours later, or longer, from first application unless otherwise specified by paint manufacturer.

6. Paint Fence

Scrape all loose paint, remove dirt and/or oxidized paint. Dust clean. Spot prime all bare spots with primer as recommended by finish paint manufacturer. Allow to dry as per manufacturer's directions. Paint fence, including posts, stringers, pickets, etc., with one (1) coat primer and one (1) finish coat of latex exterior paint (Kelly-Moore 1245 or written approved equal). All paint to be brush applied unless prior approval has been received in writing from the Rehab Office to use another method.

9.O. WALLPAPER REMOVAL

Remove wallpaper from walls and/or ceilings using a commercial steamer or approved chemical stripper at discretion of Contractor. Protect floors and other surfaces from water or dye damage. Room to be vacated of all furniture and movable objects. Surfaces are to be stripped to drywall. Wash walls with a solution of trisodium phosphate in warm water to remove all paste residue. Remove all waste from area at the close of each work day, and upon completion of job. Allow area to dry thoroughly, and patch plaster using Bondex or equal prepared patching plaster, according to manufacturer's directions. If surfaces are to be painted, allow patch to cure, and seal with an approved sealer.

9.P. WALLPAPER INSTALLATION

Paper walls and/or ceilings as follows:

- 1. Surface Preparation

A. If Plaster:

Plaster to be thoroughly dry, neutralized with zinc sulfate solution if necessary. Coat wall with sizing.

B. If Gypsum Board (Drywall):

Seal entire surface of drywall with coat of latex, oil, or varnish base sealer.

C. If Plywood:

Apply a smooth wall liner of blank wallpaper stock or smooth ¾ pound deadening felt to prevent grain from showing through wallpaper.

2. Wallpaper colors shall be sunfast and waterfast.
3. WALLPAPER TYPE SHALL BE AS SPECIFIED IN THE BID DOCUMENT.
4. All walls shall be repaired as required, prior to installation of wall covering.
5. Adhesive for wall fabric shall be that recommended by fabric manufacturer.

9.Q. REPAIR EXISTING CEILING TILE

Furnish and install all labor and materials necessary to repair existing ceiling. Ceiling surface shall be plumb and level with no objectionable marks. All other surfaces shall be protected during the repair.

9.R. PANELING

Furnish and install ¼" paneling. Masonite Royalcote Hardboard or written approved equal.

Furnish all appropriate molding. Moldings shall have wood veneer facings stained to match paneling. All work shall conform to all applicable codes.

9.S. REFINISH

Furnish and install all labor and materials necessary to refinish designated object. Carefully remove any nails as not to cause damage. Strip all paint or varnish. Sand thoroughly to remove all blemishes, then wipe clean. Hand wipe a stain, if one is needed. Apply two coats of premium quality varnish (polyurethane). All nail holes to be filled with stain-based wood putty and coats to be sanded with 00 sandpaper between coats.

9.T. STRIP PAINT

Paint shall be stripped in a safe manner. Care shall be taken that adjoining surfaces are covered to avoid damage. Chemical stripper may be used only if manufacturer's directions are strictly followed, and paint residue properly disposed of. Electric heat guns may be used with care, and only if a fire extinguisher is on site. In no case will torches be allowed.

9.U. ATTIC ACCESS

1. Attic Scuttle Hole:

Install new or repair existing attic scuttle hole to include new trim materials (to match existing/finished) installed to securely support new plywood (CD/sealed and painted) scuttle cover.

9.V. LEAD-BASED PAINT (LBP) HAZARD REDUCTION

1. APPLICABLE DOCUMENTS/ REFERENCES

A. Safety Regulations. The following are some applicable Federal regulations:

Occupational Safety and Health Administration
29 CFR 1910 General Industry Standards
29 CFR 1910.1025 Lead Standard for General Industry
29 CFR 1910.134 Respiratory Protection
29 CFR 1910.1200 Hazard Communication
29 CFR 1910.245 Specifications for Accident Prevention (Sign and Tags)
29 CFR 1926 Construction Industry Standards
29 CFR 1926.62 Construction Industry Lead Standard

Department of Housing and Urban Development
24 CFR Parts 35, 36, 37 HUD Lead-base Paint Regulations
HUD Guidelines for the Evaluation and Control of Lead-base Paint Hazards in Housing (Referred to in this document as the HUD Guidelines).

- B. Codes and Standards. All work shall conform to the standards set by applicable federal, state and local laws, regulations, ordinances, and guidelines in such form in which they exist at the time of the work on the contract and as may be required by subsequent regulations including the following:

ASTM - American Society for Testing Materials.

ASTM D3559-97 Standard Test Methods for Measuring Adhesion by Tape

ASTM D4541-95e1 Standard Test Method for Pull-Off Strength of Coatings Using Portable Adhesion Testers

ANSI - American National Standards Institute.

ANSI Z288.2- 8 Practices for Respiratory Protection

ANSI Z9.2 1979 Fundamentals Governing the Design and Operation of Local Exhaust Systems.

ANSI E1795-97 Standard Specification for Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings

ANSI E1796-97 Standard Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings

ANSI E1797-97 Standard Specification for Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings

U. L. - Underwriters Laboratories, Inc.

2. PERFORMANCE OF WORK

A. Work of the Lead Hazard Control Contractor (LHC Contractor):

The LHC Contractor to perform the work detailed in the Work Write-Up shall be a LHC Contractor licensed to perform lead hazard control.

1. All work performed by the LHC Contractor shall be in accordance with all applicable federal, state and local regulations, the specifications and drawings and the Work Write-Up.
2. All lead hazard control workers and supervisors shall be licensed in accordance with applicable federal and state and local regulations.
3. The LHC Contractor shall incur the cost of all fines resulting from regulatory non-compliance as issued by federal, state, and local agencies.
4. LHC Contractor shall incur the cost of all work requirements mandated by federal, state, and local agencies as a result of regulatory noncompliance or negligence.
5. The LHC Contractor shall allow the work of this contract to be inspected if required by local, state, federal and any other authorities having jurisdiction over such work. LHC Contractor shall immediately notify Owner and the Rehab Office and shall maintain written evidence of such inspection for review by the Rehab Office and the Owner.

6. The LHC Contractor shall immediately notify the Owner and the Rehab Office of the delivery of all permits, license, certificates of inspection, of approval, of occupancy, etc., and any other such instruments required under codes by authorities having jurisdiction, regardless of to whom issued, and shall cause them to be displayed to the Owner and the Rehab Office for verification and recording.
7. The LHC Contractor shall obtain the approval of the local fire department, if necessary, for all finish materials, and the use of lead hazard control work area isolation materials.

B. Work of the General Contractor:

All other work described in the Work Write-Up shall be performed according to applicable codes and standards, federal, state and local regulations, the General Specifications and any drawings provided.

3. USE OF THE CONTRACT DOCUMENTS

A. Work Write-Up

1. The scope of work for each project is detailed in the Work Write-Up. It shall be incumbent upon the LHC Contractor to visit the site and determine existing conditions and what will be required to accomplish the Work intended by the Contract Documents. No increase in the Contract Sum will be permitted as a result of the Contractor's failure to accomplish any or all of the work items detailed in the Work Write-Up.
2. Contract Documents: All work shall comply with the Contract Documents and with all applicable codes, laws, regulations, and ordinances wherever applicable. The most stringent of all the foregoing shall govern.

B. Drawings and Specifications: It is not intended that the Drawings, Specifications and Work Write-Up show every detail of the Work, but the LHC Contractor shall be required to furnish, within the Contract Sum, all material and labor necessary for the completion of the Work in accordance with the intent of the Drawings, Specifications and Work Write-Up.

C. Ambiguity: In case of ambiguity between any of the Contract Documents, the better quality and/or the greater number will be required.

D. Intent of Drawings: The Drawings are to be understood as diagrammatic and are not intended to be rigid in details where such detail may be in conflict with the recommendations of the manufacturers of equipment or materials to be installed or the requirements of the Work Write-Up. The Work of this Contract includes making such modifications as may be necessary, subject to approval by the Rehab Office and the Owner.

E. Trade Practices: All items not specifically mentioned in the Work Write-Up, General Specifications or noted in any Drawings but implied by trade practices to form part of the complete installation, shall be included.

4. EXAMINATION OF THE SITE

A. Examination of work:

1. It is understood that the LHC Contractor has examined the Site and made his/her own estimates of the facilities and difficulties attending the execution of the Work, and has based his/her price thereon.
2. Except for unforeseeable concealed conditions as determined by the Rehab Office, the LHC Contractor shall make no claim for additional cost due to the existing conditions at the site, which, in the opinion of the Rehab Office, with reasonable diligence could have been ascertained by the LHC Contractor in his/her examination of the Site

5. RUBBISH AND WASTE MATERIAL

A. All rubbish and waste material from the Work shall be neatly stacked or kept in suitable containers and removed regularly from the premises. The premises shall be kept clean and in an orderly condition at all times to the reasonable satisfaction of the Owner and the Rehab Office.

- B. Frequency of removal shall be made satisfactory to the Rehab Office and the Owner. At no time shall waste be removed from the site without the following documentation submitted for approval by the Rehab Office (See disposal details in Section 43.):
 - 1. Waste manifest, as waste is generated and contained for disposal.
 - 2. CLP Testing results, as required by the specification.
 - 3. Clerk sign-off of a copy of the manifest.
- 6. DELIVERY AND STORAGE
 - A. Materials for all trades shall be delivered to the job site in manufacturer's original unopened containers with manufacturer's brand name clearly marked thereon.
 - B. LHC Contractor shall handle and store materials carefully in accordance with manufacturer's recommendations and protect them from moisture and extremes of heat and cold.
- 7. CLOSE-OUT AND PUNCHLIST
 - A. The General Contractor shall carefully check his/her own work and that of LHC Contractor as the work is being performed. Unsatisfactory work shall be corrected immediately.
 - B. When the LHC Contractor determines that the work is complete he/she shall request a final inspection from the Rehab Office.
 - C. If upon completion of the final inspection items are found to be incomplete or in need of correction, a punchlist shall be prepared.
 - D. When the punchlist has been prepared, the LHC Contractor will arrange a meeting with the Owner and the Rehab Office to identify and explain all punchlist items and answer questions on the work that must be done before final acceptance.
 - E. If the LHC Contractor gives notice that the punchlist items are complete, the Rehab Office shall inspect that portion of the work, and, if the items are found to be satisfactorily completed, advise the Contractor accordingly.
 - F. The LHC Contractor shall correct all punchlist items or shall cause the correction of the punchlist items within a time frame to be established when the punchlist is made. The time frame for the completion of the punchlist shall not exceed the completion date phase of the Contract as agreed to in the project scheduling. Should the punchlist not be completed within the specified time frame, the Owner may invoke the rights given under the rehabilitation contract.
 - G. The Rehab Office shall not be expected to inspect any building more than once to inspect for the preparation of the punchlist items. If the Rehab Office discovers fifteen or more distinct deficiencies during such inspections, the Rehab Office may charge a fee for all subsequent inspections until all deficiencies are corrected to the satisfaction of the Rehab Office and the Owner.
 - H. All punchlist items shall be complete prior to requesting a second final inspection. If deficient or incomplete items are found during a second final inspection, then the Owner may invoke the rights given under the rehabilitation contract.
 - I. It is the responsibility of the LHC Contractor to request all lead hazard control inspections required by federal, state or local requirements.
- 8. CLEANING
 - A. Throughout the construction period, maintain the building and site free of rubbish, debris, surplus materials, and other items not required for the construction of the Work. Remove such materials from the site regularly to prevent accumulations. Remove all construction debris from work areas, and remove all hazardous items as required by the most current federal, state and local regulations and the requirements of the specifications. In areas where finish work is being conducted, remove dust, dirt and other matter as required to provide safe and proper working conditions.
 - B. Final Site Cleaning - At the time of the final inspection, all materials, surfaces, and finishes shall be completely clean to the satisfaction of the Owner and the Rehab Office.

- C. Cleaning activities required for lead hazard control, and selective demolition shall be performed in accordance with the most current federal, state and local regulations and these specifications in order to pass lead dust clearance levels described in Section 36.i.

9. PRODUCTS

A. GENERAL

1. Provide and maintain all services, materials, equipment and labor required for the Work of this Section.
2. Comply with all applicable requirements of the Specifications for materials and assemblies required for Work of this Section.
3. Construction and materials required for the Work of this Section and not provided for in the Specifications shall be made acceptable to the Owner and Rehab Office.
4. Remove from the site all materials and supplies provided in this Section when no longer required.
5. If requested by the Owner or the Rehab Office, submit Record Drawings or Product Data, as applicable, for products used in the work of this Section.

10. DEFINITIONS

- A. Abatement: any set of measures designed to permanently eliminate LBP or LBP hazards (see definition of “permanent”). Abatement includes:
 1. The removal of LBP and dust-lead hazards, the permanent enclosure or encapsulation of LBP, the replacement of components or fixtures painted with LBP, 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.
 3. Abatement shall also include occupant protection and safe work practices.
- B. Abatement Area: the exterior of the building or an area isolated from the building interior by containment.
- C. Accessible Surface: any surface that is below five (5) feet in height from the floor or ground or is exposed in such a way that a child can come in contact with the surface.
- D. Bare soil: soil or sand not covered by grass, sod, other live ground covers, wood chips, gravel, artificial turf, or similar covering.
- E. Biological Monitoring: the analysis of a person’s blood to determine the level of lead contamination in the body. Biological monitoring for lead hazard reduction work includes blood sampling and analysis for lead and zinc protoporphyrin levels.
- F. Certified: licensed or certified to perform such activities as risk assessment, LBP inspection, or lead hazard control supervision, either by a State or Indian tribe with a LBP certification program authorized by the Environmental Protection Agency (EPA), or by the EPA, in accordance with 40 CFR part 745, subparts L or Q.
- G. Change Room: The area of a worker decontamination facility used for removing protective equipment prior to entering the clean room.
- H. Chewable surface: an interior or exterior surface painted with LBP 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.
- I. Clean Room: The area of a worker decontamination facility used for donning protective equipment and storing street clothes.
- J. Clearance examination: an activity conducted following LBP 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 24 CFR Part 35, 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 § 35.1320.

- K. Code Enforcement Agency: the State Lead Poisoning Prevention Program or its agent, or the local board of health or other agency responsible for enforcing the State Sanitary Code or sections thereof.
- L. Commissioner: the Commissioner of Public Health
- M. Common Area: 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.
- N. Component: 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.
- O. Composite: 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.
- P. Consultant: Shall refer to the Environmental Consultant, and its designated, authorized representatives.
- Q. Containment: the physical measures taken to ensure that dust and debris created or released during LBP hazard reduction are not spread, blown or tracked from inside to outside of the worksite.
- R. Decontamination of Personnel: Shall include, at a minimum, HEPA vacuuming of disposable personal protective clothing according to the provisions in 29 CFR 1926.62.
- S. Decontamination of Work Areas: Shall be as specified in Section 26.
- T. Defective Surface: peeling, flaking, chalking, scaling, or chipping paint; or, paint over crumbling, cracking, or falling plaster, or plaster with holes in it; paint over a defective or deteriorating substrate; paint that is separating from the substrate; and paint that is damaged in any manner such that a child can be exposed to the paint from the damaged area.
- U. Deteriorated paint: 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.
- V. Dry sanding: sanding without moisture and includes both hand and machine sanding.
- W. Dust-lead hazard: surface dust that contains a dust-lead loading (area concentration of lead) at or exceeding the levels promulgated by the EPA pursuant to Section 403 of the Toxic Substances Control Act or, if such levels are not in effect, the standards in 24 CFR § 35.1320.
- X. Dwelling unit: 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.
- Y. Employee: Any person employed or hired by an employer in any lawful employment.
- Z. Employer: Any person, firm, corporation, partnership, association, or other entity engaged in a business or providing services, including the State and any of its political subdivisions, or any person acting in the direct interest of any of the foregoing in relation to any employee or place of employment.
- AA. Encapsulation: the application of a covering or coating that acts as a barrier between the LBP 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”). See Section 49 for specific performance requirements for encapsulants.
- BB. Enclosure: the use of rigid, durable construction materials that are mechanically fastened to the substrate in order to act as a barrier between LBP and the environment. Enclosure may be used as a method of abatement if it is designed to be permanent (see definition of “permanent”). See Section 50.
- CC. Environmental intervention blood lead level: a confirmed concentration of lead in whole blood equal to or greater than 20 ug/dl (micrograms of lead per deciliter) for a single test or 15–19 ug/dl in two tests taken at least 3 months apart.
- DD. Entity: any person, partnership, firm, association, corporation, sole proprietorship, or any other business concern, state or local government agency or political subdivision or authority thereof, or any religious, social, or union organization, whether operated for profit or otherwise.
- EE. Evaluation: a risk assessment, a lead hazard screen, a LBP inspection, paint testing, or a combination of these to determine the presence of LBP hazards or LBP.
- FF. Expected to reside: 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.
- GG. Federal agency: 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, The Department of Housing and Urban Development (HUD), Environmental Protection Agency (EPA), 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.
- HH. Friction surface: an interior or exterior surface that is subject to abrasion or friction, including, but not limited to, certain window, floor, and stair surfaces.
- II. g: = gram: mg = milligram (thousandth of a gram): ug = microgram (millionth of a gram).
- JJ. General Contractor: Shall refer to the contractor responsible for coordination of all filed sub-bids and general construction.
- KK. Hazardous Level of Lead for Waste Disposal: Is 5.0 parts per million (ppm) as defined by RCRA Toxicity Characteristic Leachate Procedure (TCLP) or other requirement set by local or state authorities.
- LL. Hazard reduction: measures designed to reduce or eliminate human exposure to LBP hazards through methods including interim controls or abatement or a combination of the two.
- MM. HEPA vacuum: 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.
- NN. HUD: the United States Department of Housing and Urban Development.
- OO. High Efficiency Particulate Air (HEPA) Filter: a type of filtering system capable of filtering out particles of 0.3 microns or greater diameter from a body of air at 99.97% efficiency or greater.
- PP. High Phosphate Detergent: detergent that contains at least five percent (5%) tri-sodium phosphate (TSP) or other equally effective cleaning agent.
- QQ. Intact Surface: a defect-free surface with no loose, peeling, chipping, chalking or flaking paint. Painted surfaces must be free from crumbling, cracking, or falling plaster and must not have holes in them. Intact surfaces are not damaged in any way.
- RR. Interim controls: a set of measures designed to reduce temporarily human exposure or likely exposure to LBP hazards. Interim controls include, but are not limited to, repairs, painting, temporary

- containment, specialized cleaning, clearance, ongoing LBP maintenance activities, and the establishment and operation of management and resident education programs.
- SS. Interior windowsill: 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 windowsill is sometimes referred to as the window stool.
- TT. Lead-base: Refers to paints, glazes, and other surface coverings containing a toxic level of lead.
- UU. Lead-based Paint (LBP): 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.
- VV. LBP hazard: any condition that causes exposure to lead from dust-lead hazards, soil-lead hazards, or LBP that is deteriorated or present in chewable surfaces, friction surfaces, or impact surfaces, and that would result in adverse human health effects.
- WW. LBP inspection: a surface-by-surface investigation to determine the presence of LBP and the provision of a report explaining the results of the investigation.
- XX. Lead Hazard Control Contractor (LHC): Shall refer to the contractor responsible for coordination of all lead hazard control activities.
- YY. Lead hazard screen: 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).
- ZZ. Occupant: a person who inhabits a dwelling unit.
- AAA. Owner: Shall refer to the Owner of the structure on which the work detailed in the Work Write-Up will be performed or his/her designated, authorized representatives.
- BBB. Paint stabilization: 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.
- CCC. Paint testing: the process of determining, by a certified LBP inspector or risk assessor, the presence or the absence of LBP on deteriorated paint surfaces or painted surfaces to be disturbed or replaced.
- DDD. Paint Removal: a method of abatement that permanently eliminates LBP from surfaces.
- EEE. Painted surface to be disturbed: 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 LBP hazard by generating dust, fumes, or paint chips.
- FFF. Permanent: an expected design life of at least 20 years.
- GGG. Play area: 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.
- HHH. Punchlist: A list of deficient items prepared by the Rehab Office during a final inspection.
- III. Lead Hazard Control contractor (LHC Contractor): A contractor capable of providing a properly trained and equipped work force for lead hazard control work. All workers/employees to perform lead hazard control activities shall have successfully completed a minimum of 24 hours of training in the potential hazards of abating LBP. The LHC Contractor must possess the appropriate license or certification from the State or local government.
- JJJ. Reevaluation: a visual assessment of painted surfaces and limited dust and soil sampling conducted periodically following LBP hazard reduction where LBP is still present.
- KKK. Rehabilitation: 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.

- LLL. Rehab Office or Rehab Officer: Shall refer to the designated representative of the bidding entity, whose responsibility is to provide administration of the Contract for construction.
- MMM. Removal: a strategy of lead hazard control that entails the removal of components, such as windows, doors, and trim that contain toxic levels of lead such that new components which are lead free may be installed.
- NNN. Replacement: a strategy of lead hazard control that entails the removal of building components that have surfaces coated with LBP and the installation of new components free of LBP.
- OOO. Residential property: 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.
- PPP. Risk assessment:
1. An on-site investigation to determine the existence, nature, severity, and location of LBP 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 LBP hazards.
- QQQ. Soil-lead hazard: bare soil on residential property that contains lead equal to or exceeding levels promulgated by the U.S. Environmental Protection Agency pursuant to Section 403 of the Toxic Substances Control Act or, if such levels are not in effect, the following levels: 400 ug/g in play areas; and 2000 ug/g in other areas with bare soil that total more than 9 square feet (0.8 square meters) per residential property.
- RRR. Standard treatments: a series of hazard reduction measures designed to reduce all LBP hazards in a dwelling unit without the benefit of a risk assessment or other evaluation.
- SSS. Subcontractor: Shall refer to a subcontractor hired by the LHC Contractor and approved by the Rehab Office.
- TTT. Substrate: the material directly beneath the painted surface out of which the components are constructed, including wood, drywall, plaster, concrete, brick or metal.
- UUU. Toxic Level of Lead in Surface Coatings: Is 1.0 milligrams or more per square centimeter (mg/cm²) by XRF methods or 5,000 ug/g (0.5%) by laboratory testing, as defined in HUD Regulation and the Lead-base Paint Poisoning Prevention Act.
- VVV. Toxicity Characteristic Leachate Procedure (TCLP): the EPA required sample preparation for determining the hazard characteristic of a waste generated at a lead hazard control site.
- WWW. Visual assessment: 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.
- XXX. Wet sanding or wet scraping: 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.
- YYY. Wet Wall: Shall refer to walls that contain plumbing fixtures and/or pipes, including both supply and sanitary lines.
- ZZZ. Window trough: 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.
- AAAA. Worksite: an interior or exterior area where LBP hazard reduction activity takes place. There may be more than one worksite in a dwelling unit or at a residential property.

11. Lead hazard control Regulations and Guidelines.

In addition to any detailed requirements of the Specifications, the LHC Contractor shall, at his/her own cost and expense, comply with all laws, ordinances, rules, and regulations of federal, state, regional and local authorities regarding handling and storing of lead waste material. The LHC Contractor must also comply with the provisions of the HUD Guidelines for the Evaluation and Control of Lead-base Paint Hazards in Housing (latest revision).

12. Lead Hazard Control Contractor's Responsibility

All regulations by the above and other governing agencies in their most current version are applicable throughout this project. Where there is a conflict between this Specification and the cited federal, state or local regulations or guidelines, the more restrictive or stringent requirements shall prevail. This Section refers to many requirements found in these references, but in no way is it intended to cite or reiterate all provisions therein or elsewhere. It is the LHC Contractor's responsibility to know, understand, and abide by all such regulations, guidelines and common practices.

13. Lead Hazard Control Contractor Qualifications Criteria

Documentation shall be provided for all aspects of the work at the Bid opening detailing the firm's qualifications on the following criteria:

- A. License Requirements. Firm(s) shall be qualified to perform lead hazard control operations as defined by the HUD Guidelines and Local Law and have workers and supervisors who have successfully completed training courses covering lead hazard control issues. This course shall cover all topics required by HUD, EPA and Local Law. These topics should include, but not be limited to, the following:
 - 1. Toxicity of Lead
 - 2. How Can I Protect Myself? (Respirators, Personal Protective Equipment and Decontamination Procedures)
 - 3. Other Chemical and Safety Hazards
 - 4. Using Tools
 - 5. Completing the Project
 - 6. Role of the Inspector
 - 7. Lead in Construction and Abatement
 - 8. Monitoring and Medical Removal
 - 9. Signs and Labels
 - 10. Preparing the Work Area
 - 11. Cleanup: How and Why
 - 12. Clearance
 - 13. Worker Responsibilities

All LHC Contractors are also advised that licenses in other trades may be required. The LHC Contractors are responsible for insuring that all licensing requirements for appropriate trades and procedures are met.

- B. Demonstrated Ability of Workers. Firm(s) must demonstrate that they have (or will have) a sufficient number of trained lead hazard control workers who have successfully completed training in accordance with the topics listed above to complete all aspects of work covered in this Specification.
- C. Previous Experience
 - 1. LHC Contractor. The LHC Contractor must have successfully completed at least _____ lead hazard control projects involving all required elements of lead hazard control work, including worker protection, medical monitoring, work area preparation, clean-up and clearance, valued at a minimum of (\$_____) for each project.
 - 2. LHC Contractor subcontractor. If a Subcontractor for caustic paste, needle gun and pre-fabricated metal window wraps or other subtask in the lead hazard control process will be used, the Subcontractor must be identified by name and contract amount on the bid form.

14. Insurance.

- A. Prior to the start of work, the LHC Contractor will secure and maintain, the following insurance.
 - 1. Workers compensation and employer's liability insurance subject to the laws of the state in which the work is performed. Such insurance shall include all states and voluntary endorsements as well as other endorsements that may be required by applicable jurisdictions.
 - 2. Workers Compensation Limit - Statutory
Employers Liability Limit - \$100,000/ person
 - 3. Hazardous material liability policy including completed operations liability. The completed operations liability will extend for a minimum period of five years beyond completion of the lead hazard control work. The LHC Contractor will be issued an occurrence policy with a minimum limit of \$500,000 per occurrence and \$1,000,000 aggregate.
 - 4. Commercial general liability insurance insuring bodily injury, personal injury, and property damage with a combined single limit of \$500,000 each occurrence and \$1,000,000 aggregate including contractual liability and contractors protective liability. Automobile bodily and property damage liability insurance, covering all owned and non-owned automobiles, with a minimum of \$500,000 combined single limit per accident. Such insurance shall include the transportation of any hazardous material generated from the lead hazard control work.
- B. The LHC Contractor shall require its insurer(s) to waive all rights of subrogation against the Owner, Rehab Office and all other contractors and their directors, officers and employees with respect to work or operations in connection with this lead hazard control project. The policy(ies) shall be endorsed to name the Owner, as additional insured with respect to claims or injury arising from the work or operations for this lead hazard control project.
- C. The LHC Contractor shall, prior to commencement of work at this project, furnish evidence of the insurance required above to the Owner and the Rehab Office. The LHC Contractor shall also provide proof of workers compensation, employer's liability automobile liability and lead hazard control liability insurance covering the operations related to this project. The required proof should be provided in the form of the ACCORD insurance certificate and the certificate shall provide for 30 days notice to the Owner of any material reduction in coverage.
- D. LHC Contractor shall indemnify, hold harmless, and defend the Owner and the Rehab Office and any of its affiliates, partially or wholly owner entities, and any of their agents, employees, or officers (hereinafter referred to as "Releases") from and against any and all losses, claims judgments, including legal fees and expenses, of any and every nature and description brought or recoverable against LHC Contractor or Releases by reason of any act, intentional or otherwise, or employees, arising directly or indirectly from the nature of the work covered by this Agreement, including but not limited to, the removal, handling and disposal of hazardous material.

15. SPECIFIC LEAD HAZARD CONTROL CONTRACTOR RESPONSIBILITIES

- A. Notifications/Approvals
 - 1. Provide in proper and timely fashion all necessary notifications to relevant Federal, State and local authorities and obtain and comply with the provisions of all permits or applications required by the work specified, as well as make all required submittals required under those auspices. The LHC Contractor shall indemnify the Owner, and Rehab Office from, and pay for all claims resulting from, failure to adhere to these provisions. The costs for all permits, applications, and the like, are to be borne by the LHC Contractor. For each project, the LHC Contractor shall notify in writing the following agencies, five (5) days prior to the date lead hazard control will begin (in accordance with Local Law) and shall provide evidence of notifications to the Owner, Rehab Office and General Trades Contractor at the pre-construction conference and on site at all times:
 - a. Certification or Licensing State Agency
 - b. Department of Public Health Childhood Lead Poisoning Prevention Program
 - c. Occupants of the dwelling to undergo lead hazard control activities.
- 16. Fees, Permits and Licenses
 - A. The LHC Contractor shall pay all licensing fees, royalties, and other costs necessary for the use of any copyrighted or patented product, design, invention, or processing during the performance of the job specified in this Section. The LHC Contractor shall be solely responsible for costs, damages or losses resulting from any infringement of these patent rights or copyrights. The LHC Contractor shall hold the Owner and the Rehab Office harmless from any costs, damages, and losses resulting from

any infringement of these patent rights or copyrights. If the Contract Specification requests the use of any product, design, invention, or process that requires a licensing fee or royalty fee for use in the performance of the job, the LHC Contractor shall be responsible for the fee or royalty and shall disclose the existence of such rights.

- B. Applications and Permits. The LHC Contractor shall make all applicable and necessary notifications (in proper and timely fashion) to relevant federal, state, and local authorities and shall obtain and comply with the provisions of all permits or applications required by the work specified, as well as make all required submittals required under those auspices. The LHC Contractor shall indemnify the Owner, and Rehab Office from, and pay for all claims resulting from failure to adhere to these provisions. The costs for all permits, applications, and the like, are to be assumed by the LHC Contractor.
 - C. The LHC Contractor shall be responsible for securing all necessary permits for work under this Section, including hauling, removal, and disposal, fire, and materials usage, or any other permits required to perform the specified work.
17. Coordination/Cooperation.
- A. The LHC Contractor shall meet with the Owner and the Rehab Office for a Pre- Construction meeting prior to commencing work on the project. The meeting shall be at the residence of the Owner at a mutually convenient time and date to be determined by the Owner and Rehab Office. At the meeting, the LHC Contractor shall be represented by authorized representatives and the field supervisors who shall run the project on a daily basis, and shall present evidence that all requirements for initiation of the work have been met. The minimum agenda for the meeting shall be:
 - 1. Channels of communication;
 - 2. Construction schedule, including sequence of critical work;
 - 3. Designation of responsible personnel;
 - 4. Procedures for safety, security, quality control, housekeeping, and related matters;
 - 5. Use of premises, facilities and utilities;
 - 6. Review of "Pre-Job Submittals;" and
 - 7. Discussion of a detailed Project Specification Work Plan composed of at least the following:
 - a. A sketch showing the detail, location and layout of the clean area, the dirty area (Decon System) and the work area.
 - b. The sequencing of the work.
 - c. The timing and projected completion of the work.
 - d. Detailed description of the method to be employed in order to control airborne and waste water pollution.
 - e. The type of equipment and amount of equipment available to the LHC Contractor to be used on the project, including HEPA vacuums, etc.
 - f. The procedures to contain, package and remove the waste from the work area and the procedures and locations of the disposal of hazardous and non-hazardous waste.
 - g. An air-sampling plan that includes:
 - 1) Air sampling training and strategy, sampling locations, projected number of samples; and frequency, methodology, and duration of sampling.
 - 2) The type of respirators to be used, protective equipment to be used, and a respirator program, if applicable.
 - 3) A safety precautions plan may include special precautions taken by the LHC Contractor or Subcontractors in performing their respective tasks, safety equipment to be worn by employees, frequency of safety meetings, and all other relevant functions to be performed by the LHC Contractor to ensure a safe workplace.
 - 4) Any other data that enhances this work plan. Innovative ideas and/or technology are encouraged.
18. Documentation/Submittals
- A. Pre-Lead hazard control/Job. The LHC Contractor shall provide three (3) copies of the following Pre-Job Submittals at the Pre-Construction Conference for the acceptance of the Owner:
 - 1. Copies of all notifications, permits, applications, and licenses and like documents required by federal, state, or local regulations obtained or submitted in proper fashion.

2. Copies of medical records, including lead blood level monitoring data and a notarized statement by the examining medical doctor that such examinations took place, and when, for each employee to be used on the project.
 3. Copies of Contractor's certificates, licenses, and copies of each supervisor's license and workers' certificates
 4. Record of successful respirator fit testing performed by a qualified individual within the previous six months, for each employee to be used on this project with the employee's name and social security number with each record;
 5. Proposed respiratory protection program for employees throughout all phases of the job, including make, model and NIOSH approval numbers of respirators to be used;
 6. A detailed Project Specification Work Plan as described in Section 17.A.7. above.
 7. Written description, for the Rehab Office's and Owner's review and acceptance, of all proposed procedures, methods, or equipment to be utilized that differ from the General Specifications or the Work Write-Up, including manufacturers specifications on any equipment not specified for use by this Section; in all instances, the LHC Contractor must comply with all applicable federal, state and local regulations.
 8. Proposed electrical safeguards to be implemented by qualified Electrical Subcontractor, including but not limited to location of transformers, GFCI outlets, lighting, and power 3panels necessary to safely perform the job, including a description of electrical hazards safety plan for common practices in the work area.
 9. Proposed worker orientation plan which at a minimum includes a description of lead hazards and lead hazard control methodologies, a review of worker protection requirements, and the outline of safety procedures.
 10. Chain-of-Command of responsibility at work site including supervisors, foreman, and workers, their names, resumes and certificates of training.
 11. List of all supervisors and workers intended to be assigned to the project.
 12. Proposed Emergency Plan and route of egress from work areas in case of fire or injury, including the name and phone number of nearest medical assistance center. This shall be conspicuously posted at the work site.
 13. The name and address of LHC Contractor's blood lead testing lab, OSHA-CDC listing, and Certification in the state where work site is located.
 14. The name and address of LHC Contractor's personal air monitoring and waste disposal lead testing laboratory (ies) including certification(s) of accreditation for lead in the EPA National Lead Laboratory Accreditation Program, listing of relevant experience in air and debris lead analysis, and presentation of a documented Quality Assurance and Quality Control Program.
 15. Material Safety Data Sheets (MSDS) on all materials and chemicals to be used on the project.
 16. Name, address, and ID number of the hazardous waste hauler, waste transfer route, and proposed disposal site.
 17. Name, address, and ID number of the proposed construction debris site.
 18. Proposed HVAC system to be employed.
- B. During Job. The LHC Contractor is required to submit to the Owner and Rehab Office, a weekly status report including:
1. Completed items on the Work Write-Up
 2. List of building components completed awaiting test results
 3. List of buildings components failing clearance
 4. List of building components passing clearance
 5. Results from personal air samples
 6. Results from TCLP testing
 7. Results from other testing
 8. Quantity of materials used during the lead hazard control process. (Tyvek suits, poly, chemical, etc.)
 9. Any other relevant data as requested by the Owner and the Rehab Office.
 10. Medical, license, and Respirator Fit Test 24 hours in advance of any new employees starting on the project.
- C. Post-lead hazard control. The LHC Contractor is required to submit to the Owner and the Rehab Office the following at a Post-Construction conference:

1. Copies of manifests and receipts acknowledging disposal of all hazardous and non-hazardous waste material from the project showing delivery date, quantity, and appropriate signature of landfill's authorized representative.
2. A notarized copy of the entry-exit logbook.
3. All personal monitoring results.
4. All TCLP test results.

19. PERSONAL PROTECTION

A. Respiratory Protection/ Protective Clothing

1. Prior to commencing all work, all workers shall be instructed in all aspects of personnel protection, work procedures, emergency evacuation procedures and use of equipment including procedures unique to this project.
2. Respiratory protection shall meet the requirements of OSHA as presented in 29 CFR 1910.134 titled "Respiratory Protection" and 29 CFR 1926.62 titled "Lead in Construction." The protection factors shown in 29 CFR 1926.62 shall be used for this project.
3. LHC Contractor shall provide appropriate respiratory protection equipment for each worker and ensure usage during potential lead exposure.
4. LHC Contractor shall select respirators from among those jointly approved as being acceptable for protection by the Mine Safety and Health Administration (MSHA) and the National Institute for Occupational Safety and Health (NIOSH) under the provisions of 30 CFR Part 11.
5. LHC Contractor shall have adequate supply of HEPA filter elements or other necessary filter elements and spare parts on site for respirators in use.

B. Respiratory Protection Requirements

1. The LHC Contractor shall provide respirators and all necessary maintenance materials at no cost to the employees. Employees shall wear the following respirators at all times while lead hazard control work is underway or while present in the work area.
 - a. For use while sanding, scraping or stripping with a heat gun, the minimum required respirator shall be the half-mask, air-purifying respirator equipped with HEPA filters or a powered, air-purifying respirator with high efficiency filters or the half-mask supplied air respirator operated in the positive-pressure mode, if required under local law.
 - b. For use with caustics or in replacement, the minimum required respirator shall be the half-mask, air-purifying respirator equipped with high efficiency filters. Whenever a chemical preparation is used in conjunction with a mechanical or powered technique, the use of an additional combination cartridge, appropriate to the exposure, shall be used unless a supplied-air respirator is used.
 - c. For use during removal or demolition of components with surfaces covered with lead-base paint, the minimum required respirator shall be the half-mask, air purifying respirator equipped with high efficiency filters.

20. SEQUENCING AND SCHEDULING

A. Work/ Scheduling Requirements.

Work shall be carried out in sequential phases. Inspection and approval of each phase by the Rehab Office shall be sought and gained before proceeding to the next phase and in accordance with the schedule agreed upon by Owner and the Rehab Office at the Pre-Construction meeting as amended. As a Contract requirement, any reasonable delay caused by this requirement will not constitute a basis for claim against the Owner or Rehab Office.

1. Job Sequences

- a. The LHC Contractor shall extend full cooperation to Owner in all matters involving the use of Owner's facilities. At no time shall the LHC Contractor cause or allow to be caused conditions that may cause risk or hazard to the general public or conditions that might impair safe use of the facility. The use of the facility's electricity, water or like utilities by the LHC Contractor shall be coordinated through the Owner.
- b. The LHC Contractor shall submit a time-line schedule, not date specific, to Owner and Rehab Office for integration into the overall project schedule. Coordinate the work of this section with that of all other trades. Phasing and

scheduling of this project will be at the discretion of the Owner and Rehab Office and shall not proceed in any area without the express consent of the Owner and Rehab Office. The LHC Contractor shall be available within 24 hours notice for additional work or rework if after acceptance of the work it is found that full abatement or clearance was not achieved from the initial work effort as determined by the Owner and Rehab Office.

- c. The proposed time line for the work in this Section, as noted above, shall show the time involved from start to finish of lead hazard control operations, including preparation, removal, clean-up, and tear-down portions of the job.
- d. A final written schedule shall be prepared for approval by the Owner and the Rehab Office.

21. Working Hours.

- A. The work in this Section shall be carried on under the usual construction conditions, in conjunction with all other work at the site. The LHC Contractor shall cooperate with the Owner, Rehab Office, General Contractor, and sub-contractors and equipment suppliers working on the site, coordinate the work with them and proceed in a manner so as not to delay the progress of the project.
- B. The LHC Contractor shall coordinate the work with the progress of the work of other trades so that the work shall be completed as soon as conditions permit. Any overtime hours worked or additional costs incurred due to lack of or improper coordination with General Contractor or other trades of the General Contractor by the LHC Contractor shall be assumed by the LHC Contractor without any additional cost to the Owner.
- C. Any costs associated with repeated cleaning due to a failure to achieve clearance shall be borne by the LHC Contractor without any additional cost to the Owner.

22. PRODUCTS

A. SUBSTITUTION OF MATERIALS AND OR METHODS

1. Any substitution in materials or methods of those specified must be approved by the Rehab Office and Owner prior to use. Any requests for substitution shall be provided in writing to the Rehab Office and the Owner. The request shall clearly state the rationale for the substitution.
2. Submit to the Rehab Office and the Owner product data and samples of all materials to be considered as an alternate.
3. Product data shall consist of manufacturer's catalog sheets, brochures, diagrams, schedules, performance charts, illustrations, material safety data sheets (MSDS) and other standard descriptive data. Submittal data shall be clearly marked to identify pertinent materials, products or models and show performance characteristics and capacities. Samples shall be of sufficient size and quantity to clearly illustrate the functional characteristics of the product or material with integrally related parts and attachment devices.
4. No work shall begin which requires submittal for approval until the Rehab Office has "approved" or "approved as noted" the submittal.

23. Materials and Equipment

- A. The work of this Section, without limiting the generality thereof, includes the furnishing of labor, materials, tools, equipment, services and incidentals necessary to complete all lead hazard control in accordance with the Plans, General Specifications and the Work Write-Up. These Plans and Specifications are intended to describe, and provide for a finished and complete piece of work; work that is described by any portion of these documents shall be complete in every detail and in accordance with established trade practice, notwithstanding whether or not every item or detail necessarily involved is particularly mentioned.
- B. Approvals and Inspections. All temporary facilities, work procedures, equipment, materials, services, and agreements must strictly adhere to and meet this Section along with EPA, OSHA, NIOSH and HUD regulations, recommendations, and guidelines, as well as any other federal

state, and local regulations. Where there exists an overlap of these regulations and guidelines, the most stringent one applies. All work performed by the LHC Contractor is further subject to approval of the Owner, and Rehab Office.

C. Materials

1. Deliver all materials in the original packages, containers, or bundles bearing the name of the manufacturer and the brand name and product technical description.
2. Damaged or deteriorating materials shall not be used and shall be removed from the premises.
3. Polyethylene sheet in a roll size to minimize the frequency of joints shall be delivered to job site with factory label indicating 6 mil.
4. Polyethylene disposable bags shall be six (6) mil with pre-printed label. Tie wraps for bags shall be plastic, five (5) inches long (minimum), pointed and looped to secure filled plastic bags.
5. Tape or adhesive spray will be capable of sealing joints in adjacent polyethylene sheets and for attachment of polyethylene sheet to finished or unfinished surfaces of dissimilar materials and capable of adhering under both dry and wet conditions, including use of amended water.
6. Impermeable containers are to be used to receive and retain any lead containing or contaminated materials until disposal at an acceptable disposal site. (The containers shall be labeled in accordance with EPA and DOT standards.
7. HEPA filtered exhaust systems shall be used during any dust generating lead hazard control operations.
8. All caustics shall be properly labeled and containerized in leak-tight containers.
9. Machine Sanding Equipment - Sanders shall be of the dual action, rotary action, orbital or straight-line system type, fitted with a high efficiency particulate air (HEPA) dust pick- up system. Air compressors utilized to operate this equipment shall be designed to continuously provide 90 to 110 p.s.i. or as recommended by the manufacturer.
10. Heat Blower Gun Equipment -Electrically- operated, heat-blower gun shall be a flameless electrical paint softener type. Heat-blower shall have electronically controlled temperature settings to allow usage below a temperature of 1,100 degrees Fahrenheit. Heat-blower shall be DI type (non-grounded) 120 V, AC application. Heat-blower shall be equipped with various nozzles to cover all common applications (cone, fan, glass protector, spoon reflector, etc.).
11. Chemical Stripping Removers - Chemical removers shall contain no methylene chloride products. Chemical removers shall be compatible with, and not harmful to the substrate that they are applied to. Chemical removers used on masonry surfaces shall contain anti-stain formulation that inhibits discoloration of stone, granite, brick and other masonry construction. Chemical removers used on interior surfaces shall not raise or discolor the surface being abated.
12. Chemical Stripping Agent Neutralizer - Chemical stripping agent neutralizers may be used on exterior surfaces only. Neutralizers shall be compatible with and not harmful to the substrate that they are applied to. Neutralizers shall be compatible with the stripping agent that has been applied to the surface substrate.

D. TOOLS AND EQUIPMENT

1. Provide suitable tools for all lead hazard control operations.
2. The LHC Contractor shall have available sufficient inventory or dated purchase orders for materials necessary for the job including protective clothing, respirators, filter cartridges, polyethylene sheeting of proper size and thickness, tape, and air filters.
3. The LHC Contractor shall have available power cables or sources such as generators (where required).
4. Vacuum units, of suitable size and capacities for project, shall have HEPA filter(s) capable of trapping and retaining at least 99.97% of all monodispersed particles of 0.3 micrometers in diameter.
5. The LHC Contractor will have reserve units so that the station system will operate continuously.

24. LOCATION AND WORK STATEMENT

- A. The site for lead hazard control work and locations of the effected buildings are described in the Work Write-Up.
- B. The LHC Contractor shall retain full ownership of all lead waste and construction waste generated during lead hazard control procedures outlined in the Work Write-Up.**

25. WORK AREA SET UP

A. Site Safety.

1. The LHC Contractor is responsible for all safety at the work site. This includes, but is not limited to electrical safety, mechanical (tool) safety, fire safety, and personnel protective safety. Safety requirements are, for the most part, common sense and sound business practice; however, the LHC Contractor is advised that federal, state and local regulations exist which govern safety on the work site. Therefore, in addition to the following, the LHC Contractor is responsible for adhering to the most stringent requirements in affect by any of the following entities or these Specifications.
2. A primary concern in this type of work is to ensure that adequate exits exist in the event of an emergency and conversely, that adequate entrances exist for emergency personnel. The nature of this work requires sealing entrances and the extensive use of six-mil polyethylene sheeting; however, the LHC Contractor should never permanently seal (i.e., nail, bolt, hard cover) any potential escape exits and should take extra care to clearly identify potential exits and inform the workers.

B. Work Site Safety Plan

Prior to the initiation of the lead hazard control work, the Contractor must complete the following tasks:

The LHC Contractor shall establish a work site safety plan that includes a set of emergency procedures and shall post them in a conspicuous place at the work site. The safety plan should include provisions for the following:

1. Evacuation of injured workers
2. Emergency and fire exit routes from all work areas, including local telephone numbers for fire and medical emergency personnel
3. Copies of applicable insurance certificates
4. Employee work logs

The LHC Contractor is responsible for training all workers in safety procedures. At a minimum, one employee on site shall be trained and certified in basic first aid by the American Red Cross or equivalent. A general first aid kit may be maintained in the containment for treating minor medical problems.

C. Access to Work Areas

1. The Owner will provide specific access as required during the project to the LHC Contractor and personnel assigned to the project. The LHC Contractor will be responsible for the security of each building or portion thereof involved in the lead hazard control project. It will also be the LHC Contractor's responsibility to allow only authorized personnel as defined below in Section 31 into the work area, and to secure all assigned entrances and exits at the end of the workday so as to prevent unauthorized entry.
2. The LHC Contractor shall maintain a bound log book in which any person entering or leaving the lead hazard control work area must sign and enter the dates and times of entry and departure.
3. Use of waste containers on-site shall be controlled under the following requirements:

- a. Location of waste containers on-site shall be coordinated with the Owner and Rehab Office.
 - b. The waste containers shall be solid enclosed containers, lined with two layers of six-mil polyethylene sheeting and locked and secured at all times.
 - c. The LHC Contractor shall comply with all federal, state and local regulations and ordinances regarding lead waste storage.
4. The LHC Contractor's supervisor will not allow anyone access to the dwelling unless they have successfully passed an approved training program.

26. Lead hazard control Preparation

- A. Prior to the commencement of any lead hazard control procedures, notification requirements must be met; required signs shall be posted and moveable objects shall be moved a minimum of four feet from the perimeter walls of the room.
- B. Pre-lead hazard control work shall be performed prior to any lead hazard control or component removal commencing on each side of the building.
- C. Decontamination Unit. At a minimum, the LHC Contractor shall construct a two- stage decontamination unit. This unit shall be directly adjacent to the lead hazard control area for the decontamination of workers contaminated with lead. The decontamination unit shall consist of an equipment room, dirty room, and wash area in series. The Contractor shall ensure that employees use the worker decontamination chamber prior to leaving the work area.
 1. The decontamination unit shall be constructed with six-mil polyethylene sheeting on floors, walls and ceiling. Doors through this unit shall be constructed as described in Section 25 above.
- D. Clean area. The LHC Contractor shall select a clean area outside the lead hazard control area for the workers to change into protective equipment. This area shall contain warm water hand washing facilities (potable water), clean cloths, storage for a HEPA vacuum, and respirator storage space. Table, chairs and a rest facility shall also be available at this location. Contaminated equipment or personnel shall not be permitted in this area.
- E. Abatement area.
 1. The LHC Contractor shall pre-clean all surfaces with a HEPA vacuum and protect occupants' belongings by covering with one layer of six mil polyethylene and have joints taped. All debris gathered during this clean- up shall be disposed of properly. In addition, any existing loose paint or paint bearing materials found in the structures are to be assumed hazardous and packaged and disposed of properly. The amount of the material should be estimated during the pre-bid walkthrough.
 2. For exterior work, the LHC Contractor shall prepare the area as follows:
 - a) Doors and Windows: Doors and windows on the side of the building upon which a dust- generating method is being used, and on the same floor and all floors below, must be closed and covered with six-mil thick polyethylene sheeting.
 - b) Plants and Ground: The ground and any plants or shrubs in the area in which exterior lead hazard control is occurring shall be covered with a waterproof canvas tarp and weighted at all edges so as to prevent blowing. Such covering shall cover from the side of the structure to a point at least eight feet away from the structure. The covering shall be taped or otherwise attached to the structure.
 - 1) The waterproof canvas tarp shall always be placed in a manner that traps all debris and water. This is best accomplished by elevating the edges.

- 2) The waterproof canvas tarp shall be properly disposed of and not re-used.
 3. Special Areas. Any lead hazard control project being performed on any structure other than a building shall be arranged, equipped and operated in a manner which will eliminate the possibility of lead contaminants or lead contaminated materials escaping from the work area.
 - a) The LHC Contractor shall maintain polyethylene barriers, and a clean area as long as needed for the safe and proper completion of the work. Any openings or tears in the work area barriers shall be corrected by the LHC Contractor at the beginning of each workday and as necessary during the workday with such openings or tears reported immediately to the Owner and the Rehab Office. Work will not be allowed to commence until all barriers are in place and acceptable to the Owner and Rehab Office.
 4. Barriers shall not be removed until the work areas are thoroughly cleaned, and the area approved by the Rehab Office. All debris must be properly bagged and removed from work areas, and the lead surface wipe samples must have passed final clearance tests, in accordance with provisions detailed in the Specification prior to barrier removal.
 5. At the Owner and Rehab Office's approval, the LHC Contractor may utilize a portable mini-isolation chamber to create an isolated work area around single components to be removed. This chamber shall still be equipped with an adjacent clean room, and become an isolated work area sealed at all seams to where it is attached to adjacent surfaces. It shall also satisfy all requirements for a work area and satisfy all clearance criteria, as identified in this Section and Local Law.
- F. Signs. Prior to the preparation of a dwelling for lead hazard control, the LHC Contractor shall place warning signs immediately outside all entrances and exits to the dwelling, warning that lead hazard control work is being conducted in the vicinity. The signs shall be at least 20" x 14" and read:

**WARNING:
LEAD PAINT REMOVAL HAZARD
UNAUTHORIZED ENTRY PROHIBITED
NO SMOKING, EATING OR DRINKING ALLOWED IN THE WORK AREA**

Signs shall be in bold lettering with lettering not smaller than two inches tall.

- G. Construct and maintain suitable polyethylene barriers within the building to isolate the exterior work area from the interior of the building.
- H. The polyethylene barriers termed "critical barriers" for the removal of windows shall consist of the following:
 1. Pre-Clean all interior window surfaces with a HEPA-equipped vacuum.
 2. Seal duct tape lip to innermost sill, casing and header surfaces of the window.
 3. Seal two layers of six mil polyethylene sheeting from the duct tape lip on the inside sill of the dwelling unit window and extend up to the inside surface of the top interior casing. The first layer of sheeting applied shall be sealed to the inside faces of the window casing. The polyethylene sheeting shall be sealed to a piece of three-inch wide duct tape forming a lip attached to the interior window perimeter of the window casing.
 4. There shall be no cavity in the polyethylene sheeting created that would allow lead dust to accumulate, which cannot be removed with HEPA vacuuming. This shall allow for removal of this polyethylene sheeting from the exterior of the building, without the generation of lead dust, once the window is removed and cleanup is complete.
 5. The second layer of polyethylene sheeting shall be applied over the first layer and sealed directly to the inner face of the cut tape lip and windowsill and casing.

6. This sealing of windows shall be done from the interior prior to the beginning of any exterior work.
 7. Replacement of windows shall comply with Division 8.
- I. The critical barriers for the removal of doors, door jambs, casing, and associated trim, shall consist of the following:
8. After pre-cleaning activities of HEPA vacuuming floor and surfaces to be abated, seal with duct tape one layer of polyethylene sheeting over a 4' x 4' floor area extending in from the entrance doorway. This floor sheeting shall extend a minimum of six inches up the adjacent wall.
 9. Remove the door as described in this section. Replacement of doors shall comply with Division 8.
 - a) Construct a mini-containment chamber with a double layer of six-mil polyethylene sheeting to isolate the doorframe from the interior of the unit.
 - b) Seal mini-containment chamber to the wall a minimum of six inches from the interior door casing. Seal walls of the chamber to the floor poly. Cover ceiling with one layer of six-mil polyethylene. A prefabricated containment system may be used if approved by the Rehab Office.
 - c) Allow sufficient clearance around the doorframe and casing to permit workers adequate access to remove the components without breaching the containment system.
 - d) Containment chamber shall remain in place during door, door casing, and jamb replacement.
- J. The exterior of the building and the ground surrounding the building shall be covered with plastic sheeting or tarpaulins from the edge of the building to a point at least eight feet away and secured to the ground.
- K. The poly barriers shall not be removed until after all debris, dust, and chips are vacuumed up from the exterior.
- L. Maintain polyethylene barriers, as long as needed for the safe and proper completion of the work. Any breeches in the work area barriers shall be corrected immediately and as necessary during the workday with such breeches reported immediately to the Owner and the Rehab Office. Work will not be allowed to commence until all barriers are in place and acceptable to the Rehab Office.
- M. Window barriers shall not be removed until the window opening and polyethylene sheeting are thoroughly cleaned as specified in this section, all debris has been properly bagged and removed from work areas, and the lead surface wipe samples have been taken in accordance with provisions detailed herein.

27. OCCUPANT PROTECTION

During the course of the lead hazard control project, the protection of the building occupants and their belongings shall be the responsibility of both the LHC Contractor and the occupants.

A. Owner's Responsibilities

The Owner shall be responsible for providing an unobstructed work place for the LHC Contractor prior to vacating the unit during daily construction activities. The Owner's responsibilities include, but are not limited to, the following:

1. Removal of all paintings, pictures, plaques, draperies, shelves, and otherwise applied items from outside wall surfaces within the structure.
2. Removal of all furniture from around the perimeter of the outside walls to a location in the center of the room no closer than four (4) feet from the work area walls. If the room is too small to accomplish this, the furniture must be removed from the room.

B. Lead hazard Control Contractor's Responsibility

The LHC Contractor shall be responsible for establishing and maintaining all engineering controls referenced herein and as required to prevent dispersal of lead contamination from the work area. While this is the prime responsibility of the LHC Contractor, additional responsibility will include, but not be limited to, the following:

1. Provide notifications and posting as required by these specifications.
2. Protect Owner's personal possessions as specified in these specifications including, but not limited to, furniture and boxed items located in the center of work area rooms. In most cases involving LHC work in more than one area of the structure, the owner shall remove all clothing and furniture from the structure.
3. The LHC Contractor shall be responsible for and bear all costs resulting from damage caused to the Owner's possessions during the lead hazard control work.

28. PROTECTIVE PROCEDURES

A. Personal Air monitoring: Both personal air and area (ambient) air sampling will occur periodically throughout the project. The LHC Contractor is advised of the following sampling:

1. LHC Contractor will perform clean area air monitoring sampling and analysis for all phases of the work in this Section. This sampling will include personal air monitoring of LHC Contractor's employees and ambient air sampling within the work area.
2. Air samples shall also be collected by the LHC Contractor outside critical barriers of the work area in the clean room, and in areas adjacent to the clean room.
3. The Rehab Office will collect wipe samples both within the lead hazard control area and outside.
4. The LHC Contractor may be held liable for prosecution under applicable laws and regulations for attempting to falsify test results.

B. Worker Protection Requirements

1. Biological Monitoring: All workers must have baseline and post-lead hazard control blood lead level measurements determined by the whole blood lead method, utilizing the Vena-Puncture technique with results provided to the Owner and Rehab Office. This screening shall be performed every two months for the first six (6) months, and every six months thereafter if blood lead levels do not increase by more than 10 ug/dl. In addition, the LHC Contractor shall have a medical examination performed on each employee. This medical examination must be performed before workers begin lead contaminated work and at the termination of an employee's employment or yearly, whichever comes first. The LHC Contractor shall be responsible for medical surveillance and record keeping, as defined in the OSHA Lead in Construction Standard (29 CFR 1926.62) and Local Law.
2. Training Requirements. All workers and supervisors shall have successfully completed a course provided by a licensed training provider meeting all requirements of EPA and Local Law. Supervisors shall be licensed by the responsible Local State Agency responsible. The LHC Contractor will adhere to the requirements of OSHA regulations CFR 1910.1200 and 1926.62.
3. Supervision. The LHC Contractor shall provide one site supervisor whose responsibilities include coordination, safety, security and execution of all phases of the lead removal project. The supervisor shall not be used as a lead removal worker, and shall be assigned full time to the project. The supervisor shall be fully qualified in all aspects of lead hazard control practices and procedures, and have a three-day training course provided by a certified training provider and approved by the responsible Local State Agency within the previous year prior to commencement of lead-related work.
4. Respirators and Personal Protective Equipment (PPE)
 - a. Personal protection in the form of disposable coveralls and NIOSH and MSHA approved respirators, is required for all workers, supervisors, and authorized visitors entering the work area during the lead hazard control and cleaning operations. A half-face negative pressure respirator is required until air-monitoring data proves otherwise. Authorized visitors (i. e., federal, state, and local inspectors) must provide a current health and medical report certifying

them as approved to wear half-face respirators, and must wear PAPRs until air monitoring data permits the use of half face respirators.

- b. Each worker shall be supplied with a minimum of two (2) complete disposable suits every day. Removal workers shall not be limited to two (2) suits, and the LHC Contractor will be required to supply additional suits as is necessary. In addition to disposable suits for the workers, the LHC Contractor shall also supply suits for the Rehab Office and other personnel who are authorized to inspect the worksite. Contractor must consider this cost in the bid. Disposable suits, such as TYVEK suits, and other personal protective equipment (PPE) must be donned prior to entering work area. A clean area will be provided for workers to put on suits and other personal protective equipment and to store their street clothes.

Suits will be worn inside the work area after the area passes pre-lead hazard control inspection and shall remain in use until the area passes final clearance inspection. Lightweight nylon clothes may be worn under the suit, but these clothes must be changed before leaving the work area and should be laundered separately.

- c. Work clothes shall consist of moisture repellent, disposable full-body suits, head covers, gloves with cuffs extending outside the sleeves of the protective suit, boot or shoe covers, a face shield and eye protection. Hard hats shall be worn. In addition, when caustic paste is used as an abatement agent, full-body suits and gloves impervious to caustics, glove extenders, face shields and boot or shoe covers are required.
- d. Eye protection to personnel engaged in lead operations shall be furnished when the use of a full-face respirator is not required.
- e. Goggles with side shields will be worn when working with a material that may splash or fragment, or if protective eye wear is specified on the Material Safety Data Sheet (MSDS) for that product.
- f. Additional respiratory protection by supplemental filters, such as organic vapor cartridges, may be needed when handling some coating products. Consult the Material Safety Data Sheets (MSDS) and obtain the proper filters as necessary.
- g. The LHC Contractor shall provide portable eyewash stations inside all work areas where caustic paste is to be used.

The stations should be capable of providing a flow of water for at least five minutes. The LHC Contractor shall provide another station capable of providing a flow of water for at least fifteen minutes in the clean area. Squeeze bottles are not sufficient eyewash stations.

- h. The LHC Contractor shall supply workers and supervisory personnel with NIOSH and MSHA approved respirators and HEPA filters. Respiratory protection shall be implemented for all work performed by the LHC Contractor under this Section. The respirators shall be sanitized and maintained according to the manufacturer's specifications. Disposable respirators shall not be considered acceptable under any circumstances. The LHC Contractor will maintain on-site a sufficient supply of HEPA filters to allow workers and supervisory personnel to change contaminated filters per manufacturer's recommendations or when breathing resistance is encountered. The LHC Contractor is solely responsible for means and methods used and for compliance with applicable regulations:
 - 1) Half-mask, negative pressure, air purifying respirators equipped with high efficiency filters for airborne lead dust levels not in excess of 0.5 mg/m³ (10 times the Permissible Exposure Limit) shall be used during component removal and enclosure lead hazard control methods, with the exception of surface preparation for enclosures.
 - 2) Full-face Powered Air Purifying Respirators (PAPRs) with high efficiency filters for airborne dust levels not in excess of 2.5 mg/m³

(50 times the Permissible Exposure Limit) will be required during all lead hazard control demolition methods and encapsulation surface preparation methods and as required by OSHA 1926.62.

- 3) Pressure demand, full face, supplied air respirators are required when airborne lead dust concentrations are expected to meet or exceed 50 mg/m³ (1000 times the Permissible Exposure Limit). Respirators will not be removed until the worker enters the washing area of the decontamination chamber.
 - 4) Respirators shall be individually assigned to removal workers for their exclusive use. All respiratory protection shall be provided to workers in accordance with the approved respiratory protection program, which includes all items in OSHA 29 CFR 1910.134 (B),(D),(E), & (F), and the OSHA lead standard 29 CFR 1926.62. A copy of this program shall be kept at the worksite, and shall be posted in the clean area.
 - 5) Workers must perform negative and positive pressure fit checks each time a respirator is put on, whenever the respirator design so permits.
 - 6) Powered air purifying respirators (PAPR) shall be tested for adequate flow as specified by the manufacturer.
 - 7) Workers shall be given a qualitative fit test in accordance with procedures detailed in OSHA 29 CFR 1910.1025, Appendix D, Qualitative Fit Test Protocols, for all respirators to be used on any lead hazard control project. An appropriately administered quantitative fit test may be substituted for the qualitative fit test.
 - 8) If a question exists as to the proper selection of respirators, the Contractor may consult the OSHA Lead in Construction Standard (29 CFR 1926.62).
 - 9) Upon leaving the active work area, cartridges must be removed, and respirators cleaned in a disinfectant solution and clean water rinsed.
 - 10) Clean respirators should be stored in plastic bags when not in use.
 - 11) The LHC Contractor shall inspect respirators daily for broken, missing, or damaged parts.
 - 12) The LHC Contractor shall provide personal sampling to check personal exposure levels. Samples shall be taken for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken every day but must be taken in accordance with 29 CFR 1926.62. Sampling will determine eight-hour Time-Weighted Average exposures (TWA). Results shall be provided to the Owner and Rehab Office within 48 hours of the sampling.
 - 13) LHC Contractor shall comply with all OSHA, state, or other applicable requirements of worker medical examinations for approval to wear respiratory protection, and shall submit document of such approval to the Owner and Rehab Office.
- i. Exposure Conditions: If air-monitoring data, gathered by the LHC Contractor or Rehab Office shows that worker exposure to airborne lead exceeds 50 ug/m³, the following conditions apply:
- 1) Clothing. Street clothes cannot be worn into containment. Workers must wear nylon shorts, TYVEK shorts, or nothing under disposable suit.
 - 2) Showers. Showers must be provided. Shower water must pass through at least a 5.0 micron filter before returning to the public waste system.
 - a) All workers must shower upon leaving the work area.
 - b) A five-stage decontamination unit must be constructed of six-mil polyethylene sheeting and consisting of a dirty room, airlock, shower, airlock, and clean room.

29. Personal Air Sampling

- A. General. The LHC Contractor is required to perform the personal air sampling activities during all lead paint lead hazard control work. The results of such sampling shall be posted, provided to individual workers, and submitted to Owner and Rehab Office as described herein.
- B. Sampling. Samples shall be taken for the duration of the work shift or for eight hours, whichever is less. Personal samples need not be taken every day after the first day if working conditions remain unchanged, but must be taken every time there is a change in the removal operation, either in terms of the location or the type of work. Sampling will be used to determine eight-hour Time-Weighted Averages (TWA). The LHC Contractor is responsible for personal sampling as outlined in OSHA Standard 29 CFR 1926.62. This sampling will determine the degree of respirator protection required, subject to the regulations.
- C. Sampling Results. Air sampling results shall be transmitted to the Owner, Rehab Office and individual workers in written form no more than forty-eight (48) hours after the completion of a sampling cycle. The reporting document shall list each sample's result, sampling time and date, personnel monitored and their social security numbers, flow rate, sample duration, sample yield, cassette size, and analysts' name and company, and shall include an interpretation of the results. Air sample analysis results will be reported in micrograms of lead per cubic meter of air (ug/m³).
- D. Testing Laboratory. The LHC Contractor's testing lab shall be certified for lead air sample by the American Industrial Hygiene Association. LHC Contractor shall submit for the Owner's and Rehab Office's review and acceptance the name and address of the laboratory, certification(s) of accreditation for heavy metal analysis, and a listing of relevant experience in air lead analysis, and presentation of a documented Quality Assurance and Quality Control program.
- E. Air Monitoring Frequency. The air monitoring frequency for LHC Contractor operations will be established in accordance with the requirements set forth in 29 CFR 1926.62.

30. WORKER HYGIENE PRACTICES.

In order to avoid possible exposure to dangerous levels of lead and to prevent possible contamination of areas outside the demarcated work area, work shall follow the general guidelines listed below:

- A. Work Area Entry. At no time shall a worker or other authorized personnel entering the work area go further than the Clean Area without proper respiratory protection and protective clothing.
- B. Work Area Departure. The worker shall remove all gross contamination, debris and dust from the disposable suit by completely HEPA vacuuming them before leaving work area.
- C. Personal Protective Equipment. All persons leaving the work area must remove their personal protective equipment (except respirators) before leaving the containment. Suits shall be removed "inside out" to minimize the dispersal of lead dust.
- D. Wash Facilities. All workers must wash upon leaving the work area. Wash facilities will be provided by the LHC Contractor. This wash facility will consist of; at least, warm running potable water, soap, and towels. All wastewater must be contained and disposed of in accordance with this Specification.
- E. Equipment. All equipment used by the workers inside the work area shall be either left in the work area or thoroughly decontaminated before being removed from the area. Extra work clothing (in addition to the disposable suits supplied by the LHC Contractor) shall be left in the clean area until the completion of work in that area.

The clean area shall be cleaned of all visible debris and disposable materials daily.

- F. Prohibited Activities. Under no circumstances shall workers or supervisory personnel eat, drink, smoke, chew gum, or chew tobacco or remove their respirators in the work area. To do so shall be grounds for the Owner and/or Rehab Office to STOP all removal operations. Only in the case of life threatening emergency shall workers or supervisory personnel be allowed to remove their protective respirators while in the work area. In this situation, respirators are to be removed for as short duration as possible.
- G. Footwear. As with additional clothing, all work footwear shall be left inside the decontamination area until the completion of the job and then shall be HEPA vacuumed and wiped or discarded as contaminated waste.
- H. Shock Hazards. The LHC Contractor is responsible for using safe procedures to avoid electrical hazards. Power will be shut off and checked before work begins when a hazard exists. All extension

cords and power tools used within the work area shall be attached to Ground Fault Circuit Interrupters (GFCI).

31. CONTROL OVER LEAD HAZARD CONTROL WORK

All work procedures shall be continuously controlled and monitored by the LHC Contractor to assure that the building will not be further contaminated. The following controls shall be instituted on each working day:

A. Start Up

Prior to work on any given day, the Contractor's designated project supervisor will discuss the day's work schedule with his/her work force to evaluate job tasks with respect to safety procedures and requirements specified to prevent contamination of the other parts of the building or the employees. This includes a visual survey of the work area and the decontamination enclosure systems.

B. Access

The Contractor shall maintain control of and be responsible for access to all work areas to ensure the following requirements:

1. Non-authorized personnel are prohibited from entering the area at all times of day and night;
2. All authorized personnel entering the work area shall be familiar with the worker protection procedures contained in this specification and shall be equipped with properly fitted respirators and protective clothing;
3. All personnel who are exiting from the decontamination enclosure system shall be properly decontaminated.
4. Lead waste that is taken out of the work area must be properly handled in accordance with these specifications. The surface of any waste containers, removed from the work area, shall be wiped down with a minimum of a 5% solution of tri-sodium phosphate or other equivalent cleaning agent prior to removing it from the work area.
5. Building components with lead painted surfaces shall be removed from the work area and placed directly into a labeled and secured disposal container or a designated storage area.

32. CAUSTIC PAINT REMOVAL - PROCEDURES

A. General. Caustic paste application and use shall be in accordance with manufacturer's instruction for each product. Prior to beginning the application, all accumulated dust, dirt, and visible oil and grease shall be removed with a five percent TSP and water solution or other equally effective cleaning agent. When a caustic stripping agent is used as the abatement agent, the LHC Contractor shall provide and ensure the use of the following items:

- Full-body coveralls with hood impervious to caustic substances;
- Gloves impervious to caustic substances;
- Glove extenders;
- Face shield;
- Appropriate boot or shoe covers;
- An eyewash station;
- A suitable and unrestricted wash area in the event of inadvertent exposure.

B. Paint Removal - A caustic stripping agent may require multiple applications, depending on a variety of circumstances. When this type of material is used, care should be taken to avoid drying of the agent. It may become necessary to lightly mist over area with water to keep it moist. Surfaces that come in contact with the stripping agents used in this methodology during washing or neutralizing shall be completely cleaned before the waste dries.

1. Each worker, in order to be allowed in the work area, must have received specific instructions on the procedures to remove material that inadvertently comes in contact with skin, and eye washing procedures, together with information on the nature of the danger. This can be accomplished by general safety meetings that are regularly scheduled and with a "right-to-know" booklet that is in a location that is known to all persons and is readily accessible.
2. In addition to standardized work area preparation, to protect surrounding areas, polyethylene sheeting shall be placed flush to the surrounding walls for a firm seal to avoid leakage of waste below the polyethylene sheeting, and the joint shall be caulked. The LHC Contractor may place absorbent pads or material below the surface being abated and/or place waterproof duct tape on the surface adjacent to that being abated, to prevent damage to the adjacent wall or floor surface. The LHC Contractor is responsible for repairing any adjacent surfaces harmed by the chemical removal process. This includes contamination of these surfaces by chemical residue.
3. A dwell time may be specified by the manufacturer. The LHC Contractor shall run a series of test patches to determine the optimal amount of time for the chemical to work on a particular component.
4. Removal of the caustic stripping agent after dwell time shall be performed by scraping the waste off the substrate onto the paper, using a metal scraper. Application process shall be repeated if, in the opinion of the Rehab Office, complete removal of the paint is not attained. At no time shall dry scraping be used.
5. Once removal of paint from the abated surface is complete, clean-up procedures shall then follow and include wash-down of the surface and neutralization.
6. Once the neutralizing process is complete, the surface shall undergo normal clean-up procedures of HEPA vacuuming, wet wash and repeated HEPA vacuuming.
7. All worker protection equipment as specified shall be left within the work area during all phases of the work. This equipment may be transferred between work areas using double six (6) mil polyethylene bags to prevent contamination of clean areas.
8. All accumulated debris resulting from removal of caustic paste shall be treated as hazardous and shall be properly stored and disposed of according to EPA, DOT, and all other applicable federal, state, and local regulations.
9. Any wood flooring contaminated by the absorption of lead caustic shall be replaced by the LHC Contractor at his/her expense.

C. Application and Removal

1. Spray or hand trowel paste according to manufacturer's specifications. The caustic stripping agent should be applied with recommended special spray equipment approved by the manufacturer to ensure proper application of product, if spray application is used.
2. During spray application no more than two workers (one person applying and one helper) shall be allowed in the work area. Security of work area is absolutely essential.
3. Never remove material with personnel below, or in a manner that would allow caustic to fall on, splatter or contact personnel in the vicinity of the removal. Minimize the fall distance of the paste/paint.
4. Work area shall be properly heated/cooled so as to meet temperature requirements outlined in the manufacturer's specifications. Heating procedures shall be subject to the approval of the Rehab Office and Owner, and shall be supplied by the General Contractor.
5. LHC Contractor shall make certain that during the application, dwell time and removal of caustic paste, the work area is secured.

D. Clean Up

1. Collect caustic paste cloth with paste/paint along with remaining residue and put into six (6) mil polyethylene bags and dispose of in compliance with all regulations and specifications.
2. Spray surface lightly with water spray. Then with a nylon scrub brush, agitate surface to loosen all residue. Thoroughly scrub surface, being sure to get all crevices, grooves, cracks, etc.
3. Lightly spray clean water on surface, removing remaining residue. The use of a wet vacuum to assist in the clean up is suggested. Make certain that entire surface is clean of any paint/paste residue.

4. Treat residue (paste, paper, water, etc.) as hazardous waste until results of TCLP tests are available. Disposal will be dependent upon these results.

E. Neutralization

1. Apply caustic stripping agent neutralizer in accordance with manufacturer's recommendations. Wash neutralizer off with clean water, per manufacturer's recommendations.
2. Apply second application of caustic stripping agent neutralizer if needed and allow to dry. After one to three (1-3) hours, wash neutralizer off with clean water and allow surface to dry completely.
3. LHC Contractor should use pH paper to determine if neutralization is adequate. A dry surface showing a pH of between 6 and 8 after the proper drying out period is ready to be recoated. A pH over 8 should be treated to another application of neutralizer and left to dry before retesting. It is most important that the surface properly dry out before recoating.

33. DAILY CLEANUP

At the completion of each workday, the LHC Contractor shall clean the inside of the work area. At a minimum, the following procedures shall be adhered to:

- A. End of Day Cleaning. Thirty (30) minutes or more if necessary prior to the end of each workday, the lead work area must be cleaned of all debris. Under no circumstances will lead clean-up be permitted when active lead hazard control work is proceeding. All lead hazard control activity must cease during the cleanup period.

Such cleaning shall include a thorough HEPA vacuuming of all affected surfaces, as determined by the Rehab Office. Additionally, cleaning requires the use of a solution of five percent tri-sodium phosphate (TSP) or other equally effective cleaning agent. All waste materials generated during this daily clean-up shall be disposed of as hazardous waste, unless analytical testing proves otherwise.

B. Equipment Cleaning.

1. Durable equipment, such as power and hand tools, generators, and vehicles shall be cleaned at least monthly or prior to removal from buildings undergoing lead hazard control or the site. All equipment shall be cleaned by HEPA vacuuming and high-phosphate (tri-sodium phosphate) washing (or use of an equivalent cleaner).
2. High Efficiency Particulate Air (HEPA) vacuum: The LHC Contractor will obtain training in the use of the HEPA vacuum from the manufacturer prior to use and submit evidence of this training to the Owner and Rehab Office. The LHC Contractor shall obtain HEPA vacuum attachments, such as various size brushes, crevice tools, and angular tools to be used for varied applications and service the HEPA vacuum routinely to assure proper operation. Caution shall be used any time the HEPA is opened for filter replacement or debris removal. Operators shall wear a full set of protective clothing and equipment, including respirators, when using and emptying the HEPA vacuuming equipment.

- C. Preliminary Clean Up. Upon completion of the lead hazard control and a satisfactory visual inspection by the Rehab Office in a given work area, a preliminary clean up shall be performed by the LHC Contractor. This clean up includes removal of any contaminated material, equipment or debris including polyethylene sheeting from the work area, except for critical barriers. The polyethylene sheeting shall first be sprayed or misted with water for dust control, the resulting lead hazard control debris removed, then the sheeting shall be folded in upon itself. All polyethylene sheeting used for critical barriers shall remain in place until final clearance testing results have passed the clearance criteria set forth herein.

1. Large Debris. Large debris from demolition (i. e. doors, windows, baseboards) shall be wrapped in polyethylene sheeting at least six-mil thick, sealed with heavy-duty duct tape, and stored until proper disposal.

2. Small Debris. Prior to picking up or collecting small debris, the surfaces of this debris will be sprayed with a fine mist of water. The debris will be picked up, collected and placed into a single plastic bag, at least six-mils thick. The bags shall not be overloaded, shall be securely sealed, and shall be stored in the designated area until disposal. Dry sweeping is not permitted in the work area; wet sweeping will require approval by the Rehab Office.
3. Sheeting. Removal of surface six-mil polyethylene sheeting shall begin from upper levels, such as on cabinets, counters or shelves. Removal of floor polyethylene sheeting shall begin at the corners and folded into the middle to contain the dust or residue. All collected polyethylene sheeting shall be placed in six-mil polyethylene bags for proper disposal as described in this Specification.
4. HEPA Vacuuming. Once the six-mil polyethylene sheeting is removed from the work area, cleaning shall begin with a thorough HEPA vacuuming of all surfaces, starting at the ceilings, proceeding down the walls and including window, doors and door trim and floor. The floor shall be vacuumed last, beginning at the farthest corners from the entrance to the work area. HEPA vacuuming shall again be performed as noted above, after the following TSP wash.
5. TSP Wash. LHC Contractor shall next wash or mop the same surfaces with a tri-sodium phosphate (TSP) detergent solution (five percent) or other equally effective cleaning agent and allow surfaces to dry. The LHC Contractor, as described above, will perform then a second HEPA Vacuuming of the surfaces. By the conclusion of the cleaning phase, all visible dust and debris shall have been completely removed.
6. Hygiene, Cleaning Equipment and Supplies. Special attention shall be given to personal hygiene and the cleaning of supplies and/or equipment. All mop heads, sponges and rags shall be replaced or changed daily, at a minimum. Rags, mop heads or sponges may be reused if LHC Contractor has them cleaned via a washing system specially equipped with HEPA filtration.
7. Detergents. The LHC Contractor shall prepare and use detergents containing five to ten percent TSP according to the manufacturer's instructions. The manufacturer's recommended coverage will be followed. The wastewater from clean up shall be contained and disposed of according to all applicable Federal, state, county and local regulations and guidelines. In no instance shall wastewater be disposed in storm sewers (e. g., yard inlet or street drain) or sanitary sewers (e. g., toilet, sink, or any other household/residential/commercial type drain system) without specific governmental approval.

34. VISUAL INSPECTIONS

The LHC Contractor shall request a visual inspection by the Rehab Office. If the area does not pass a visual inspection (i. e., visible dust or debris), the LHC Contractor shall reclean the area as outlined in 34.C.

- A. Post-lead hazard control Visual Inspection. The Rehab Office shall confirm job completeness by determining whether all surfaces have been abated according to the approved lead hazard control plan and project specification. The Rehab Office will then determine if the building has been adequately cleaned by examining all surfaces for dust and debris. If dust is found, the work area should be recleaned, and the damp cloth test repeated.
- B. Post-lead hazard control Clearance. When all surfaces have passed visual inspection, wipe samples as detailed in Section 35.E shall be performed by the Rehab Office. The standards for passing a wipe test shall be those detailed in the latest HUD Guidelines (see Section 36.i). Should laboratory results indicate that the wipe test clearance level is exceeded, the LHC Contractor shall re-clean the affected area, at no additional cost to the Owner, utilizing the methods specified above. Retesting will then be performed to verify compliance with the mandated levels. LHC Contractor shall pay for all additional testing and provide, at no additional cost, a recleaning of an effected area and personal belongings until the clearance level is achieved.
- C. Finish Coatings. Finished coatings including, but not limited to, stains, primer, sealers and polyurethane coatings, if used, shall only be applied upon approval by the Owner and the Rehab Office. Any surface requiring painting shall be primed with an approved primer. All primers or finish coating materials shall have labeling stating, in equal or appropriate wording, "does not contain lead-base paint greater than 600 parts per million" (0.06%) and "does not contain mercury." In lieu of label wording, a manufacturer's statement to this effect may be substituted.

- D. Inspection/Clearance Standards. When clean-up has been completed and all surfaces have been final cleaned, wipe samples by the Rehab Office will be performed. The following standards must be met for all "clearance" requirements:
- E. Wipe Tests.

- 1. The Rehab Office is responsible for scheduling testing of all component types in all rooms and room equivalents of the structure.

In order to compare results with applicable federal clearance criteria, the following methods must be used unless a newer standard is more stringent.

- 2. The sampling location (a specific surface area) must be selected, and the surface area of that location carefully measured and recorded.
- 3. The wipe sampling procedure must ensure that a very high percentage of the surface dust present on the sample location is captured on the wipe.
- 4. Wipe sample collection criteria for lead hazard control shall be as detailed in Section 36.

35. Clearance

Clearance on all lead hazard control projects shall be done by a certified risk assessor completely independent of the LHC Contractor to eliminate conflicts of interest.

- A. Finish the lead hazard control and cleanup effort. Seal floors before clearance testing (if necessary).
- B. Wait 1 hour to allow any airborne dust to settle. Do not enter the room during that hour.
- C. Conduct visual examination.

- 1. Determine if all required work has been completed and all lead-base paint hazards have been controlled.
- 2. Determine if there is visible settled dust, paint chips, or debris in the interior or around the exterior.

- D. Complete the Visual Clearance Form; if all specified work was not completed, inform the Owner and order completion of work and repeated cleanup, if necessary.
- E. Conduct clearance dust sampling of floors, interior windowsills, and window troughs using the protocol in this chapter.
- F. Conduct clearance soil sampling if bare soil is present that was not sampled previously, or if exterior paintwork was completed as part of the lead hazard control effort.
- G. Complete the Dust and Soil Sampling Clearance Form.
- H. Submit samples to an Environmental Protection Agency (EPA) recognized laboratory participating in the National Lead Laboratory Accreditation Program for analysis (see Section 41).
- I. Interpret results by comparing them to the HUD Clearance Standards.

Clearance criteria shall be as follows:

Surface Leaded Dust Loading ($\mu\text{g}/\text{ft}^2$) (micrograms per square foot) – Wipe Only

Floors – 40

Interior Window Sills (Stools) – 250

- J. If clearance is achieved, go to step N.
- K. Order repeated cleaning if results are above applicable standards. Clean all surfaces the sample represents. If both window and floor samples fail, the entire unit must be recleaned.
- L. Continue sampling and repeated cleaning until the dwelling achieves compliance with all clearance standards.

- M. Complete any related construction work that does not disturb a surface with lead-base paint (all work that does disturb painted surfaces or that could generate lead dust should be completed as part of the lead hazard control effort).
- N. Issue any necessary reports and/or certificates of lead-base paint compliance or releases and maintain appropriate records.
- O. Permit residents into the cleared work area.

36. Retests

Should laboratory results indicate that the wipe test clearance level is exceeded, the LHC Contractor shall reclean the affected area, at no additional cost to the Owner or the Rehab Office, utilizing the methods specified above. Retesting will then be performed to verify compliance with the mandated levels. LHC Contractor shall pay for all additional testing and provide, at no additional cost, a recleaning of an affected area until the clearance level is achieved.

37. Inspections

In addition to various daily inspections of the lead work area and lead hazard control practices, the Rehab Office will make four (4) mandatory inspections during the work, one during each phase of removal. Each inspection must be requested by the LHC Contractor to be performed by the Rehab Office to the Rehab Office's satisfaction before work may begin for next phase of work, or an area accepted. Failure on the part of the LHC Contractor to obtain the Rehab Office's approval before proceeding to the next scheduled phase is regarded as a violation of this section. In the event of this occurring, Rehab office will request work be stopped and Owner will be contacted to intervene. The four (4) inspections are as follows:

- A. Window and Door Barrier Completion. LHC Contractor shall have all pre-lead hazard control preparations of the work area complete, as described in Section 26.
- B. Post Removal Inspection. LHC Contractor shall have completed lead hazard control and final clean-up of all visible debris and perform final cleaning techniques of TSP washing and HEPA vacuuming as described in Section 34.
- C. Daily Clean-up. LHC Contractor shall have completed daily cleanup as defined in Section 34.
- D. Final Clearance. Rehab Office will perform final clearance wipe testing 24 hours after final clean-up activities are completed as described in Section 34.

38. Air Sampling Procedure

The LHC Contractor shall conduct air sampling. Samples shall be collected and analyzed for total airborne lead. Air sampling will be collected during, but not limited to, the pre-lead hazard control and post-lead hazard control periods.

- A. Sampling Apparatus. Air Sampling shall be collected utilizing a closed-face, 37 millimeter cassette. A mixed cellulose ester filter with 0.8 micrometer pore size with a cellulose support pad shall be placed in the cassette. Air sampling pumps shall be calibrated at 2.0 liters per minute prior to sampling. All pumps shall be post calibrated.
- B. Analytical Method. The NIOSH 7082 (AAS) procedure shall be used for sample analysis. A blank filter shall be submitted with each set of samples.

39. Data Reporting for Lead in Air

Laboratory results for air samples shall be provided in micrograms of lead per cubic meter of air.

Information specific to obtaining the air samples should be listed on a separate data form for air samples, which would include the following:

- A. Location where sample was taken
- B. Length of time in use

- C. Approximate volume of air sampled
- D. Lead hazard control/clearance status
- E. Abatement method (e. g., removal vs. enclosure)

40. Analytical Laboratory Qualifications

Analytical laboratories must be recognized by the EPA as participating in the National Lead Laboratory Accreditation Program (NLLAP). The Laboratory must show evidence that it is proficient in lead analysis under the Environmental Lead Proficiency Analytical Testing Program. If the laboratory is not currently enrolled in these programs, the laboratory will be required to enroll in the next round of ELPAT samples. The laboratory must be accredited within a one year period by an organization recognized by NLLAP that has signed a Memorandum of Understanding with EPA. Currently, the American Industrial Hygiene Association (703- 849- 8888) and the American Association for Laboratory Accreditation (301- 670- 1377) have signed such memoranda of understanding with EPA.

All dust, paint, and soil samples shall be analyzed for lead, as required in the HUD Guidelines for Evaluation and Control of Lead-base Paint in Housing.

41. Qualifications of Sampling Personnel

All personnel conducting environmental sampling for this project shall be certified as a LBP inspector, risk assessor or equivalent by the Environmental Protection Agency or the appropriate state agency.

42. DISPOSAL OF WASTE MATERIAL

Caution Note for Contractors:

All materials, whether hazardous or non-hazardous, shall be disposed of in accordance with all laws and the provisions of this Section and any or all applicable federal, state, county, or local regulations and guidelines. It shall be the sole responsibility of the Qualified LHC Contractor to assure compliance with all laws and regulations relating to this disposal. Until analytical results are available, all waste materials (including water) shall be segregated and treated as hazardous.

- A. Disposal Requirements. The LHC Contractor shall contact the Regional EPA, state, local, and all other pertinent authorities to determine lead-base paint debris disposal requirements. If applicable, the requirements of the Resource Conservation and Recovery Act (RCRA) must be complied with, as well as any or all other applicable federal, state, county, or local waste requirements.

During or after the actual lead hazard control, the LHC Contractor shall not leave any debris in the yard or near-by property, incinerate debris, dump debris by the road, place debris in any unauthorized dumpster, or introduce lead contaminated (non-filtered) water into storm sewers (shall not be poured down yard inlet or street drain) or sanitary sewers (shall not be flushed down toilet or any other household/ residential/ commercial type drain system). All wastewater shall be labeled "filtered" (using 5 micron filter) or "non-filtered." All non-filtered wastewater containers shall be labeled "hazardous waste" and with a date the LHC Contractor began to collect contaminated water in that container.

- B. EPA ID Numbers. The LHC Contractor shall apply for an EPA identification number from the appropriate office; if more than 100 kg of hazardous waste will be generated from the lead hazard control process during any calendar month. If less than 100 kg is to be generated, the LHC Contractor shall obtain a Small Quantity Generator RCRA Hazardous Material ID number. The Rehab Office will assist the chosen LHC Contractor in contacting the appropriate office to secure the identification number. The LHC Contractor also has the responsibility to coordinate this action through the State and secure any additional number as required.
- C. The following testing must be performed by a laboratory properly certified by the State. The name of the laboratory must be supplied to the Owner and Rehab Office prior to the initiation of the testing.

1. TCLP Test. Testing on lead hazard control waste materials by use of the Toxicity Characteristic Leaching Procedure (TCLP) will be completed and paid by the LHC Contractor, and results shall be supplied to the Rehab Office and Owner.
 2. Testing of Materials. The testing of material shall be performed as obtained to minimize the storage of "assumed" hazardous material. In absence of written official state guidance, the LHC Contractor shall take at least one (1) composite sample of the items listed below for the RCRA eight (8) heavy metals. The LHC Contractor shall also determine if additional testing for other compounds, such as pH, flashpoint, etc., are required for disposal at a particular landfill. The following materials shall be tested to determine whether or not they are hazardous:
 - a. Waste water.
 - b. Dust from HEPA filters.
 - c. Metals that have not been previously tested.
 - d. Plastic sheets, duct tape, or tape used to cover floors and other services during the lead-base paint removal.
 - e. Solvents and caustics used during the stripping process.
 - f. Liquid waste, such as wash water used to decontaminate wood after solvents have been used, and liquid waste from exterior (or interior) water blasting.
 - g. Rags, sponges, mops, scrapers, and other materials used for testing, lead hazard control, and clean-up.
 - h. Disposable work clothes and respirator filters cartridges.
 - i. Any other items contaminated with lead-base paint or items produced as a result of lead hazard control activity, such as the water filters.
- D. Storage Requirements. Any item found to be hazardous, by way of testing, shall be kept in a secured area or lockable container that is inaccessible to all persons other than lead hazard control personnel. All hazardous waste shall be labeled "Hazardous Waste-Contains Lead" and a date that the LHC Contractor began to collect waste in that container. All hazardous and non-hazardous waste shall be kept in totally and completely separate containers. Until TCLP testing proves an item to be non-hazardous, all items shall be considered hazardous and stored in a secured area or lockable container.
- E. Regulations. The LHC Contractor will be required to comply with the Resource Conservation and Recovery Act (RCRA) and/or any other applicable state, county law, regulation and/ or guidelines, whichever is most stringent.
- F. Waste Transportation.
1. If the LHC Contractor is not a RCRA/ DOT/ EPA certified Hazardous Waste Transporter, a contract shall be entered into with a certified transporter to move the waste. The LHC Contractor shall require the certified hazardous waste transport firm to follow RCRA, DOT, EPA, and any/all other applicable regulations. Many transporters are also capable of supplying pertinent information and services applicable to necessary rules, regulations, and specifications. The certified transporter/ hauler shall submit for LHC Contractor approval their qualifications to perform the work as specified herein. The LHC Contractor shall be responsible for all actions of the waste hauler as pertaining to waste removal and disposal under this Section and all EPA, DOT, and other applicable regulations.
 2. The LHC Contractor must supply documents that detail the site(s) to be used for ultimate waste disposal. Documents from these disposal sites must be supplied by the LHC Contractor to the Owner and Rehab Office from the disposal facilities stating that hazardous and/or construction waste will be accepted by these facilities. In addition, the LHC Contractor must submit documents from these sites proving that they are licensed/permitted to accept such waste and will accept the waste proposed by the LHC Contractor for treatment or ultimate disposal.
- G. Waste Containers. The LHC Contractor will comply with EPA and DOT regulations for waste containers. The LHC Contractor shall contact the state and local authorities to determine their criteria for containers. In the case of any conflict in regulations, the more stringent regulation shall apply.
- H. Emergencies. LHC Contractors shall: contact local fire, police, hospitals or local emergency response teams and inform them of the type of hazardous waste activity and ask for assistance in the event of an accident; keep and properly maintain a suitable fire extinguisher(s) on site; have an immediate means of communication with a regulatory agency in the event of an emergency; keep a list of phone numbers of regulatory agencies on site, make sure all employees know how to deal with all types of

accidents; make one person who is always on site, when the site is occupied, the emergency coordinator to ensure that emergency procedures are carried out in the event an emergency arises; and keep and maintain a "right to know" manual that is in an easily accessible location and in an area that is known to all employees.

- I. Disposal Packaging. The LHC Contractor shall place lead-base paint fragments and debris produced as a result of any lead hazard control activity and lead dust in six-mil polyethylene (plastic) bags that are airtight and puncture-resistant.
- J. Cleaning Materials. The LHC Contractor will place all disposable cleaning materials such as sponges, mop heads, filters, disposable clothing, and brooms in six-mil plastic bags. If after testing, those materials are determined to be hazardous, the bags will be sealed, labeled, and considered hazardous waste.
- K. Contaminated Debris. In particular, the LHC Contractor shall separate, label, and containerize the following:
 - 1. All paint or paint fragments removed by chemical strippers, surface preparation, or by any lead hazard control methodology;
 - 2. Grossly contaminated body suits;
 - 3. HEPA vacuum contents, filters, and respirator cartridges: paint chips or other lead hazard control debris on plastic should always be HEPA vacuumed prior to picking up the plastic.
 - 4. All hazardous wastes or materials should be kept totally separate from non-hazardous materials.
 - 5. Polyethylene Sheeting. The LHC Contractor shall clean surfaces and equipment and containerize large debris. Prior to removing any six (6) mil polyethylene sheeting, the LHC Contractor shall lightly mist the sheeting in order to keep dust down and remove and containerize any debris and fold six (6) mil polyethylene sheeting inward to contain debris and to form tight bundles to containerize for disposal. The LHC Contractor shall place all plastic sheeting in six (6) mil thick polyethylene bags and seal.

L. Removing and Transporting Waste

- 1. Vehicles. The LHC Contractor shall ensure that all non-hazardous waste is transported in covered vehicles to a landfill, or lined landfill, if required.
- 2. Container Handling. The LHC Contractor shall carefully place the containers into the truck or dumpster used for disposal. At NO time will debris or containers be thrown or dropped.
- 3. Dust or Debris. If the LHC Contractor subcontracts the removing of the non-hazardous lead hazard control waste, the Contractor shall ensure that the company removing the waste material adequately covers all loads so as to assure that no dust or debris is released.
- 4. Liquid Wastes. The LHC Contractor shall contain and properly dispose of all liquid waste, including lead-contaminated wash water if not filtered and drained.
- 5. Containers. The LHC Contractor shall HEPA vacuum the exterior of all waste containers prior to removing the waste containers from the work area and shall wet wipe the containers to ensure that there is no residual contamination. Containers should then be moved out of the work area into the designated storage area.
- 6. Solvents. The LHC Contractor shall place solvent residues and residues from strippers in drums made out of materials that cannot be dissolved or corroded by chemicals. Solvents will be tested by the LHC Contractor to determine if they are hazardous. Solvents, caustic, and acid waste must be segregated and not stored in the same containers.

43. Soil Sampling Procedure

- A. Pre-lead hazard control Soil Sampling. In order to establish baseline lead-in-soil conditions on the site prior to the initiation of exterior lead hazard control, soil samples will be collected.
- B. Post-lead hazard control Soil Sampling
 - 1. Post-lead hazard control soil samples will be collected at the same building where pre-lead hazard control soils samples were collected.
- C. If pre-lead hazard control soil samples at any building locations exceed 400 ug/g for play areas/2,000 ug/g for other areas with bare soil, the Contractor may be required to perform soil excavation and removal at additional cost in accordance with 40 CFR 745.227(e). and Section 44.
- D. If pre-lead hazard control soil samples are at or below 400 ug/g for play areas/1,200 ug/g for other areas with bare soil and post-lead hazard control soil samples exceed these levels the Contractor will

be required to perform soil excavation and removal at no additional cost as specified in Section 45 and Section 47. Damages.

44. Excavations and Removal of Contaminated Soil

- A. Careful excavation will begin with equipment, such as an excavator or backhoe if feasible. Work will continue with hand tools as directed by the Rehab Office. Careful handling of soil with hand tools shall be employed in order to avoid damaging the structure and to minimize waste generation.
- B. Excavation to a depth of two (2) inches will take place within the area identified by the Rehab Office.
- C. Excavation will be performed with care to protect structures, utilities, sidewalks, pavements, and other facilities from damage caused by equipment, contaminated soil, and other hazards created by operations.
- D. Excavated soils will be placed in a pre-designated area on six (6) mil polyethylene roll sheeting and covered with the same material.
- E. Proper protective measures will be taken to prevent human exposure to excavated soils. Protective measures shall include installation of construction fencing around excavated soil and staking or weighting polyethylene sheeting to prevent wind or precipitation damage.
- F. Careful removal of contaminated soil will begin with equipment, such as an excavator or pay loader. Work will continue until all contaminated soil is removed from the area outlined on the site plan or described in the Work Write-Up to the specified depth.
- G. Appropriate worker protection practices shall be followed as specified in OSHA Regulations.

45. Laboratory Testing for Lead in Soil

Pre-lead hazard control and post-lead hazard control soil lead analysis will be performed. EPA protocols for soil sampling will be followed

46. DAMAGES

The LHC Contractor shall protect remaining surfaces such as drywall, paneling, plaster, glass, and the property soil, etc., from damage. Damages to non-protected remaining surfaces shall be repaired at the LHC Contractor's expense. Random background soil samples will have been obtained by the Rehab Office. Results will be supplied without specifying their location. The LHC Contractor is responsible for damages if the property soil becomes further contaminated. Reference is made to Sections 43 and 44.

47. REOCCUPANCY CRITERIA

Dwelling units will be reoccupied upon successful clearance as detailed in Sections 34 through 37.

48. ENCAPSULATION

- A. Definition (from HUD Guidelines, Section Chapter 13, Section I.)

Encapsulation is the process that makes LBP inaccessible by providing a barrier between the LBP and the environment. This barrier is formed using a liquid applied coating (with or without reinforcement materials) or an adhesively bonded covering material. While encapsulant systems may also be attached to a surface using mechanical fasteners, the primary means of attachment for an encapsulant is bonding of the product to the surface (either by itself or through the use of an adhesive).

Encapsulants should not be confused with enclosures, which are rigid barriers fastened by mechanical means to the base substrate (or the structural members). Enclosures rely on mechanical fasteners as the primary method of attachment.

Encapsulation depends upon a successful bond between the surface of the existing paint film and the encapsulant for performance. However, this condition alone is not sufficient for encapsulation system success. All layers of the existing paint film must adhere well to each other, as well as to the base substrate. If not, the encapsulation system may fail. Thus, proper assessment of the suitability of the surface and substrate for encapsulation is essential prior to the application and installation of the product.

The success of an encapsulation application also depends on successful patch testing in the field, proper completion of surface preparation and application procedures, ongoing monitoring by the owner and resident, and periodic reevaluation by a risk assessor. These procedures are discussed in detail in subsequent sections of this chapter.

B. Encapsulation Process

The LHC Contractor shall not encapsulate the following surfaces:

- Friction surfaces, such as window jambs and doorjambs.
 - Surfaces that fail patch tests.
 - Surfaces with substrates or existing coatings that have a high level of deterioration.
 - Surfaces in which there is a known incompatibility between two existing paint layers.
 - Surfaces that cannot support the additional weight stress of encapsulation due to existing paint thickness.
 - Metal surfaces that are prone to rust or corrosion.
1. The LHC Contractor shall conduct field tests of surfaces to be encapsulated for paint film integrity.
 2. The LHC Contractor shall consider special use and environmental requirements (e.g., abrasion resistance and ability to span base substrate cracks) in the selection of encapsulants.
 3. The LHC Contractor shall examine encapsulant performance test data supplied by the manufacturer and compare this data to the ANSI Standard Specifications for encapsulants (see Section 48.C.).
 4. The LHC Contractor shall conduct at least one test patch on each type of building component where the encapsulant will be used.
 5. The LHC Contractor shall for both nonreinforced and reinforced coatings, use a 6- by 6-inch test patch area. Prepare the surface in the manner selected for the complete job. Prepared surfaces for patch testing should be at least 2 inches larger in each direction than the patch area.
 6. The LHC Contractor shall, for fiber-reinforced wall coverings, use a 3- by 3-inch patch. For rigid coatings that cannot be cut with a knife, use a soundness test.
 7. The LHC Contractor shall, for liquid coating encapsulants, allow coating to cure and then visually examine it for wrinkling, blistering, cracking, bubbling, or other chemical reaction with the underlying paint. For all encapsulants, carry out the appropriate adhesion tests.
 8. The LHC Contractor shall record the results of all patch tests on Form 13.1.
 9. The LHC Contractor shall follow these General Specifications, the Work Write-Up and all industry standards in the prosecution of the lead hazard control work.
 10. The Worksite Preparation Level (see Chapter 8 of HUD Guidelines and Tables 8.1 and 8.2) shall be determined by the Rehab Office in consultation with the LHC Contractor.
 11. The LHC Contractor shall repair all building components and substrates as detailed in the Work Write-Up (e.g., caulk cracks and repair sources of water leaks).
 12. The LHC Contractor shall prepare surfaces. Remove all dirt, grease, chalking paint, mildew and other surface contaminants, remnants of cleaning solutions, and loose paint. All surfaces shall be deglossed, as needed.
 13. The LHC Contractor shall ventilate the containment area whenever volatile solvents or chemicals are used.
 14. The LHC Contractor shall, during encapsulant application or installation, monitor temperature and humidity. For liquid coatings, monitor coating thickness to ensure that the encapsulant manufacturer's specifications are met.
 15. The LHC Contractor shall conduct cleanup and clearance as per Section 9.U.36.
 16. The Owner should monitor the condition of the encapsulant after the first 6 months and at least annually thereafter. Repairs should be made as necessary. Reevaluations should be completed according to the schedule in Chapter 6 of the HUD Guidelines
 17. The LHC Contractor shall provide information to residents on how to care for the encapsulation system properly and how to contact the contractor to get repairs completed safely and quickly.
 18. The LHC Contractor and the Rehab Office shall maintain records on the exact detailed locations of encapsulant applications, concentration of lead in the paint underneath the encapsulant, patch test specifications and results, reevaluations, product name, contractor, and date of application or

installation, along with a copy of the product label and a material safety data sheet (MSDS) for the product. Record failures and corrective measures, signs of wear and tear, and the identity of the certified risk assessor.

C. Standards and Acceptance

ALL ENCAPSULANTS USED SHALL CONFORM TO ANSI E1795-97 Standard Specification for Non-Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings, E1796-97 Standard Guide for Selection and Use of Liquid Coating Encapsulation Products for Leaded Paint in Buildings AND E1797-97 Standard Specification for Reinforced Liquid Coating Encapsulation Products for Leaded Paint in Buildings or the latest standard in effect at the time the work is performed.

Special Note: Encapsulation is considered an acceptable method of federally supported LBP abatement or federally supported LBP hazard abatement, provided the following conditions, procedures, and precautions exist or are followed:

1. The encapsulation product or system is warranted by the manufacturer to perform for at least 20 years as a durable barrier between the LBP and the environment in locations or conditions similar to those of the planned application.
2. Selection and use of encapsulation products or systems follow the manufacturer's recommendations and the procedures and precautions described in Chapter 13 of the HUD Guidelines and in other relevant chapters, including those on occupant protection, worker protection, cleanup, clearance, and waste disposal.
3. Patch testing is completed successfully.
4. The property owner or local government agency conducts surface-by-surface visual monitoring of all encapsulant applications month and 6 months from the date of completion of the application and at other times as specified for encapsulation in Chapter 6 of the HUD Guidelines and records those results.
5. Failures are repaired as soon as possible, and repairs are made according to manufacturers' recommendations and the procedures and precautions recommended in Chapter 13 and other relevant chapters of the HUD Guidelines, including those pertaining to resident protection, worker protection, cleanup, clearance, and waste disposal.

D. Minimum Performance Requirements for Encapsulants

Encapsulant adhesion testing shall be performed either by using the guidelines below or ASTM D3359-97/ASTM D4541-95e1 as determined by the Rehab Office.

Four general performance requirements for encapsulants are as follows:

1. The encapsulant must be capable of being applied safely and must not contain toxic substances.
2. The encapsulant must adhere to existing paint films.
3. The encapsulant must have the ability to remain intact for an extended period of time (minimum of 20 years) when exposed to the expected environmental conditions and use patterns.
4. The encapsulant and its application procedure must comply with fire, health, and environmental regulations.

See Table 13.2 (from HUD Guidelines) "Categories of Encapsulants" following this chapter.

E. Safe Application

All encapsulants must be able to be applied safely, without excessive worker or occupant exposure to hazardous solvents, curing agents, or other chemicals in the encapsulant, either by inhalation or by contact with the skin.

F. Adhesion

An encapsulant must adhere to the existing paint film. Adhesion can be measured using peel, tensile, or shear tests. However, adhesion of an encapsulant to the LBP film is not sufficient for success of the encapsulant system; the integrity of the underlying paint layers is also crucial. Each of these layers must adhere well to other layers and the base substrate. In addition, each layer must have sufficient cohesive strength to support the increased internal stresses caused by the addition of an encapsulant layer.

G. Fire, Health, and Environmental

The LHC Contractor shall ensure that encapsulants must meet all local fire code requirements. Building codes and material safety data sheets (MSDS) must be consulted to ensure safe application and to provide information on when residents can safely reenter the area. The MSDS will also provide information on toxic substance content. In addition, environmental volatile organic compound (VOC) regulations limit the VOC content of paints in many local regions. **MSDS sheets will be provided to the Rehab Office and the Owner.**

H. Cleaning

Encapsulants shall not be applied over dirt, rust, oil, grease, mildew, chalk, or other surface contaminants. Surfaces shall be cleaned with trisodium phosphate. Additional cleaning agents may be needed for mildew or chalk removal. Cleaning can be done by hand with a sponge or rag or with the aid of power washing equipment. All surfaces shall be rinsed thoroughly with water to remove cleaning residue. In situations where chalk cannot be removed to an acceptable level, the use of a primer or stabilizer may be needed. If a special primer is used, the LHC Contractor shall use one recommended by the encapsulant manufacturer.

I. Deglossing

Deglossing shall be performed whenever recommended by the manufacturer to improve adhesion of the encapsulant coating. Deglossing materials must be compatible with the encapsulant. For some very hard, chemically resistant surfaces, deglossers may not work, and wet sanding may be needed.

J. Removal of Loose Paint

Loose paint shall be removed by wet scraping.

K. Preparing Exposed Base Substrates

The surface of bare wood shall be wet sanded to remove the degraded surface layer. Corroded metal shall be cleaned using HEPA-assisted power tools or HEPA-vacuum blasting to remove surface rust and contaminants. Bare concrete and masonry materials shall be washed to remove loose dirt, degraded materials, or other surface contaminants.

L. Field Patch Tests

A patch test shall be performed on each component detailed in the Work Write-Up that is to be encapsulated. An encapsulant/surface preparation system that fails a patch test shall not be used. The Rehab Office shall determine the locations of all patch tests and shall inspect all patch tests to determine success or failure of the encapsulant/surface preparation system.

1. Size of Patch Tests

- a. For liquid-applied systems the test patch size shall be a minimum of 6 by 6 inches.

b. Location of Patches

2. At least one test patch shall be applied to each type of component in each room or exterior location representing different types of paint where the encapsulant is to be used as directed by the Rehab Office.
3. Surface Preparation for Patch Testing

The area prepared for the patch test shall be at least 2 inches larger in each direction than the area to be encapsulated for the test, unless the shape of the component makes this impossible. The surfaces shall be inspected following preparation to ensure that the preparation was carried out properly. The inspection results shall be documented separately for each patch.

4. Encapsulant Application and Installation

The encapsulant(s) shall be applied in accordance with the manufacturer's recommendations. The application method, wet film thickness (if appropriate), and environmental conditions shall be documented for each patch and shall be the same as when used on the target surface. For encapsulants that cannot be cut with a knife use the soundness test described below. After the encapsulant has cured, the patch is examined for adhesion and compatibility with the existing LBP film. Since the cure times of encapsulants range from less than 24 hours to a period of months for a complete cure, it may not always be possible to perform patch tests on completely cured patches.

5. Patch Preparation for Conducting a LBP Soundness Test

A 3/8- by 3-inch bead of construction adhesive shall be applied to the central portion of the face of an 8-inch-square piece of gypsum wallboard. The wallboard square shall be pressed onto a 6- by 6-inch patch. The curing time recommended by the adhesive manufacturer shall be observed. Evaluation of results is discussed below.

6. Visual and Adhesive Evaluation of Field Patch Tests

The encapsulant coating shall be visually examined by the Rehab Office for signs of incompatibility with the paint film. These signs include wrinkling, blistering, cracking, cratering, and bubbling of the encapsulant. Solvent-based encapsulants (e.g., epoxies, polyurethanes) may react with the underlying paint layer and cause bubbling, disbonding, or other LBP film deterioration. Bubbling or disbonding may be detected by scraping the surface of the patch, using sufficient pressure to break any visible and nonvisible surface bubbles. Surface imperfections may indicate that the encapsulant is incompatible with the existing coating. Bubbles may also form in liquid-coating encapsulants because of foaming during application, solvent entrapment during cure, and other conditions. If the Rehab Office determines that the bubbles are associated with chemical reactions between the encapsulant and the underlying paint film, or the extent of bubbling is unacceptable, the patch test is a failure. If deeper probing reveals a weakened layer of paint, the patch test is also a failure. If it has failed a patch test, the encapsulant shall not be applied to the target surface.

7. "X"-Cut Adhesion Method.

For the "X"-cut method, the Rehab Officer should take a sharp cutting tool (e.g., a knife, razor blade, or scalpel) in good condition and a hard metal ruler (as a cutting guide) and inscribe an "X" in the center of the patch after the encapsulant system has cured according to the manufacturer's recommendations. Each cut line should be 1 ½ to 2 inches long and should be made through the coating, the paint, and the patch all the way down to the substrate. A flashlight may be necessary to determine the depth of the cut. If the cut does not go through the patch to the base substrate, a second "X" cut

should be made in a different location. The first cut should not be deepened. To evaluate the adhesion and integrity of the paint film, the inspector technician should use the point of the cutting tool to attempt to peel or lift the patch from the existing topcoat. The point of the tool should be placed below the encapsulant layer at the intersection of the two cut lines. If the inspector technician can lift, peel, or tear a large (more than ½ inch- or ½ inch-square) portion or section of the patch away from the existing topcoat to which it was applied, then the encapsulant fails the patch test. The Rehab Officer should expect that a small piece of the patch will separate from the base substrate (up to 1/4 to 1/2 inch). This does not indicate failure of the patch test.

8. Patch-Edge Method.

For the patch-edge method, the Rehab officer shall make a cut adjacent to the edge of the patch through to the base substrate. If the thickness of the encapsulant does not change abruptly, but gradually decreases at the edge of the patch, the cut should be made through as thick a layer of the encapsulant as possible to the base substrate. The point of the knife should be placed under the encapsulant at the cut, attempting to peel or lift the patch from the LBP topcoat or locate other delaminated layers within the LBP film. If a large portion of the encapsulant, as determined by the Rehab Office, can be lifted easily, then the patch test fails.

9. Soundness Method.

For the soundness method, the Rehab Officer should attempt to pull the wallboard square way from the painted surface. If the paper backing of the wallboard remains on the adhesive of the painted surface of the patch, the test is a success. The patch test fails if the adhesive is removed from the surface of LBP or if the paint film splits. Failure at the adhesive/wallboard interface can perhaps be overcome by the use of a different surface preparation procedure, as discussed below for the encapsulant patch test. If failure occurs in any of these procedures, it is important to carefully examine the back of the delaminated portion of the patch in order to determine if the failure occurred at the encapsulant/paint film interface or in an underlying layer of paint. As discussed below, encapsulation may still be suitable—with a different system or surface preparation—when the failure is interfacial but not when the failure is within the old paint film. It may be difficult to determine the locus of failure if the paint layers and the encapsulant coating are similar colors. If a failure occurs, one of the following courses of action must be taken, depending on the cause of failure:

- c. The adhesion between two underlying layers of paint failed, causing delamination.

Check for this condition by examining the back of the delaminated portion of the patch for signs of paint. This result indicates a layer of paint that bonded poorly and does not have sufficient adhesion. Poor bonding between underlying layers may be due to inadequate deglossing, poor-quality paint, or incompatible coatings. These conditions are usually not correctable. Since multiple patch tests are recommended, complete all patch tests before deciding upon a plan of action. The encapsulant should not be used on a surface or component that has failed patch tests.

- d. The adhesion between the paint and the base substrate failed.

Check for this by looking for signs of bare substrate and paint adhering to the back of the delaminated portion of the patch. Failure may be due to a painting history that has included so many layers of paint that the weight of the paint plus the encapsulant has begun to weaken the bond between the paint and the

substrate. Moisture can also cause this type of failure. This is usually not correctable, and the encapsulant should not be used.

- e. The adhesion between the encapsulant coating and the top layer failed.

Check for this by examining the back of the delaminated portion of the patch for lack of paint. Failure may be due to:

- Application of the encapsulant to a glossy surface without adequate deglossing. It may be possible to degloss the surface using a different technique and apply a second patch test to a different area on the same component. Wet sanding is permitted to degloss but not dry sanding.
- Inadequate curing time or improper curing conditions. Manufacturer's recommendations for curing and application conditions should be consulted.
- Application of the encapsulant to a dirty or greasy surface. The surface must be re-cleaned, and possibly deglossed before a second patch test is tried.
- Application of material to excessive thickness. This can cause failure due to internal stresses that cause the coating to pull away from the substrate. The applicator should be trained according to the manufacturer's instructions and a wet film or dry film thickness gauge (sometimes referred to as a "mil" gauge) should be used during application.

10. Evaluation of Adhesively Bonded Flexible Surface Covering Tests.

A successful patch is one that cannot be easily removed. If the patch cannot be removed, the covering will have to be installed over the patch. In such a case, a smaller patch in an inconspicuous place will minimize the irregularity in the appearance of the finished product.

11. Documentation of Patch Test Results

Patch testing may involve multiple patches on multiple surfaces. Therefore, documentation is very important to be sure that the correct encapsulant systems (including surface preparation) are applied to the target surfaces. If multiple patch tests are performed in a dwelling a schematic drawing shall be used to indicate the locations of the patches. Form 13.1 of the HUD Guidelines shall be completed for this purpose.

M. Application and Installation of the Encapsulation Systems

Upon successful completion of a patch test, the encapsulant system can be applied or installed to the targeted surface. The steps for a proper application of an encapsulant system are summarized in Table 13.2. of the HUD Guidelines.

1. Surface Preparation for Job

The surface preparation shall be the same one that was used in the successful patch test and shall be conducted with the same thoroughness and level of effort. The process of repairing components and preparing surfaces for the application and installation of encapsulants can generate leaded dust and debris, so precautions must be taken. The type of precautions needed will depend upon the methods used. The appropriate Worksite Preparation Level shall be selected from Chapter 8 of the HUD Guidelines by the Rehab Office. Repair of defective surfaces or components shall be detailed in the Work Write-Up. The encapsulant manufacturer shall be asked by the LHC Contractor to provide recommendations for caulk and other filling compounds that are compatible

with the encapsulant. To minimize future crack formation in the encapsulant, these materials shall match the expansion characteristics of the encapsulant and be compatible with the existing coatings. When the repair work and the surface preparation have been completed, the surface shall be inspected by the Rehab Office prior to application and installation of the encapsulant. Once the encapsulant is applied, it becomes impossible to fix a poor surface preparation or, in the case of a failure, to confirm that surface preparation was done properly. **Therefore, if the LHC Contractor proceeds with encapsulation without an inspection, the Rehab Office may require that the encapsulant be removed, redone, or enclosed at the LHC Contractor's expense.**

2. Installation and Application of Encapsulant System

a. Nonreinforced and Reinforced Coatings

The application procedures and requirements depend upon the specific product type. The same application method shall be used for the targeted surface that was used in the patch test.

Several safety considerations are important in application: the applicator must have the appropriate MSDS documentation; personal protective equipment may be needed and must be in compliance with NIOSH or OSHA regulations; and areas need to be properly ventilated.

Masking procedures shall be carried out, as needed. Surfaces to receive masking tape or other masking materials shall be clean and free from dirt, dust, grease, and oil to ensure good contact. Loose edges of masking materials shall be secured to avoid "flyaway," if spray application is being used. The time between coating application and masking material removal may depend upon the specific encapsulant being used.

The required environmental conditions for application depend upon the specific encapsulant being used. The manufacturer's specifications shall be followed. Water based systems generally should not be applied to substrates when temperatures are below 40 °F or above 95 °F and the relative humidity is above 85 percent. For all encapsulants, application shall be done only when the surface is dry and the temperature of the target surface is above the dew point.

Additional mixing and/or thinning of liquid encapsulants may be needed and shall be done in accordance with the manufacturer's directions. Excessive thinning can cause premature failure.

For two-component coatings, it is essential that the proper ratio of materials be mixed according to the manufacturer's directions. Not all two-component products are to be mixed together in the same ratio. Two component materials will have a limited "pot life." That is, once the two components are mixed, a chemical reaction begins that can be slowed, but not stopped, by cooling. This means that the user has a limited period of time, i.e., pot life, in which to apply the product and to clean tools. Two-component coatings may also have an "induction time" requirement. This is a period required after mixing but before application to allow time for initiation of the reaction between the two components.

Encapsulants shall be applied according to the manufacturer's recommended thickness. Wet film thickness gauges (sometimes called mil gauges) shall be used to ensure proper film thickness. An encapsulant layer that is either too thick or too thin can cause premature failure.

Reinforced liquid encapsulants can require the use of a fabric. The manufacturer's recommendations for application of the fabric and procedures for seaming shall be followed.

For liquid coatings, cure times vary from product to product and can depend upon atmospheric conditions. Thick elastomeric coatings may take only a few hours to be dry to the touch, but it may take several weeks for their mechanical properties to reach optimum values. The time for two-component coatings to cure depends upon temperature but is generally about a day.

b. Adhesively Bonded Coverings

Adhesively bonded wall coverings are installed in a manner similar to that used for vinyl wall coverings. No special tools are required. The typical three-step procedure is to apply adhesive with a roller; align and trowel the covering over the adhesive; and apply the topcoat, if needed. There are two options for coloring. The adhesive can be tinted the same color as the topcoat, which ensures two coatings with color, or two topcoats with color can be applied over untinted adhesive.

Some product manufacturers do not supply specific adhesive and topcoat products but only provide recommendations for choosing these products. Generally, there are two types of adhesives, "permanent" clay-based adhesives and water-based, heavy-duty, but strippable adhesives. Since the permanent clay-based adhesive is more durable, it is preferred for LBP encapsulation. However, removal of a wall system is difficult, if not impossible, when the permanent adhesive is used. Water-based adhesives are more easily removed than permanent adhesives but may blister and fail when they come in contact with moisture.

Adhesively bonded floor tile shall be installed according to the manufacturer's directions. If new subflooring is installed, then the tile/subfloor system constitutes an enclosure. If adhesion alone is used, the tiles constitute an encapsulant.

3. Inspection of Encapsulant Systems

Surface preparation and application procedures shall be carried out according to the manufacturer's recommendations and in accordance with the General Specifications and the Work Write-Up. Monitoring of surface preparation and application is essential, in addition to conducting the final clearance examination.

a. Tools

Tools that may be required are a dark cloth to check for chalk removal, copies of referenced surface preparation standards, wet film and dry film thickness gauges, a moisture meter, surface and air thermometers, a relative-humidity meter, pressure gauges, a timepiece, and an illuminated viewing device. A logbook should be used to record all inspection data.

b. Procedures

SPECIAL NOTE: THE LHC Contractor SHALL NOT PROCEED WITH ANY STEP OUTLINED BELOW WITHOUT INSPECTION AND APPROVAL OF THE REHAB OFFICE.

The contractor shall provide work (scheduling) plans, worker safety plans, lists of materials and the amounts to be used, material manufacturer's written technical data sheets, application instructions, MSDS, test reports, and other information required in the General Specifications and Work Write-Up.

The Rehab Office shall be notified by the LHC Contractor and shall inspect coating operations. All inspection data should be recorded by the inspector in a daily logbook.

Surface preparation and application inspection checkpoints and procedures are listed below:

1. Prior to start of job—the Rehab Office will check equipment and encapsulant material.
2. After preliminary cleanup and readying of the area prior to surface preparation—the Rehab Office will check for containment, protection of belongings and property, and completion of surface repairs, such as caulking.
3. After surface preparation—the Rehab Office will ensure that the surface has been prepared in accordance with the General Specifications and Work Write-Up and in the same manner as used in the patch test.
4. For liquid encapsulants, just prior to material application—observe mixing and thinning, if any, for compliance with manufacturer's written instructions. Ensure that mixing ratio of two-component coatings is correct.
5. During application of encapsulant—check environmental conditions (temperature, relative humidity, etc.). For liquid coatings, check wet film thickness, color of material (different colors should be required for different coats), and cure of previous coat before application of next coat for compliance with manufacturer's written instructions.
6. After job completion—check dry film thickness and cure of liquid-applied coatings and appearance for all encapsulants.

N. Periodic Monitoring and Reevaluation

Because of the limited experience with the use of encapsulant systems and because of their dependence upon the integrity of a LBP film, the property owner should arrange for regular monitoring and repairs, as needed. Visual monitoring should be performed 1 month and 6 months after application and at the schedule specified in Chapter 6. If signs of wear or deterioration are apparent during any reevaluation examination, the monitoring should be increased to a quarterly basis for the next 6 months, then annually thereafter. In addition, occupants should notify the LHC Contractor and the Rehab Office of the need for repairs on a timely basis.

O. Record Keeping

The owner and LHC Contractor shall both maintain documentation of interim control or abatement measures. Since the lead is not removed, appropriate protective measures must be taken if the encapsulant fails or if the building is renovated or demolished. Although it would be possible to label existing LBPed surfaces prior to encapsulation, the warning would likely be hidden, since it would be covered by the encapsulant. A chemical reaction between the marking substance and the encapsulant could cause the encapsulant to fail. Therefore, drawings showing locations of LBP shall be mounted on a wall of a storage closet, or utility room. Records of both the initial installation and reexaminations shall be provided to a new owner at the time of property transfer.

The following information describing the initial application shall be included with the drawings kept in the building:

1. Type of encapsulant and product name.
2. Exact location of encapsulant.
3. Product label and/or copy of manufacturer's technical product information.
4. MSDS for all products used.
5. Contractor name.
6. Date of application.

The visual monitoring document shall be kept by the owner and the Rehab Office. Each document should include the name of the person performing the periodic visual monitoring, the date of the visual monitoring, the condition of coating and signs of wear or deterioration, and results of any leaded dust tests performed. If failure was observed or encapsulant had been repaired, the reasons for failure (if known), corrective actions recommended or taken to repair failures, and any other information pertinent to the maintenance of the encapsulant should be included.

Form 13.2 may be used for this purpose (provided at end of this chapter).

49. Enclosure

The LHC Contractor shall stamp, label, or stencil all LBP surfaces that will be enclosed with a warning approximately every 2 feet both horizontally and vertically on all components. The warning should read: "Danger: LEAD-BASED PAINT." Deteriorated paint shall not be removed from the surface to be enclosed.

- A. The Rehab Office will select a Worksite Preparation Level (see Chapter 8 of the HUD Guidelines).
- B. The LHC Contractor Contractor shall attach a durable drawing to the utility room or closet showing where LBP has been enclosed in the dwelling.
- C. A Plan for annual monitoring of the enclosure by the owner will be developed by the Rehab Office. An independent inspector technician or risk assessor should evaluate the integrity of the enclosure according to the reevaluation schedule in Chapter 6 of the HUD Guidelines and after any significant damage due to plumbing or roof leaks, tornadoes, hurricanes, floods, earthquakes, etc.
- D. The LHC Contractor CONTRACTOR shall repair unsound substrates and structural members that will support the enclosure, as detailed in the Work Write-Up.
- E. The LHC Contractor Contractor shall use the enclosure material detailed in the Work Write-Up.
- F. The LHC Contractor Contractor shall install extension rings for all electrical switches and outlets that will penetrate the enclosure.
- G. If enclosing floors, the LHC Contractor Contractor shall remove all dirt with a HEPA vacuum to avoid small lumps in the new flooring.
- H. The LHC Contractor Contractor shall seal and back-caulk all seams and joints. Back-caulk means applying caulk to the underside of the enclosure.
- I. When installing enclosures directly to a painted surface, the LHC Contractor Contractor shall use adhesive and then anchor with mechanical fasteners (nails or screws).
- J. Conduct cleanup as per Section 9.U.36.
- K. The Rehab Office shall have a certified risk assessor or inspector conduct clearance testing and provide documentation and a Statement of LBP Compliance.

50. Interim Control: Guidance for Rehab Staff

- A. Owners of properties where the paint is in good condition, as determined by the Rehab Office, may decide to proceed directly to interim control without a risk assessment. This involves stabilizing any deteriorated paint (see Chapter 11, Section II of the HUD Guidelines), on the assumption that all deteriorated paint contains LBP, thoroughly cleaning all surfaces (see Chapter 11, Section IV of the HUD Guidelines), and covering all bare soil (see Chapter 11, Section V of the HUD Guidelines). These measures should be followed by a risk assessment (not a risk assessment screen) to determine if the property meets clearance standards and if any hazards were left uncorrected. All interim control activities shall be carried out in accordance with the procedures described in the HUD Guidelines.
- B. Alternatively, an owner, in consultation with the Rehab Office, may first have an independent risk assessment performed by a certified professional to determine if LBP hazards exist and to minimize hazard control activities.

- C. Together with a certified risk assessor, planner, or other designer, the Rehab Office shall develop a site-specific lead hazard control plan based on the hazards identified, the feasibility of the control measures, occupant protection, and financing. For interim controls and some abatement techniques, the plan shall include how and when ongoing monitoring by the owner and reevaluation by a certified risk assessor or certified inspector will be performed. (See Chapter 6 of the HUD Guidelines for standard reevaluation schedules.)
 - D. For building components, determine which hazards will be addressed with interim controls (dust removal, paint stabilization, and/or control of friction/abrasion points). For lead-contaminated soil, decide which interim control measure is appropriate for the climate and the planned use of the area.
 - E. These General Specifications shall be used in conjunction with the site-specific Work Write-Up to detail how any abatement activities and other construction work (e.g., weatherization) will coincide with the interim control work. Interim controls may be combined with abatement in many cases.
 - F. Although interim controls are not expected to generate hazardous waste, the planner or risk assessor should make this assessment for each project and notify local authorities if the local jurisdiction requires it.
 - G. Select a qualified, trained contractor to complete the hazard control work. For some small jobs, onsite maintenance workers may be able to perform the work. In either case, Occupational Safety and Health Administration (OSHA) regulations require all interim control workers to be trained in safe work practices.
 - H. Select the appropriate interior and/or exterior Worksite Preparation Level (from Chapter 8 of the HUD Guidelines) to protect residents.
 - I. Notify occupants of the dwelling and nearby dwellings of the work and when it will begin. Distribute educational materials furnished by the U.S. Environmental Protection Agency (*Protect Your Family From Lead In Your Home*) and/or the State or local government to residents about lead poisoning and lead-safe practices.
 - J. Correct any existing conditions that could undermine the success of the interim controls (e.g., structural deficiencies, moisture problems, uncleanable surfaces).
 - K. For exterior work, pre-interim control soil samples shall be collected but not necessarily analyzed until clearance soil samples have been collected, analyzed, and compared to clearance standards. If soil levels are below applicable limits, the baseline samples need not be analyzed (see Chapter 15 of the HUD Guidelines).
 - L. Execute interim control work. See the Step-by-Step Summaries in each section of Chapter 11 of the HUD Guidelines for information about dust removal, paint film stabilization, friction and impact surface treatments, and interim soil controls.
 - M. Store all waste in a secure area and make sure that it is properly labeled (see Chapter 10 of the HUD Guidelines). Dispose of all waste properly.
 - N. Conduct daily and final cleanups (see Chapter 14 of the HUD Guidelines and Section 9.U.36 of these General Specifications).
 - O. Have a certified inspector technician or risk assessor, independent of the LHC Contractor, conduct a clearance examination 1 hour after cleanup to let dust settle (see Chapter 15 of the HUD Guidelines and Section 9.U.36 of these General Specifications). If no preliminary risk assessment was performed, only a certified risk assessor can conduct the clearance examination/risk assessment. If clearance is not achieved, complete interim controls and/or reclean. Following a successful clearance examination, the property owner shall receive documentation to that effect, including a schedule for required reevaluation (if applicable). Local authorities may also require a Statement of LBP Compliance.
 - P. Pay contractor and clearance examiner.
 - Q. The owner should conduct ongoing maintenance and monitoring of interim controls to ensure that they remain in place. Periodic reevaluations by a certified risk assessor should be completed according to the reevaluation schedule in the hazard control plan of the property.
 - R. The Owner should maintain records of all lead hazard control, reevaluation, and monitoring activities and turn them over to any new owner upon sale of the property.
51. Interim lead hazard control measures-Guidance for Rehab Staff & requirements for Contractors
- A. General Requirements

Unless precluded by regulation (i.e. substantial rehabilitation – >\$25,000), interim controls are most easily implemented when most surfaces with LBP are intact and structurally sound and lead exposure comes primarily from deteriorating paint and excessive levels of lead in household dust and/or soil. Interim controls are also appropriate if the housing unit is slated for demolition or renovation within a

few years. In many cases resources will not be available to finance permanent abatement, making interim controls the only feasible approach.

If the housing unit has substantial structural defects or if interior or exterior walls or major components, such as windows and porches, are seriously deteriorated or subject to excessive moisture, interim controls are unlikely to be very effective. Paint cannot be effectively stabilized unless substrates are dry, structurally sound, and waterproof. Other interim control measures, such as window repair, would also not be very effective if structural problems are likely to result in rapid treatment failure. Any structural problems should be repaired before interim controls can be implemented. If these problems cannot be repaired, then more frequent reevaluation will be necessary in case of premature failure.

Interim lead hazard control measures include:

1. Repairing all rotted or defective substrates that could lead to rapid paint deterioration (repairing defective building systems that cause substrate damage may be a prerequisite for effective interim control but is outside the scope of interim control per se).
2. Paint film stabilization (see Chapter 11, Section II of the HUD Guidelines)—stabilizing all deteriorated LBP surfaces by removing deteriorating paint and repainting.
3. Friction and impact surface treatments (see Chapter 11, Section III of the HUD Guidelines)—treating floors and interior windowsills and window troughs so that they are smooth and cleanable.
4. Treating friction and impact surfaces, such as windows, doors, stair treads, and floors, when they are generating LBP chips or excessive levels of leaded dust that cannot be controlled with ordinary cleaning.
5. Treating protruding, accessible surfaces, such as interior windowsills, where LBP may be present and there is either visual or reported evidence that children are mouthing or chewing them.
6. Treating all bare soil containing excessive levels of lead.
7. Dust removal and control (see Chapter 11, Section IV of the HUD Guidelines)—cleaning surfaces to reduce levels of leaded dust to acceptable levels, including cleaning carpets, if they are contaminated.
8. Educating occupants and maintenance workers on how to avoid lead poisoning.
9. Conducting reevaluations by certified individuals and ongoing monitoring and observation by owners.

B. Paint Film Stabilization

Repairs listed below should be individually detailed on the site-specific Work Write-Up.

1. Eliminate any exterior leaks in the building envelope (e.g., roofing leaks, gutter or downspout problems, missing or damaged doors, roof flashing, missing opening trim, missing glass in windows, defective or missing caulk and glazing, loose fasteners).
2. Eliminate any interior water leaks (e.g., plumbing leaks; clogged condensate drip lines for air conditioners; missing water pans for hot water heaters; inadequately ventilated attic spaces; clogged bathtub drains; missing tile, grout, or caulking in bathtubs; windows that won't close completely).
3. Select and implement an appropriate Worksite Preparation Level (see Chapter 8 of the HUD Guidelines).
4. For exterior work, collect soil samples before the work begins (unless soil sampling has already been completed for a risk assessment). These samples need not be analyzed unless clearance samples show soil lead levels are above applicable clearance standards.
5. Repair all rotted structural, siding, or railing components; defective plaster; missing door hardware; loose siding or trim; and loose wallpaper.
6. Prepare surface by wet scraping or wet sanding. Do not remove paint by burning or torching, power sanding without HEPA attachments, or abrasive blasting. Dry scraping and chemical strippers with methylene chloride are not allowed.

7. Clean, degloss, neutralize, and rinse surfaces. Surfaces should be dry before priming or repainting.
8. Select primer and topcoat by considering longevity, moisture resistance, and organic compound content with low volatility. Paint film stabilization involves the application of at least two coats (the primer and the topcoat). Use a primer/topcoat system from the same manufacturer to ensure compatibility.
9. Apply all paints at appropriate thickness (see Chapter 11, Table 11.1 of the HUD Guidelines) or according to manufacturer's directions. Apply paint only during proper temperature, wind, and humidity conditions. Allow sufficient time for each coat to dry fully.
10. Conduct final cleanup (see Chapter 14 of the HUD Guidelines and Section 9.U.34 and 36 of these General Specifications).
11. At the end of the lead hazard control project, have a certified inspector technician or risk assessor conduct a clearance examination and provide appropriate documentation or statements of LBP compliance.
12. Conduct reevaluations annually as indicated in the site-specific schedule (Chapter 6, Table 6.1 of the HUD Guidelines). Perform ongoing maintenance of paint and restabilize paint whenever deterioration is discovered.

C. Friction and Impact Surface Treatment

Repairs listed below should be individually detailed on the site-specific Work Write-Up.

1. The Rehab Office will select and implement the appropriate Worksite Preparation Level (see Chapter 8 of the HUD Guidelines).
2. For windows, the LHC Contractor Contractor shall remove stop bead and parting strip and dispose of properly. Wet scrape deteriorated paint. If the window trough is badly weathered, cap with back-caulked, aluminum coil stock. Prior to installation of aluminum coil stock, repair to allow solid penetrations of mechanical fasteners. Repair window weight and pulley system. Install new window channel or slide system and replace stop bead and parting strip. Upper sash shall be made inoperable through installation of screws. Caulk upper sash and stabilize paint on entire window frame, sill, sashes, stool and trim materials.
3. For doors, the LHC Contractor Contractor shall remove doorstep and dispose of properly. Remove door by pulling out hinge pins. Mist and plane door to eliminate friction points. Reinstall door and install new doorstep.
4. For stairs, LHC Contractor Contractor shall install a hard, cleanable covering on treads (i.e., rubber tread guards or as specified in the Work Write-Up). Carpeting may be used instead (if detailed in the Work Write-Up, but it must be securely fastened so that it does not cause abrasion. Stabilize paint on banisters, balusters, and newel posts as detailed in the Work Write-Up (refer to important information in Section 50).
5. For baseboards, LHC Contractor Contractor shall remove and dispose of shoe molding and replace with new as detailed in the Work Write-Up.
6. For abraded outside wall corners, LHC Contractor shall install new plastic or wood corner bead as detailed in the Work Write-Up.
7. For drawers and cabinets, LHC Contractor shall remove and replace cabinet doors or remove paint by offsite stripping as detailed in the Work Write-Up. Strip paint from drawers and drawer guides or plane impact points and repaint as detailed in the Work Write-Up. As an alternative, install rubber or felt bumpers at points of friction or impact as detailed in the Work Write-Up.
8. Repaint porches, decks, and interior floors as detailed in the Work Write-Up.
9. The Rehab Office shall have a certified risk assessor or certified inspector conduct a clearance examination.
10. The Owner should perform ongoing maintenance and monitoring of treatments. Reevaluations should be conducted by certified risk assessors based on the reevaluation schedule for the specific property (see Chapter 6 of the HUD Guidelines).
11. The Rehab Office shall provide educational materials to the Owner. Information should include proper cleaning routines and the sticky tape method of removing loose paint.

D. Dust Removal and Control

Repairs listed below should be individually detailed on the site-specific Work Write-Up.

1. If the level of lead-contaminated dust exceeds the following levels, the dust shall be removed. The present standards for wipe sampling are:

- **Interior window sills, 250 µg/ft².**
- **Floors, 40 µg/ft².**

Bare floors and window components shall be made smooth and cleanable.

2. The LHC Contractor shall correct any known or suspected LBP hazards before dust removal, as detailed in the Work Write-Up.
3. The LHC Contractor shall visually inspect other dust traps, such as radiators and floor grates. If visible dust is found, the component shall be cleaned.
4. The Rehab Office shall distribute educational materials prepared by EPA or State or local government agencies to Owners. These materials should warn owners that carpets, drapes, and upholstered furniture may be contaminated and should be cleaned or replaced.
5. Prepare the work area with Interior Worksite Preparation Level 1 or other proven containment method (see Chapter 8 of the HUD Guidelines). If contaminated carpet is to be removed, the work area should be contained with Interior Worksite Preparation Level 3 or 4 (do not put down plastic sheeting on floors for carpet removal).
6. The LHC Contractor shall clean all horizontal surfaces, beginning with HEPA vacuuming, followed by wet washing with a cleaning agent suitable for lead removal, such as a lead-specific cleaner or trisodium phosphate detergent (as per Section 9.U.34). Test the cleaning solution before using to determine if it will discolor or damage surfaces to be cleaned.
7. The LHC Contractor shall begin dust removal at the top rear room in the dwelling, working forward and down. Within rooms, start with the highest horizontal surface and work down. Clean windows, other dust traps, and finally the floors (as per Section 9.U.34). When practical, clean dirty areas last within rooms to avoid spreading dust.
8. The LHC Contractor shall place the HEPA vacuum on a smooth, hard surface or on a sheet of plastic during operation. Remove HEPA filters and bags offsite (not inside the dwelling) in a controlled environment. See Section 9.U.34.
9. During wet cleaning, the LHC Contractor shall replace rags, sponges, and mops frequently (at least once per dwelling). Use a two-bucket system for floors: one for the cleaning solution and the other for rinsing. Change the wash water at least once in each room. See Section 9.U.34.
10. The LHC Contractor shall clean until no surface dust is visible. After cleaning rinse with clean water and a new sponge or cloth.
11. The owners of carpets and upholstered furnishings are responsible for their care. Recommend to the owners that highly contaminated or badly worn items should be discarded. To discard a carpet, mist the surface with water; seal in plastic sheeting, bags, or containers; and discard properly.

FORM 13.2

LBP ENCAPSULATION VISUAL MONITORING FORM

Name of Person Performing Visual Monitoring _____

License or Certificate Number (If Applicable) _____

Complete Address of Dwelling _____

Date Encapsulant was Applied _____

Date of Last Evaluation _____

Table 13.2 Categories of Encapsulants

ENCAPSULANT CATEGORY	Application and Installation Method	CHARACTERISTICS
Nonreinforced liquid coatings.	Usually applied with brush, roller, or spray.	Interior and exterior products. Some properties vary widely, such as elongation (e.g., elastomeric with high elongation to rigid with limited elongation), dry film thickness (0.05 mm to greater than 0.5 mm), hardness, dry/cure time, and compatibility with existing painted surfaces.
Liquid coatings reinforced with cloth, mat, fibers, etc.	Applied with brush, roller, spray, or trowel. Usually applied in two steps.	Interior and exterior products. Properties vary widely.
Materials adhered with an adhesive (e.g., fibermat, vinyl floor tile).	System is usually installed in two steps: (1) adhesive application and (2) encapsulant product installation.	Classification includes sheet vinyl systems, floor tile, wall systems, and other adhesively bonded systems.

DIVISION 10 - SPECIALTIES (SUBJECT TO DIVISION 1)

10.A. PEST CONTROL

1. General

Exterminate for rodent and insect pests as called for in Bid Document. All work shall be performed by a licensed exterminator.

2. Products

Use only those chemicals approved for use by the Environmental Protection Agency (EPA).

3. Execution

Apply poisons at rates and by method recommended by the chemical manufacturer.

Exercise care to protect inhabitants and pets from hazards associated with treatment, making any continuing hazard known to the resident.

Provide certificate of treatment to the Rehab Office.

Offer owner annual renewable insurance against termite and similar insect damage.

Supply Material Safety Data Sheet (MSDS) to the owner, Contractor, and Rehab Office.

10.B. HARDWARE

Unless otherwise noted, existing hardware that is to be removed becomes the property of the contractor. Voids or blemishes caused by the removal of hardware, which are not covered by new hardware, shall be patched and finished to match adjacent surfaces as closely as possible.

All door and miscellaneous hardware items shall be Weiser, Kwikset, or written approved equal. Kitchen cabinet hardware shall be Washington, Amerock, National, or written approved equal.

10.C. SIGNAGE & ACCESSORIES

1. General

Install as specifically called for by the Bid Document.

2. Products

A. House numbers shall be at least three inches high aluminum or plated 11 gauge steel.

B. Mailbox shall be a model approved by the United States Postal Service and as specified in the Bid Document.

3. Execution

A. Install letters with a minimum of two screws finished to match letters. Install in a legible configuration.

B. Install mailbox according to manufacturer's recommendations.

10.D. VENTS & LOUVERS

1. General

A. Provide vents as required for all equipment and appliances provided as part of the Bid Document.

B. Provide vents as specifically required by the Bid Document.

C. Repair or replace all existing vents and louvers to provide protection from weather and insects.

2. Products

A. Foundation Vents - Stamped steel, 16 x 8 inch with 20 gauge damper and 18 x 16 wire mesh insect screen.

- B. Attic Vents - Fixed louvers, aluminum or galvanized steel with flange with 18 x 16 wire mesh insect screen, sized according to FHA Specification 604-4.2. There shall be a minimum of two gable vents as practical. When power ventilation is called for, adjust attic vent size accordingly.
 - C. Soffit vents shall be 8" x 16" and installed 8' o.c.
 - D. Dryer Vents - 4" galvanized steel or aluminum with weather cap, thru-wall type.
 - E. Power ventilators shall be UL approved and rated for the size of space to be ventilated.
 - F. Turbine vents shall be 12" in diameter and externally braced. Position on roof and installation as recommended by manufacturer.
3. Execution
- A. Install vents plumb and square.
 - B. Flash as required for weathertight installation.
 - C. Foundation vents shall be a minimum of 8" above grade line.
 - D. Kitchen hood shall be equal to the width of the cooking appliance below it and U.L. rated hood shall have:
 - 1) Removable, washable filter system.
 - 2) Light with separate switch.
 - 3) Two-speed exhaust fan.
 - 4) The hood shall have a minimum C.F.M. of 150.

10.E. TOILET & BATH ACCESSORIES

1. General

Accessories shall match existing as far as possible.

- A. Each bathroom referenced on the Bid Document shall be provided with the following accessories at a minimum:

1 medicine cabinet as specified in Bid Document

1 soap/grab @ tub/shower

1 toilet paper holder

1 towel bar @ lavatory

1 towel bar @ tub/shower

2. Products

- A. Accessories shall conform to Federal Specifications WW-P 54 lb.

1) Accessories located in ceramic tile wainscots shall be stock ceramic units.

2) All other accessories shall be chrome finish brass or zinc die cast metal with concealed mounting brackets.

- B. Medicine cabinets shall be surface mounted, or recessed 20 gauge seamless box with white porcelain enamel, stainless steel framed mirror on piano hinge, and with three bulb edge glass shelves.

C. Soap/grab shall be recessed model #HM-1964 when installed on tile shower enclosure, and HM-868 at tub without shower, as manufactured by Nutone or an written approved equal.

D. Paper holder - recessed - mounted with metal roller. Model #HM-877 as manufactured by Nutone or written approved equal.

E. Towel bar - surface mounted ¾" x 24" square stainless steel tube. Model #896 as manufactured by Nutone or an written approved equal.

3. Execution

- A. Install accessories with fasteners as recommended by manufacturer. Installation shall be level and rigid.
- B. Mounting should be at standard heights and located for convenience and to avoid conflict with door wings and passage clearance.

10.F. APPLIANCES (STOVE/REFRIGERATOR)

1. General

The work covered by these specifications includes furnishing all labor, materials, and equipment for installing the items of equipment as enumerated in the Bid Document. Rehab Office shall have choice of manufacturer and color for appliances.

2. Products

- A. Range (electric) to be Hot Point, standard oven, 30" range with four burners, white enamel finish, or written approved equal.
- B. Range (gas) to be Magic Chef, Caloric, economy range with standard oven, 30" range with four burners and white enamel finish, or written approved equal.
- C. Refrigerator to be Magic Chef or written approved equal of minimum 12.2 cubic foot capacity, and approximately 28" wide with white enamel finish.
- D. Range hood to be General Electric, Vent-a-hood, Nutone, or written approved equal, 30" range hood of non-vented type, charcoal odor filter, washable grease filter, and white enamel finish.

3. Execution

Contractor is to submit catalogue cuts of all pieces of equipment prior to installing same. Installation shall be in accordance with manufacturer's instruction. Contractor shall supply the owner with a manufacturer's warranty certificate and instruction manual for the care and maintenance of the equipment supplied.

4. Repair

Furnish and install all labor and materials necessary to repair appliance. Contractor to ensure no damage to other parts during process of making repairs. Contractor shall warranty appliance for one year after the repairs are made.

10.G. FIRE EXTINGUISHER

Furnish and install one 5 lb. Class ABC 2A-rated fire extinguisher. Fire extinguisher shall be hung and readily accessible.

10.H CARPORT

Install a new metal carport to size and location indicated on the Bid Document. Roof panels shall be 26 gauge (minimum) with baked on enamel paint finish. Beams shall be 14 gauge (minimum) with surfaces treated for rust prevention. Columns shall be 3" x 3", 14 gauge (minimum) with baked on enamel paint finish. Edges shall be trimmed with "J" or "H" panel trim pieces with baked on enamel paint finish. All materials shall suitable for the use intended and installed in accordance with the manufacturer's recommendations.

DIVISION 11 - PLUMBING (SUBJECT TO DIVISION 1)

11.A. GENERAL

All work to conform to all applicable codes.

Work performed under this section shall result in complete and updated plumbing systems. All material, labor, equipment, and other items to complete the plumbing system as outlined in Bid Document shall be furnished.

All plumbing work performed under this contract SHALL BE INSPECTED, tested, and approved by the Building Inspection Department.

Cutting, patching, and cleaning shall be done as necessary by the contractor performing the work; however, special permission shall be obtained from the Rehab Office before cutting structural members of finished construction.

The plumbing contractor shall clean away all debris caused by his work at the close of each work day, and upon completion of the job. Labels must be removed from all fixtures only after inspection by the Rehab Office and/or the Building Inspection Department.

All new plumbing fixtures shall be Gerber or equal manufacturer. All fixtures shall be white, and have shut-off valves unless otherwise noted in Bid Documents. A salvaged plumbing fixture can be used upon approval by the Rehab Office.

Upon removal of old fixtures, contractor shall inspect all cleats, supports, and floor joists to assure a solid and secure installation. If unforeseen repair or replacement is needed, contractor shall notify the Rehab Office.

The contractor shall further determine if a change in the location of any plumbing fixture and/or pipes is necessary for proper functional replacement of the unit, and to meet codes.

1. Materials

- A. Sanitary and Storm Water Underground Lines - to be of service weight, cast iron, Bell and Spigot, or no-hub pipe and fittings.
- B. Sanitary and Storm Water Line Above Ground - to be of service weight, cast iron, Bell and Spigot pipe, or no-hub and fittings.
- C. Plastic Piping - ABS schedule 40, DWV and PVC schedule 40, DWV with approved fittings may be used only where approved by the city code.
- D. Branch Waste and Vent - piping less than 2" may be Type "K" hard drawn copper with soldered drainage fittings, or schedule 40 galvanized steel pipe with screwed cast iron fittings. All waste lines to be type M, vents can be OWV.
- E. Water Service Line Below Ground - to be Type "K" copper with cast brass or wrought copper fittings. Other lines below grade may be Type "L."
- F. Water Lines Above Ground - to be Type "M" or "L" copper with wrought copper fittings.
- G. Any fitting below a slab shall be braised and not soldered.
- H. Exposed Water Piping at Fixtures - to be chromium plated brass threaded tubing and fittings.
- I. Gas Piping - to be schedule 40 black steel or galvanized steel with black malleable iron screwed fittings.
- J. Kitchen Sink - to be 20 gauge stainless steel, double bowl sink 33" x 22" x 6½" Elkay or written approved equal. Sink to come complete with countertop deck faucet Delta, or written approved equal, 1½" drain and tail piece, and all accessories necessary for mounting the sink to the countertop.
- K. Water Closet - to be white vitreous china, with reverse trap and siphon jet, such as American Standard or written approved equal with 3/8" chrome plated supply valve.
- L. Lavatory - to be white enameled cast iron American Standard, with Delta faucet fittings and pop-up waste, or written approved equal.

- M. Bath Tub - to be white porcelain enamel on steel Eljer "Ventura" or written approved equal, with "Ultima" over the rim tub filler with C.P. Brass handles, by-pass valves, drop spout and drain.
- N. Shower Compartment - to be one piece thermo-formed Fiberglass and polyester seamless unit as manufactured by Aqua Glass or written approved equal. Size to be 36" x 36" unless specified otherwise in the Bid Document.
- O. Water Heater to be Gas Fired - A-O Smith or Reliance, glass lined, 30 gallon capacity (unless otherwise specified in the work write-up) or written approved equal, with at least a seven year written guarantee. Tank to come complete with TPR valve and drain to exterior, cold water shutoff, gas shutoff and all materials required for code compliant installation.
- P. Water heater to be Electric - A-O Smith, Reliance or written approved equal, 30 gallon capacity (unless otherwise specified in the work write-up), with at least a seven year written guarantee. Tank to come complete with TPR valve and drain to exterior, cold water shutoff, gas shutoff and all materials required for code compliant installation.
- Q. Insulation - all pipes, valves, and fittings in unheated areas to be insulated with high density Fiberglass or styrofoam to prevent lines from freezing. Seal all openings around all pipes to prevent infiltration. Tape insulation securely after installation.
- R. Free-standing shower stall to be a Durastall by Mustee, or written approved equal.
- S. Tub wall or shower wall to be fiberglass as manufactured by Swan, Trayco or written approved equal.

2. Installation

A. Water Heater

Furnish and install 40 gallon direct fire gas water heater, bearing UL or AGA listing and label.

ALL GAS WATER HEATERS IN GARAGES SHALL BE PLACED ON A WATER RESISTANT (PRESSURE TREATED LUMBER) PLATFORM AT LEAST 18" ABOVE THE FLOOR. ALTERNATE METHODS MAY BE USED ON WRITTEN APPROVAL OF THE REHAB OFFICE.

Heater shall be provided with a reseating type temperature and pressure relief valve, constructed, listed, and installed in accordance with ANSI Z21.22. This requirement is in addition to the energy cut-off device installed by the heater manufacturer, and which conforms to the labeling requirements of the appropriate AGA and UL standards.

Listed BTU relieving capacity of relief valves shall be not less than the BTU input capacity of the water heater. The pressure relief elements of relief valves shall be set to open at not less than 25 psi in excess of available water pressure. Setting shall not exceed tank working pressure. There shall be no shut-off or check valve between the pressure relief valve and water heater. Relief valves shall be piped to discharge by gravity to exterior wall, terminating in an elbow turned to discharge downward, and shall be located approximately one foot above the exterior grade. Discharge piping shall be the same size as relief valve outlet. Temperature sensing elements shall be accessible without requiring removal of tank jacket.

Storage tanks for direct fired storage type water heaters shall be constructed to withstand a minimum of 300 psi test pressure without leakage or permanent distortion, and shall bear the manufacturer's marking showing test and working pressure, except that in lieu thereof, pressure markings appearing on AGA or UL listed water fittings shall be provided between water lines and water heater when dissimilar metals are connected.

The warranty issued by the manufacturer shall be given to the owner, and shall provide for the free replacement of parts found to be defective in materials or workmanship under normal conditions of service during the first year after installation. It shall further provide for the free replacement of the entire heater assembly should a tank leak develop during the first two years after installation, and for the replacement of the entire heater assembly on a prorated basis should a tank leak develop during the third, fourth or fifth year after installation. **Installation shall be complete with all new vent and combustion air piping. All work to conform to code.**

Where required by the Bid Document, a new R-11 water heater blanket shall be installed on existing water heater. Installation shall comply with manufacturer requirements.

B. Water Service

Domestic Water Piping - minimum water service size to housing unit shall be 1".

Where new piping to housing unit is required, new water service shall be provided from existing curb box valve if, and only if, valve and curb box are in good working condition, service is not less than ¾", and lines can be cleaned to provide proper operating pressures as required by code at highest fixture. If these conditions cannot be met, a new service shall be provided.

A water meter, where required, shall be installed in accordance with utility standards, but in no case less than ¾" in size. Pipe sizes shall be as follows: ¾" to first branch off; ¾" to hot water heater; ½" for branch supplies to fixtures. The work shall also include all necessary arrangements with the utility company involved, and all necessary excavating and back filling required by the work.

C. Sanitary Sewer

Where new sanitary sewer line to the house is required, a new 4" drainage line shall be provided. A main vent may be 3"; fresh air inlet shall be of four (4) inch diameter. Drain lines as required shall be installed with a minimum slope of ¼" per foot. A lower slope of 1/8" per foot may be used only if sewer connection cannot be made at ¼" slope. Clean out shall be provided at the base for each, and within 3' of the exit point of the building stack, and in main drain line at over 135° turns, and not more than 100 foot intervals. The work shall also include all necessary arrangements with the utility company involved, and all necessary excavating and back filling required by the work.

D. Plumbing Fixtures, Trim & Accessories

Plumbing fixtures, trim, and accessories, as required by the Bid Document, shall be installed complete with all necessary water supply, soil, and vent piping to sanitary drainage system. All fixtures shall be furnished with necessary accessories, such as escutcheons, traps, shut-off valves, and installation hardware. Traps shall be chrome plated tubular adjustable type with clean out. Shut-off valves shall be placed adjacent to, or under the fixture, to permit the line to the fixture to be shut off separately. Chrome finished escutcheon plates shall be provided at all exposed piping passing through the floor, wall, or ceiling.

Plumbing access panels shall be installed, if required in the Bid Document, at fixtures so as to allow easy access to fixture. The access panel shall be pre-fabricated or site-built. Site-built access panels shall be trimmed to match adjacent surfaces and easily removable.

E. Water Connections

Furnish and install hot and cold supply with shut-offs. All work to conform to local code.

F. Waste Connections

New waste piping shall be properly installed and vented to exterior.

G. Repair All Existing Supply lines.

Furnish and install all labor and materials necessary to repair all existing supply lines in and under structure. All work to conform to local plumbing code. Examine all supply lines in and under structure for proper operation. Replace all galvanized. Quest and any non-code approved materials.

H. Repair All Existing Drain lines.

Furnish and install all labor and materials necessary to restore all drain lines in and under structure to good condition (no leaks and fast positive drainage and venting) in accordance with the Code. Care to be taken to not damage any plumbing fixture or other pipes.

I. Dryer Vent

Supply and install as required 4" aluminum dryer vent to exterior, with vent cap on exterior. Installation shall be in accordance with manufacturer's direction, and shall be located within two (2) feet of dryer location.

J. Washer Connection

Washer connection and washing machine outlet box (with center drain-use Oatley or written approved equal) is to be installed in location called for in Bid Document. ½” copper lines with double valve shut-off shall be provided. A 2” stand pipe and necessary waste line with venting shall be provided, all in accordance with code requirements.

K. Reseat Toilet

Remove toilet and old seating gasket. Clean area and reseat toilet with new wax seal. Make all connections and leave free of any leaks. Installation shall meet all local plumbing codes. If Contractor shall uncover a lead flange once toilet is removed, the Contractor shall notify the Rehab Office for a decision on whether the flange should be replaced.

L. Replace Toilet Seat

Furnish and install high impact toilet seat with rust-proof nylon hinges and plastic nuts and bolts.

M. Toilet

Replace existing toilet with new first quality vitreous china toilet. Installation shall be complete with new toilet seat and all required plumbing connections. Plumbing equipment and materials and workmanship shall comply with local codes.

Color and style of fixture to be selected by owner.

N. Replace Flush Mechanism

Remove deteriorated flushing unit and install a suitable adaptable unit. All new seals to be installed with new unit. After replacement, unit shall function properly with moderate pressure and completely shut-off when optimum water level is reached.

O. Repair Faucet

Repair existing defective faucet(s) as set forth in Bid Document. Restore to a watertight condition in accordance with code. Any replacement handles or equipment shall conform to original style as closely as possible. Contractor shall take all necessary precautions to prevent tool scarring or damage to fixture or other accessories. Work shall include replacement of all worn internal components. Final result shall be a faucet that operates easily with no leaks or drips.

P. Install Faucet

Furnish and install new Delta or equal faucet at designated location, complete with all accessories. New unit must cover all existing openings in the present area. Unit shall be securely fastened and watertight.

Q. Toilet Set Accessories

Furnish and install chrome plated bathroom accessories as follows: recessed paper holder, recessed soap dish with grab bar at shower/bath, two stainless steel towel bars 24” x 30” in length. Furnish proper anchorage in wall for all fixtures.

R. Drains, Wastes, Vents, Traps

Furnish and install all required drains, wastes, vents, and traps. Installation shall meet all local plumbing codes. Stack shall extend through roof and be made waterproof. Repair all scarring. When a new plumbing fixture is installed, or an existing fixture is relocated, all work shall conform to local plumbing code.

S. Snake drain lines - where called for in the work write-up a professional contractor shall be used to snake the entire sewer system including all clean outs, roof vents and yard line to the street.

T. Sillcock

Furnish and install new frost-proof sillcock with vacuum breaker. Location to be as set forth in Bid Document. This includes copper cold water feeder lines if applicable.

U. Lavatory Legs

Furnish and install lavatory legs on all new wall hung lavatories except as noted in Bid Documents.

V. Kitchen Sink

Furnish and install double well, stainless steel sink with sound dampening. Replace all waste to the wall including baskets strainers. Work shall include removal and reinstallation of all items not replaced in the Bid Document.

W. Replace Existing Drain

Furnish and install all labor and materials to replace existing drain. If existing drain is not vented, provisions shall be made to vent the replacement drain. Size and slope shall conform to the current plumbing code. Plastic may be used upon approval of the city's plumbing inspector.

X. Replace Existing Supply Lines

Furnish and install all labor and materials necessary to replace supply lines as indicated in the Bid Document. Piping to be ¾" copper with all necessary fittings, hangers, supports, and all accessories needed to run piping in a workmanlike manner in conformance with the plumbing code.

Y. Garbage Disposal

Furnish and install all labor and materials necessary to install one garbage disposal at kitchen sink. Garbage disposal to have toggle switch easily accessible at counter. Use In-Sink-Erator Badger 5, ½ horsepower or written approved equal.

Z. Medicine Cabinet

Furnish and install a wall hung or recessed medicine cabinet as specified in the Bid Document. Cabinet shall be complete with mirror, and may be lighted. Doors shall swing past 90 degrees or slide smoothly in the track.

AA. Sump Pump

Furnish and install all labor and materials necessary to install sump pump as specified in Bid Document. Pit shall be located at lowest corner of basement. Materials included are sump pump pit, rigid outflow pipe, and electric hook-up. Drainage from sump pump shall not be connected to the sanitary sewer. All work shall conform to local codes.

BB. Stand Pipe

Furnish and install all labor and materials necessary to install new stand pipe for washing machine. Include all necessary cement work. Work shall conform to the plumbing code.

CC. Floor Drain Cover

Furnish and install new floor drain cover on existing drain. Cover should fit snugly.

DD. Demolition

Where required, demolition shall be performed without damage to adjacent existing work. All existing fixtures, equipment and piping which have been removed or disconnected by the contractor shall become the property of this contractor and shall be removed from the site at his expense. All remaining lines that are not to be reused shall be deactivated and properly capped and plugged in basement or crawl space areas.

When concrete is removed in a basement floor for access to underground pipes, concrete shall be replaced in accordance with Division 3.

EE. Gas line

1. Pressure test - Provide a gas line pressure test of the entire system using a licensed plumbing contractor.
2. Shut off valve - gas shut off valves shall be installed by a license plumbing contractor at all locations required by code.
3. Cap gas lines - cap all gas lines to prevent the use of unvented space heaters. Lines shall be capped in walls or under the structure. A pressure test shall be performed to verify the integrity of the system.

FF. Refinish bath tub or lavatory

Refinish complete bath tub or lavatory. Contractor shall provide a five (5) year warranty against chipping, peeling and discoloration.

GG. Shower sprayer

Install a new adjustable shower sprayer complete with neck extension.

HH. Rebuild commode

Replace all tank components including supply line and shutoff. Work shall include removal, replacement of wax ring and reinstallation.

3. Grab Bars

A. Structural reinforcement for future installation of grab bars shall be provided. Backing shall be a minimum 2 x 8 in a continuous band at the height specified by the owner. The backing shall be able to withstand a 250 lb. load. Plywood may be substituted for wallboard behind tub walls.

B. Owner shall be given a choice as to the brand and style of grab bar used. Owner shall also be consulted as to the location and height of installation.

4. VANITY/LAVATORY/FAUCET/TOP

Remove existing vanity and lavatory. Repair/replace wall surface as needed. Install a new pre-finished unit, washerless faucet and cultured marble top (minimum 1" overhang). Size shall be specified in the Bid Document. Include new supply and waste lines to wall. Unit shall be complete with vented drains, proper traps, cutoffs and washerless faucets.

DIVISION 12 - HEATING & AIR CONDITIONING (SUBJECT TO DIVISION 1)

12.A. GENERAL

SPECIAL NOTE: BIDDING CONTRACTOR SHALL BE RESPONSIBLE FOR SIZING OF HEATING AND AIR CONDITIONING EQUIPMENT EVEN WHERE SIZE IS SPECIFIED IN THE BID DOCUMENT.

1. Gas fired, forced air furnace shall be of sufficient size to maintain an indoor temperature of 68° Fahrenheit at a sitting level 30” above floor throughout the structure, when the external temperature is at 22° Fahrenheit. Installation shall comply with NFPA Standard No. 54, and the ASHRAE guide or applicable manual of the Warm Air Heating and Air Conditioning Association, as modified by local codes.
2. Existing duct work may be used with approval of the Rehab Office and the Building Inspection Department, provided all of the following are met:
 - a. A combination shut-off and controllable register is provided to each supply outlet in all rooms.
 - b. All duct work is in operable condition.
 - c. Return air from any living unit shall not be recirculated and delivered to any other living unit.
 - d. Supply ducts shall be on exterior walls where possible.
 - e. Insulate supply ducts in unheated attic spaces, ventilated crawl spaces, on cold side of stud spaces in exterior walls, and other exposed locations to prevent excessive heat loss.
 - f. If existing ductwork is covered with asbestos, it shall be removed by a contractor who is licensed for such removal.
3. All piping and electrical hook-ups shall be included in the price quote.
4. All furnaces shall be equipped with thermostat location on any inside wall, responsive to changes in outside temperatures, and properly sealed behind to prohibit drafts through interior wall.
5. All line voltage electrical connections shall be made directly to the electrical panel. All low voltage wire shall be not less than #16 gauge.
6. Gas piping shall be steel or wrought iron piping with malleable screw type fittings. It shall conform to all local codes and ordinances, and utility requirements and restrictions. Gas line shall be properly supported with approved hangers, and be of sufficient size to feed supply lines.
7. If central air conditioning is not installed, adapt bonnet to accept future air conditioning coils.

12.B. MATERIALS

1. Warm Air Furnace (manufacturer shall be chosen by the owner) with heating capacity and air delivery as required below. Entire unit to be A.G.A. and U.L. approved and labeled. Furnace shall have a minimum of 80% efficiency. Higher rated furnaces may be approved with the consent of the rehab office.
2. Forced Water and Steam Boilers (gas fired, oil fired [select one]): Shall be HB Smith, Utica, American Standard, or written approved equal, with heating capacity as determined below. All boilers to be ASME labeled.
3. Duct Work: Factory-made air ducts shall be approved for use intended or shall conform to the requirements of U.M.C. Standard No. 10-1. Each portion of a factory-made air duct system shall be identified by the manufacturer with a label or other suitable identification indicating compliance with U.M.C. Standard No. 10-1 and its class designation. These ducts shall be listed and shall be installed in accordance with the terms of their listing, the requirements of U.M.C. Standard No. 10-5, and the amendments adopted by the city in which the work takes place.
4. Steam Piping System: Shall be of schedule 40 black steel with malleable iron screw type fittings.
5. Gas Piping: Shall be schedule 40 black or galvanized steel with malleable iron screw type fittings.
6. Water Piping: Shall be type “M” or “L” copper with wrought copper fittings.

7. Circulating Pumps: Shall be as manufactured by Bell and Gosset in line pump, or written approved equal. Pump is to be designed for total head and G.P.M. delivery required.
8. Expansion Tank: Shall be ASTM approved, and shall have a capacity to fit heating system output design.
9. Radiation (Water System): Shall be copper finned tube radiation, sized for heat loss of each room served. Radiation shall be as manufactured by Trane or written approved equal, complete with cover and air vent.
10. Supply Registers and Diffusers (wall and baseboard type): Shall be as manufactured by Atlas or written approved equal. Registers and diffusers shall come with balancing dampers.
11. Radiators (Steam): Shall be of cast iron of an acceptable manufacturer, and shall be sized for the heat loss of each room in which they are to be installed.
12. Oil Tank: Shall be minimum 275 gallon capacity by acceptable manufacturer. Tank shall include vent alarm gauge, fuel oil filter, and oil tank valve. Fuel oil vent and fill box shall be provided at exterior in an acceptable location.
13. Unit Heaters: Shall be manufactured by Singer, Trane, or written approved equal, and shall be sized for heat loss of room in which they are to be installed.
14. Prefab Chimney: Shall be as manufactured by Van-Packer or written approved equal. Chimney shall be refractory lined/thermosyphon of size required, and shall be Underwriter Laboratory approved.
15. Air Conditioning Units: Manufacturer shall be Trane or approve equal, compatible with new or existing furnace and have a minimum SEER rating of 10.

Note: Additional equipment and materials required may be noted under Bid Document.

12.C. INSTALLATION OF HEATING

1. Installation of complete heating system, including furnace, heat distribution system, temperature control system, fuel system, and all required accessories to provide a minimum indoor temperature of 68° Fahrenheit when the outdoor temperature is 22° Fahrenheit. All equipment shall be sized in accordance with ASHRAE, city, and utility standards.
2. Controls such as thermostats, water cut-offs, low voltage and control wiring, accessory equipment, and a fused disconnect located within six (6) feet of the furnace, shall be supplied and installed by this contractor.
3. Testing: Contractor is to do all necessary testing, balancing, performance tests, and adjusting for all equipment furnished and installed by him/her.
4. Connections such as water, gas, and other system connections are to be installed complete with all necessary shut-off valves, check valves, and couplings to assure proper shutdown of components of all systems for easy removal and/or maintenance.
5. Breeching of flue to chimney is to be of galvanized steel with automatic flue damper. Chimney is to be cleaned and renovated into working condition as required by code, and acceptable to local utility company.
6. Repairs and patching of floors, walls and ceilings where cutting through of same was required by the installation of the heating system shall be done by this contractor. Contractor shall remove from the premises at the end of each work day all unnecessary piping, equipment, and debris that was caused by the installation of the heating system.
7. Warm Air System Furnace (Gas): Shall be supplied complete for use with natural gas. Furnace shall have heating capacity as determined by design requirements above. Furnace shall come complete with centrifugal blower, filters and filter housing, heat exchanger, and aluminized steel tapered burners. Furnace shall come equipped with electronic ignition. Unit shall be U.L. approved and labeled.
8. Warm Air System Furnace (Oil): Shall be supplied complete for use with number 2 fuel oil. Furnace shall have heating capacity as determined by above design requirements. Furnace shall come complete with centrifugal blower, filters and filter housing, stainless steel combustion chamber, steel slip stream heat exchanger, atomizing type burner. Furnace shall include limit controls to deactivate the furnace in case of power, mechanical, or reduced air supply failure. Also to be included are reset and primary control to shut

down furnace if oil fails to ignite; transformer for low voltage thermostat and fuel pump controls. Unit shall be U.L. approved and labeled.

9. Ductwork, metal gauges, reinforcing, fittings, connection plenums, access panels, and other accessories shall be in accordance with the mechanical code. All ducts above the basement shall be concealed. Each room shall be supplied with a supply air register and/or diffuser with balancing damper. Each floor level shall be provided with return air register.

10. Furnace ([Hot water, steam] [gas fired, oil fired] select type required): Boiler shall be installed in accordance with manufacturer's recommendation and shall be ASME labeled. Boiler output to be equal to heating requirements as determined above. Boiler to be of cast iron with insulated steel jacket, complete with accessories such as thermostat, relief valve, blow down valve, low-water cutoff, drain cock water connections, gas connections, and all necessary appurtenances for a complete operating heating unit. Unit shall be IBR rated and U.L. approved and labeled. Boiler to be installed in existing location and reconnected to existing pipe systems. All heating equipment shall be tested to assure safety of operations. Where hot water system is used, an aquastat shall start the circulators when water temperature is reached. An automatic air vent shall be provided at a high point in the piping system.

11. Base Board Fin Radiation where required shall be sized for the heat loss of each room in which they are to be installed. Baseboard shall be IBR rated of 640 BTU per foot at 190° Fahrenheit temperature drop. All fittings and accessories for a complete job shall be supplied, including a manual air vent on each section.

12. Radiators (steam) where required shall be of cast iron and sized for the heat loss of each room in which they are to be installed. Radiators are to come complete with valves and air vents and shall be provided with all necessary fittings for a complete installation.

13. Circulating Pumps where required shall be supplied and installed as per manufacturer's recommendation. The pump capacity shall be selected for the total head and GPM needed for the system, and shall be of such horsepower rating that the motor shall not be overloaded at any time.

14. Zoning: Where called for, a separate circulating pump shall be added to the system to heat bedroom wing separate from living areas and basement. A wall-type thermostat shall be added to the bedroom wing to operate circulator. Installation of circulator shall be complete with all necessary piping, accessories, and fittings for a complete separate operation zone.

15. Chimney (prefabricated): Where called for shall be installed in complete accordance with manufacturer's direction. Assembly shall consist of all necessary fittings, fire stop spacers, flashing and storm collars, stack top, and all accessories required for a complete system. Installation shall meet all code requirements.

16. Bathroom and/or Kitchen Exhaust Fan: Where called for shall be installed in accordance with manufacturer's direction. Where required, installation shall include all necessary exhaust grills, duct, exhaust fan, switch and necessary electrical work for a complete operating installation.

12.D. INSTALLATION OF NEW CENTRAL HEAT AND AIR/COMPLETE

Furnish and install complete central heat air conditioning equipment, size as determined by industry approved heat/loss heat/gain calculation. This to include coils, condenser with approved base, thermostat, control relay, and all other material for a complete working unit. HVAC contractor shall be responsible for providing for the installation of all electrical work required to meet all code requirements.

The contractor shall be required to test and properly balance the system, and guarantee the entire system against faulty materials and workmanship for one year following completion and acceptance.

12.E. INSTALLATION OF ELECTRIC WALL HEATER

1. Furnish and install 1250 watt wall heater bearing UL or equivalent label.
2. The label voltage shall be within 5% of the service voltage provided.
3. Unless otherwise indicated, installation recommendations contained in the ASHRAE Guide and those of the manufacturer shall be followed.
4. Thermostatic control shall be provided in each heated room or built into unit.

5. Bathroom wall insert heaters and switches shall be located as far as practical from plumbing fixtures, but at least 60 inches from the tub and/or shower.

6. Operating devices such as timers, switches, etc., which are not tested as an integral part of an appliance, shall be separately listed by UL or equivalent. All work shall conform to all applicable codes.

12.F. REPLACE ELECTRIC FURNACE MOTOR

Replace existing electric motor on furnace with new 110-120 volt, CO-C, AC motor having an automatic reset overload protector.

HP of motor shall be as set forth in Bid Document. Installation shall be in accord with manufacturer's directions and shall be complete with all electrical connections as required by code.

12.G. INSTALL NEW THERMOSTAT

Provide and install a new thermostat to replace existing, including all wiring from furnace to thermostat, and new transformer. All work shall conform to code.

12.H. INSTALL NEW DUCT WORK

Install new duct work from plenum to register, including all necessary duct, damper, register, register cover and hardware. All work shall conform to local Mechanical Code.

12.I. REPAIR DUCT WORK

Furnish and install all new necessary material to replace deteriorated portions of existing duct work. If existing ducts are wrapped in asbestos, the Contractor shall obtain a mitigator who is licensed through the State of Texas to dispose of this product.

12.J. REGISTER COVER

Provide and install new register cover to match existing in house. A salvaged cover may be used upon approval by the Rehab Office.

12.K. REPAIR HUMIDIFIER

Furnish and install all labor and materials necessary to assure that humidifier is in good working order. All rusted and non-functioning parts shall be replaced. Contractor shall warranty work for one year.

12.L. REWIRE FURNACE

Furnish and install all labor and materials necessary to run new wiring to new or existing furnace. All wiring shall conform to the National Electrical Code and be switched and fused to the furnace specifications.

12.M. REPAIR HVAC SYSTEM

Repair entire HVAC system.

1. Replace filter
2. Recharge as needed
3. Perform temperature differential test
4. Clear all condensation drain lines and repair drain pan as needed
5. Clean interior and exterior coils
6. Replace thermostat
7. Check duct system, supply and return, for leaks. Seal all leaks found during inspection.
8. Submit written report detailing condition of system (noting items above) and recommendations.
9. Clean burners and combustion chamber and tune to proper flame.
10. Check combustion chamber for cracks or other dangerous conditions.

Repair ductwork.

1. Inspect all ductwork (return and supply) for leaks. Seal all leaks.

2. Clean all ductwork.
3. Replace all supply and return air grills.
4. Replace filter.

12.N. UNVENTED SPACE HEATERS/REMOVE

All unvented space heaters shall be removed from the structure. Gas lines shall be capped to prevent further use in the wall, crawlspace or attic . A gas line pressure test shall be performed prior to sealing the line from inspection by a licensed plumber.

12.O. COMBUSTION AIR

Provide combustion air to the designated gas appliance to code.

12.P. INSTALL NEW GAS SPACE HEATER

Install new gas space heater to comply with code.

At a minimum units shall:

1. Meet National Fuel Gas Code.
2. Contain 99.9% oxygen depletion valve.
3. Be equipped with a safety shut-off device.
4. Be approved and “listed” with a recognized testing laboratory.
5. Have no combustible material around space heater.
6. Each unit shall be installed with a carbon monoxide detector.

DIVISION 13 - ELECTRIC (SUBJECT TO DIVISION 1)

13.A. GENERAL

1. All products supplied shall conform to the requirements of the appropriate National Electric Code, amendments, and UL or equivalent. All work performed shall be to the local code.
2. When 100 ampere service is required by the Bid Document, it shall be the responsibility of the electrical contractor to split the load into not less than eight circuits for a one and two-story, single-family dwelling, and twelve circuits for a three-story, single-family dwelling.
3. In multi-family dwellings, the requirements for splitting the load shall be not less than four circuits per dwelling unit. Each dwelling unit shall have a breaker box accessible to each tenant.
4. All replacement duplex receptacles installed shall be of a grounded type. Where a grounding means does not exist in the receptacle enclosure, a GFI shall be used.
5. Kitchen outlets shall be placed on grounded individual circuits with GFI within 6 feet of edge of sink.
6. Basements shall have one duplex outlet per 200 square feet or fraction thereof. If unfinished, the outlets shall be GFI.
7. The contractor shall be responsible for all permits and inspections required for his work.
8. All bathrooms shall have GFI outlets installed.

13.B. EXISTING EQUIPMENT

Existing electrical equipment throughout the building which is not required and becomes superfluous shall be disconnected and removed.

Existing materials found to be in good condition and complying with the appropriate electrical code may be left in service.

13.C. MATERIALS

1. Wiring
 - a. Service and Feeders - shall be in a metal raceway.
 - b. Branch Circuits - shall be installed as per N.E.C. and local code requirements.
2. Minimum wire size shall be No. 14 A.W.G. for branch circuits.
3. Minimum wire size shall be No. 12 A.W.G. for small appliance circuits.
4. Junction boxes and outlet boxes shall be Underwriter labeled, and shall be installed according to N.E.C. local code requirements.
5. Duplex receptacles, switches, and all electrical appurtenances shall be U.L. or equivalent lab approved, and installed according to N.E.C. and local code requirements.
6. Panel boxes shall be U.L. or equivalent listed, and installed according to local code.
7. The contractor shall provide all lighting fixtures, complete with lamps, glassware, mounting hardware, frames, trim, stems, ballast's, and sockets, to provide a complete operating fixture as called for under work description, and shall be listed by U.L. or equivalent.

13.D. INSTALLATION

1. **ENTRY SERVICE** - Remove existing entry service and install new entry service according to utility company's requirements and local code standards. Minimum service supplied shall be 150 amp 120/240 volt, single phase, 3 wire grounded system or larger as required by local city code.
 - a. When total square footage, including basement, is 2,500 square feet or more, it shall be a 200 amp service.
2. **PANEL BOX** - Disconnect and remove existing service panel boxes and replace with new 150 amp, 16 circuit (minimum) breaker panel with main breaker and ground. Existing circuits are to be disconnected and rewired in such manner that owner will not be left without any power. New panel box shall be securely

mounted at code approved location. Height of panel box shall be set to code approved height. Breakers shall be plug-in type with single pole breakers being of full module size. Two pole breakers shall not be installed in a single module. Multiple breakers shall be common trip type and shall have a single operating handle. All work to be in accordance with N.E.C., local utility company and local code requirements.

3. **WIRING** - All conductors are to be of copper and shall be U.L. or equivalent listed. In no case will aluminum conductors be acceptable in any part of the work. Wire color coding shall be in accordance with N.E.C. and shall be uniform throughout the building. Wiring shall be run concealed in all rooms of first and second floors, and/or living, bedroom, bathroom and kitchen areas. All wiring shall be installed in accordance with N.E.C. and local code requirements.

4. **OUTLET BOXES/JUNCTION BOXES** - Where called for and required by N.E.C. and local code requirements, shall be U.L. listed or equivalent.

5. **SWITCHES** - Shall be medium grade U.L. or equivalent listed. Where more than one switch occurs at a given point, the switches shall be installed under a common gang plate.

Switches shall be located as follows:

- a. Single pole switches located at the entry to each area and 48' above finished floor.
- b. Three (3) way switches located at the top and bottom of stairs and 48' above finished floor.

6. **CONVENIENCE OUTLETS** - Duplex receptacles shall be rated 15 amps - 120 volts except for kitchen, dining and laundry areas which shall be rated at 20 amps. Each duplex receptacle shall be of the grounding type. Each receptacle shall have contacts enclosed in a high heat resistant, non-flammable molded case with provisions for back or side wiring. All receptacles to be U.L. or equivalent listed.

If no ceiling light fixture exists, at least one split duplex receptacle shall be installed in the living room and bedrooms, with the top receptacle controlled from a wall switch located at the room entrance.

A ground fault interrupted receptacle shall be installed in bathroom, garage, exterior receptacles, kitchens, unfinished basements, and wherever required by applicable codes. All ground fault receptacles shall be circuited separately.

Exterior outlets shall have an exterior weather-proof face plate.

Outlet boxes in walls shall be located 18" above the finished floor line, and 48" above floor line at countertops.

A suitable cover plate shall be provided, either brass or plastic, for each receptacle.

7. **SEPARATE CIRCUITS** - shall be furnished and installed for the following equipment. (Select those required.)

- a. Exhaust fan in kitchen and/or bathroom where required.
- b. Domestic electric hot water heater.
- c. Furnace system (as required).
- d. Electric range.
- e. Electric dryer.
- f. Electric dishwasher.
- g. Air conditioner.
- h. Microwave.
- i. Smoke detectors

All circuits to be installed according to N.E.C. and local code requirements.

8. **GROUNDING** - of all junction boxes, equipment panel boxes and the neutral conductors shall be grounded in accordance with N.E.C., utility company and local code requirements.

9. **LIGHT FIXTURES** - The contractor shall provide all lighting fixtures complete with lamps, glassware, mounting hardware, frames and trim, stems, ballast's, sockets, etc., to provide a complete operating

fixture at each location, as called for in the Work Write-Up. See Bid Document for minimum fixture allowance.

NOTE: Bathroom lighting fixture may be omitted if furnished integrally with the medicine cabinet and cabinet light is so located so as to provide uniform lighting to the entire bathroom.

- A. Globe - Furnish and install all labor and materials necessary to install new globe on existing light fixture base. Electrician to ensure fixture is wired correctly, and is in good physical condition.
 - B. Fan/Light - Furnish and install all labor and materials necessary to install new three-speed/reversible fan with light. Light to be switched at room entrance and be UL-approved.
 - C. All exterior light fixtures shall be weather-proof.
10. **DOOR BELL SYSTEM** - Furnish and install a complete and operable doorbell system. The doorbell system shall consist of push button, chime or bell, 120/240 volt transformer and bell 24 volt wire. System shall be installed complete with wiring concealed and in accordance with manufacturer's directions. System shall be Nutone or written approved equal.
11. **SMOKE DETECTORS** - shall be installed in each bedroom, all hallways adjacent to bedrooms and near the landings of stairwells. All smoke detectors of direct wired type shall have battery backup and shall be wired together on a dedicated circuit. All smoke detectors shall conform with the requirements of the fire code and local codes. Detectors shall be tested after installation to assure proper operation.
12. **GARAGE LINE** - To be installed complete with garage porcelain socket lights, three (3) garage outlets GFI protected (one each wall), and three-way switches (at house and garage). For detached garages, use code approved overhead or underground wiring as specified in the Bid Document.
13. **CUTTING, FITTING & PATCHING** - of all walls, ceilings, partitions and paneling for the passage of electrical work, including the removal of all debris caused thereby shall be performed by the contractor performing the electrical work, and shall be coordinated with all other work prior to installation of new ceilings and finishes. All patching repair of walls and ceiling shall be done by the General Contractor.
14. **REMOVE OLD EXPOSED WIRING** - and all old and unsafe receptacles, switches and fixtures where specified in the Bid Document. All work shall be meet N.E.C. and local code requirements.
15. **REPAIRS/REMOVAL** - Where repairs and/or removal are required to the existing electrical system, repairs and/or removal are to be made to conform to N.E.C. and local code requirements.
16. **VENT FANS** - Where vent fans are required because of lack of natural ventilation, they shall be installed in accordance with the National Electric Code (NEC), and provide a minimum of two air exchanges per hour. The exhaust from this fan shall not be discharged into an attic or crawlspace, but discharge directly to the exterior.
17. **CONDUIT** - Furnish and install conduit, wiring, and hardware necessary to place all exposed wiring at location specified in the Bid Document.
18. **CEILING FAN** - Furnish and install a new 52" ceiling fan complete with light kit, bracing, wiring and switch.
19. **HVAC SERVICE DISCONNECT** - Furnish and install a service disconnect to HVAC system. All work shall be performed by a licensed electrician to code.
20. **ALUMINUM WIRING IN EXISTING SYSTEMS** - Existing electrical systems with aluminum wiring shall have approved electrical devices (CO/ALR) installed throughout the entire structure. All work shall be performed by a licensed electrician to code.
21. **BRING STRUCTURE TO NEW CODE COMPLIANCE.**
- Bring the entire structure, including detached garages and outbuildings presently wired, to new National Electrical Code and city code requirements for new construction. Wire for all existing electrical appliances, switches, outlets and devices including any added in the bid document. Include all additional devices required by code. The work shall include installation of hard wired smoke detectors with battery back-up (unless noted otherwise in the bid document) and installation of GFCI outlets at all code required locations. If structure is wired with aluminum wiring, all unapproved devices shall be replaced with code approved devices.

22. BRING STRUCTURE TO CODE STANDARDS FOR EXISTING STRUCTURES.

Bring the entire structure, including detached garages and outbuildings presently wired, to National Electrical Code and city code requirements for existing structures. Wire for all existing electrical appliances, switches, outlets, fixtures and devices including any added in the bid document. Include all additional devices required by code. The work shall include installation of hard wired smoke detectors (include batteries) in each bedroom and hallways adjacent to bedrooms (wired together on dedicated circuit) and installation of GFCI outlets at all code required locations for new construction. At a minimum, install GFCI outlets at bathrooms (1), kitchens (2), garages (1) and exterior front and rear (2). If structure is wired with aluminum wiring, all unapproved devices shall be replaced with code approved (CO/ALR) devices.

Examine all electrical components for safe code approved operation. Provide written report on status of entire electrical system before and after repairs. Replace all defective components found (SEE BELOW).

WORK SHALL INCLUDE AT A MINIMUM:

1. Installation of 150 Amp panel box (or larger if code requires) as per this section. This item may be added as a separate item on the Work Write-Up.
2. Vent/heat/light fixture, circuit and switch at all bathrooms per this section.
3. Vent-a-hood and circuit at stove per this section.
4. GFCI outlets shall be installed in all bathrooms (1), kitchens (2 at each side of sink), at exterior (1 each at front and rear of structure), and garages (1).
5. Add additional outlets to rooms having less than two (or as required by code) as per this section.
6. Add a switched light fixture to all rooms not having switched light fixture as per this section.
7. Replace all electrical outlets, switches and plates as per this section.
8. All non-romex wiring shall be replaced. All wiring shall be inspected for proper operation and code compliance.
9. All new circuits added shall be grounded.

DIVISION 14 - ENERGY (SUBJECT TO DIVISION 1)

14.A. GENERAL

1. Existing attics shall be insulated to a minimum R value of 30 at ceiling.
2. New exterior walls shall be insulated to a minimum R value of 13 before wall cavity is covered with finish material.
3. New floors over unheated spaces shall be insulated to a minimum R value of 11 at floor when specified in the Bid Document.
4. Install vapor barrier in crawl space and below all new interior concrete slabs on grade.
5. Additional insulation requirements beyond the general guidelines will be in Bid Document.

14.B. MATERIALS

1. Loose-Fill Insulation - Loose-fill insulation blown into attics and sidewalls shall be cellulose and shall meet the Federal Specification HH-I-515 D. Each bag or other container of insulation must carry the following statement:

“Attention: This material meets the applicable minimum Federal flammability standard. This standard is based upon laboratory tests only, which do not represent actual conditions which may occur in the home.”

All manufacturers and private labelers of cellulose insulation are required to furnish a certificate of compliance with the Federal standard to each distributor or retailer to whom the product is delivered. Prior to the approval of any cellulose insulation for use in a rehabilitation project, the contractor shall verify to the Rehab Officer that the material meets the above standard.

2. Batt Insulation - Fiberglass batt insulation shall be used wherever possible and shall meet the Federal Specification HH-I-521 E.
3. Sealants - Glazing compound shall meet Federal Specification TT-G-410 E. Caulk shall be siliconized acrylic type and shall meet Federal Specification TT-S-001543 A.
4. Storm Windows - All storm windows shall be double track and shall meet Federal Standard ANSI 134.1. They shall have an air filtration test rating of .55 cfm or less and shall be marine glazed. Hardware shall be either die cast or 100% nylon and shall have mill finish unless otherwise stated in Bid Document.
5. Storm Doors - Aluminum storm doors shall be as stated in Division 8.
6. Rigid Insulation - Rigid insulation shall be as manufactured by “Dow Chemical” styrofoam or equal. K-factor, 0.185 at 40° F mean, compressive strength 40 psi at 5% deflection, water vapor transmission rate 0.6. Density 2.1 lbs./cu. ft.

14.C. INSTALLATION

1. Insulation material shall be continuous and of uniform thickness and size.
2. Remove dirt, debris and foreign matter from spaces to receive insulation.
3. Install insulation in conformance with manufacturer’s recommendations; maintain integrity by fitting material around all penetrations.
4. Vapor barrier shall be 4 mil polyethylene film sheeting and placed on the warm side (winter) of walls. Urea formaldehyde vapor barrier is not an acceptable material.
5. Insulation shall be placed and secured to prevent shifting, settlement or drifting of material.

14.D. ATTIC VENTILATION

1. When using roof/ridge vents without eave vents and no ceiling vapor barrier, enough vents should be used to provide 1 square foot of free vent area for each 150 square feet of ceiling area.
2. When using roof/ridge vents without eave vents and a ceiling vapor barrier, enough vents should be used to provide 1 square foot of free vent area for each 300 square feet of ceiling area.

3. When using a combination of roof/ridge and eave vents and no ceiling vapor barrier, there should be 1 square foot of free vent area for each 300 square feet of ceiling area. Vents should be installed with 50% of the total area of the vents in the roof near the peak.

4. Install air chutes between roof rafters at the end of the ceiling joints and allow at least a 1" opening next to roof for ventilation from soffit area. Air chutes shall be at least 2" higher than the finished depth of insulation. The number of air chutes shall be determined by the amount of square footage ventilation needed in relation to the amount of square footage of insulation being installed. All vented soffit openings shall not be blocked.

14.E. CRAWL SPACE VENTILATION

Provide at least 1 square foot of free vent area for each 150 square feet of floor area.

14.F. LOOSE FILL

All holes drilled by insulating contractor shall be plugged with like material, finished to match existing surface.

Any siding, floor boards, trims, or moldings removed for the purpose of insulating shall be reinstalled free from any marks, nicks, or damage caused by removal, and finished to match existing. Except attic floor boards which shall be renailed free of MAJOR cracks and defects caused by removal and insulation. Whenever possible, siding shall be removed and holes drilled in sheathing so that plugs are not necessary.

DIVISION 15 - SIDING (SUBJECT TO DIVISION 1)

15.A. GENERAL

1. Repair shall mean to realign and resecure existing siding to provide a weathertight and secure surface that matches adjacent surfaces.
2. Replacement shall mean complete removal of siding to existing end joints of all deteriorated wood siding, and the installation of new matching materials.
3. Repair and replacement work shall be installed in such a manner as to match existing finish work. Alternate methods of construction requires written authorization from the Rehab Office prior to execution.

15.B. MATERIALS

1. Wood siding shall be redwood or cedar of a standard pattern to match existing or as specified in the Bid Document.
2. Hard board siding shall be manufactured according to Commercial Standard CS251-63 and be factory primed and sealed.
3. Laminated Fiberboard siding shall be adhesive laminated siding manufactured from wood fiber treated to resist mold, fungus, and termites, factory primed and edge sealed.
4. Plywood siding shall conform to American Plywood Association (APA), APA -303 Siding Manufacturers Specifications.
5. Asbestos cement siding shall conform to Fed. Spec. SS-S-34CC, Type I.

Accessories

Non-staining, corrosion resistant nails and fasteners.

Starter Strip: ASTM C-223.

Felt underlayment: #15 Asphalt felt.

Corner Closures: Aluminum with baked enamel finish to match shingles or as specified in Work Write-Up.

6. New super steel siding, manufactured by U.S. Steel or equal, .029 inch thickness with insulated backer board. This work includes all trim and accessories as required for a complete job. New siding profile and width to be similar to existing siding. The color will be selected by the Rehab Office.
7. New "Super-V" Vinyl Siding as manufactured by Alcoa or an written approved equal (50 year warranty). This work shall contain all forms, pieces, inside corners, outside corners, soffit material, connectors, fasteners, and related materials required for complete job. Color as selected by Rehab Office. New siding shall have profile and width to match existing siding.
8. New baked enamel aluminum siding as manufactured by Alside or an written approved equal. This work shall contain all trim pieces, inside corners, outside corners, soffit material, connectors, fasteners, and related materials required for a complete job. Color as selected by Rehab Office. New siding shall have profile and width to match existing siding.

15.C. INSTALLATION

1. Wood Siding
 - a. Remove all deteriorated materials and necessary trim.
 - b. Repair all deteriorated sheathing materials and secure.
 - c. Install new materials to match existing coursings and patterns, locating end joints on bearing members or adequate backing. Fit all members for tight joints and proper overlap. All new siding shall be installed as per manufacturer's warranties and guidelines.
 - d. Loose siding shall be resecured with appropriate fasteners to provide a weathertight secure finished surface.
 - e. Seal all vertical and open joints for weatherization installation.

- f. Flash and trim as required for complete installation.
2. Manufactured Siding (Vinyl, Steel, Aluminum)
- a. Repair Existing
 - 1) Remove all damaged or unsound material as designated in the Bid Document.
 - 2) Replace all damaged or missing siding and associated flashing. New siding shall match with coursing of existing and shall be located with end joints on framing member. Securely nail with a minimum of two nails for every member.
 - 3) Remove all caulking as per manufacturer's recommendations.
 - b. Install New Siding
 - 1) Install all new prefinished manufactured siding on entire structure. Main structure and open air porch shall be included. Rehab Office to select color and texture.
 - 2) Install ¾" insulating core under siding.
 - 3) Install prefinished material over all fascia and soffits. Color selected by Rehab Office. Furr out fascia to be plumb.
 - 4) Remove all combination windows and cover all window trim with prefinished material.
 - a) All door trim included.
 - b) New metal trim shall be three (3) inches wide and shall be broke ½ inch over blind stop. Outer edge shall be installed under window channel.
 - c) All nails shall be installed under window channel and to blind stop, exposed nails shall be kept to a minimum.
 - d) Siding and trim shall be installed with no hazards and shall be free of all surface defects.
 - 5) Cover all window sills with pre-finished material.
 - a) New metal sills shall extend ¼ inch under interior stool.
 - b) New sills shall protrude ½ inch up on casing.
 - c) Seal around existing wood sills before new metal sill is installed.
 - d) Replace all damaged/deteriorated materials prior to installation for sound surface and sealing of exterior wall.
3. Replace Damaged Asbestos Cement Siding
- Replace broken or cracked asbestos siding. Use galvanized nails of proper size to penetrate sheathing ¾" and roofing cement as recommended by manufacturer.
- Asbestos shingles to match existing as to color, texture, and quality as closely as possible.
4. Repair Wooden Beveled Siding
- After careful inspection and evaluation of existing wooden siding, repair and/or replace all damaged or deteriorated siding. Repair of siding shall consist of: using a premium quality wood filler to rebuild minor holes and nail holes, and nailing of all loose siding with galvanized 7d nails. Replacement of siding too deteriorated to patch shall consist of: removal and proper disposal of all deteriorated boards, and replacement with new siding of appropriate size.
- Replace siding to match existing on required areas of structure. Installation shall follow manufacturer's specifications and codes regarding surface preparation, nailing, lap, and joint staggering, etc. All siding to be back primed before installation. Allow for replacing and/or repair of sheathing and/or studs in areas where new sheathing and siding will be installed.

5. Replace skirting.

Remove existing skirting in designated areas. Install new 18 gauge metal roll flashing 4" below grade. Install new 1" x 4" trim cap at top edge. Top edge shall be sealed with flexible silicon caulk. Finish metal shall be primed and painted with two coats of exterior latex paint. Attach new skirt to 2" x 4" (pressure treated) frame. Backfill shall be placed around skirt and compacted to prevent soil erosion. Foundation vents shall be 8" x 10" galvanized metal. Use Sherwin Williams mid range exterior latex paint or written approved equal. Final work shall result in a uniform, clean skirt appearance, properly backfilled to prevent erosion and runoff under the house. Foundation vents shall be installed in sufficient number to allow for 1 square foot of ventilation for each 150 square feet of floor space. Vents shall be placed at corners to create cross ventilation.

DIVISION 16 - BARRIER REMOVAL

16.A. RAMP INSTALLATION

Construct a wheel chair ramp for the addresses listed at the locations designated in the cover letter preceding this specification (see page 3). Work shall comply with all applicable local codes and the provisions of the Americans with Disabilities Act (ADA).

The following specifications are intended to serve as general guidance. In all cases, local codes and the requirements of the ADA shall control design and construction. Material specifications may be exceeded in quality, strength and durability at the discretion of the contractor and written approval of the homeowner and the Rehab Office. These specifications, provisions of city code and ADA requirements are the minimum that will be allowed. It is the responsibility of the contractor to (1) acquire permits, (2) supply drawings and plans, and (3) pass all inspections required by the local governmental entity.

SLOPE AND RISE

The least possible slope shall be used for any ramp. The maximum slope of a ramp shall be 1:12. The maximum rise shall be 30 in.

CLEAR WIDTH

The minimum clear width of a ramp shall be 36 in.

LANDINGS

Ramps shall have level landings at **bottom and top** of each ramp and each ramp run. Landings shall have the following features:

- (1) The landing shall be at least as wide as the ramp run leading to it.
- (2) The landing length shall be a minimum of 60 in. clear.
- (3) If ramps change direction at landings, the minimum landing size shall be 60 in. by 60 in.
- (4) If a doorway is located at a landing, then the area in front of the doorway shall comply with the following:
 - (a) Outward swinging door
Width = 5'; Depth = 5'
 - (b) Inward swinging door
Width = 5' Depth = 3'
- (5) The ramp landing shall begin at a point level with the house entry door.
- (6) The ramp shall end at a smooth, seamless transition with adjacent surfaces. This shall be accomplished by cutting into existing surfaces, forming, reinforcing and pouring concrete to edge of ramp end point.

THE RAMP END LANDING MUST PROVIDE FOR EASY TRANSFER OF USER FROM LANDING TO A TRANSPORTATION VEHICLE.

HANDRAILS

If a ramp run has a rise greater than 6 in. or a horizontal projection greater than 72 in., then it shall have handrails on both sides. Handrails shall have the following features:

- (1) Handrails shall be provided along both sides of ramp segments. The inside handrail on switchback or dogleg ramps shall always be continuous.
- (2) If handrails are not continuous, they shall extend at least 12 in. beyond the top and bottom of the ramp segment and shall be parallel with the floor or ground surface.
- (3) The clear space between the handrail and the wall shall be 1-1/2 in.
- (4) Gripping surfaces shall be continuous.
- (5) Top of handrail gripping surfaces shall be mounted between 34 in. and 38 in. above ramp surfaces.

- (6) Ends of handrails shall be either rounded or returned smoothly to floor, wall, or post.
- (7) Handrails shall not rotate with their fittings.
- (8) Gripping surfaces shall be uninterrupted by newel posts, other construction elements, or obstructions.
- (9) The diameter of the gripping surfaces of a handrail or grab bar shall be 1-1/4" to 1-1/2" or the shape shall provide an equivalent gripping surface.

REMOVAL OF OBSTRUCTIONS

All barriers to proper ramp construction shall be removed and replaced (if necessary) including but not limited to:

- (1) Existing handrails and support posts
- (2) Existing driveway and sidewalk surfaces
- (3) Landscaping, trees, shrubs etc.
- (4) Existing ramps.

CROSS SLOPE AND SURFACES

The cross slope of ramp surfaces shall be no greater than 1:50. Ramp surfaces shall be slip proof.

USE SKID-NO-MORE NON-SKID PAINT OR Written approved equal SLIP PROOF MATERIAL.

MATERIALS

- (1) Support posts: 4" x 4" pressure treated lumber. Posts shall be protected from direct contact with soil by setting in concrete or mounting to existing concrete with fasteners designed for such purpose.
- (2) Deck: 5/4" x 6" pressure treated "deckboard" or written approved equal.
- (3) Fasteners: ring shank nails or deck screws designed for exterior use.
- (4) Handrails: 2" x 6" pressure treated lumber for top rail (horizontal);
2" x 4" pressure treated lumber for inside rail (vertical)
Rail pieces shall be fastened to conform with handrail construction noted above.
- (5) Properly treated metal handrails may be used.

LOAD DESIGN:

ALL MATERIALS, DESIGN AND CONSTRUCTION SHALL RESULT IN A RAMP THAT WILL SUPPORT A MINIMUM OF 40 POUND-PER-SQUARE-FOOT LOADING.

16.B. EXTERIOR DOOR - WIDEN

WIDEN EXTERIOR DOOR OPENING AND INSTALL NEW

36" PRE-HUNG EXTERIOR DOOR

Existing exterior door at the designated location shall be altered as detailed below. All work shall comply with local code requirements.

- 1. Remove existing door and storm door (**see item 6 below**) and dispose of in code legal dump. Homeowner may choose to keep one or both. Use care to minimize damage to adjacent surfaces. Contractor shall be responsible for returning all affected surfaces to match existing. Door trim materials will be replaced with new materials to match existing as close as possible.
- 2. Prepare existing wall structure to accept a 36" wide, pre-hung, steel, exterior door (see below for door specifications). Work shall include replacement of header to support roof and ceiling loads as per city code, removal of interior and exterior wall surfaces (replace to match existing), moving and re-mounting of all electrical devices and any other obstructions necessary to accommodate the new door opening. The contractor shall be responsible for replacement of all damaged components.

3. The replacement door shall be a new Stanely K-1 type, steel (24 gauge) insulated, pre-hung, 6-panel entrance door (or written approved equal) - **see note below**. Door shall be installed complete with interior and exterior trim, threshold, weather-stripping, entrance lock set, dead bolt, door stop and peep hole (set to height determined by homeowner). Door shall be set with screws (recessed into jamb) sufficiently long to penetrate 1 ¼" into framing. Striker side shall be solidly blocked at locking mechanisms.

NOTE: IF DOOR INDICATED IS THE MAIN ENTRY DOOR FOR THE STRUCTURE THE REPLACEMENT DOOR SHALL BE A 6-PANEL STEEL ENTRY DOOR. IF DOOR INDICATED IS NOT THE MAIN ENTRY DOOR THE REPLACEMENT DOOR SHALL BE A FLUSH-FACED STEEL ENTRY DOOR.

4. Seal the entire space between the rough framing and the door jamb with spray insulating foam product. Proper care must be taken to insure that the foam expansion does not interfere with proper door operation. Final result shall be a weathertight, airtight installation with no visible light showing.
5. Prep and paint door (inside and out), trim and all new materials to homeowner selected color. Homeowner's choice shall be from readily available colors (Kelly-Moore or written approved equal). Homeowner may choose one interior (latex) and one exterior (latex) color.
6. Existing storm or screen doors shall be replaced with a new combination storm door. New storm door shall be extruded aluminum, 1" thick, self storing, baked-on enamel finish (color chosen by homeowner) and shall match new door opening in size. Door shall be installed complete with hydraulic door closer, storm chain, and weather-stripping.

16.B.1. SWING FREE HINGES

Install swing free or swing clear type hinges at location indicate on the bid document. Screws shall penetrate a minimum of 1 ¼" into framing members. Repair all surfaces disturbed by installation to original or better condition. At final door shall swing completely out of frame and open and close properly.

16.B.2. WIDEN INTERIOR DOOR OPENING/INSTALL 36" WIDE PRE-HUNG DOOR AND HARDWARE

Existing interior door at the designate location shall be altered as detailed below. All work shall comply with local code requirements.

1. Remove existing door and frame and dispose of in code legal dump. Homeowner may choose to keep unit. Use care to minimize damage to adjacent surfaces. Contractor shall be responsible for returning all affected surfaces to match existing as closely as possible.
2. Prepare existing wall structure to accept a 36" wide, pre-hung, interior door (see below for door specifications). Work shall include replacement of header to support roof and ceiling loads as per local codes, removal of wall surfaces as needed (replace to match existing), moving and re-mounting of all electrical devices and any other obstructions necessary to accommodate the new door opening. The contractor shall be responsible for replacement of all damaged components.
3. The replacement door shall be as called for in the bid document. If no type is detailed in the bid document match existing door as closely as possible. Door shall be installed complete with trim, entrance lock set (use privacy locks on bedrooms and bathroom doors) and door stop. Door shall be set with screws sufficiently long to penetrate 1 ¼" into framing. All hinges and striker side shall be solidly blocked at locking mechanisms.
4. Prep and paint door , trim and all new materials to match existing. Use Kelly-Moore or written approved equal. See Division 9 for paint specifications.

16.C. BATHROOMS

1. *Grab bars/stainless steel*

Install grab bars in location specified in the bid document as per the Americans With Disabilities Act Accessibility Guidelines sections indicated below for:

- a. Showers: 4.21.4
- b. Bathtubs: 4.20.4
- c. Water closets: 4.16.4

USE FROHOCK-STEWART OR WRITTEN APPROVED EQUAL.

2. *Commode*

- a. High rise commode adapter.
Install a high rise commode adapter at location designate in the bid document. Use Frohock-Stewart or written approved equal.
- b. High rise commode.
Replace existing commode with new high rise commode complete with new wax ring, supply line and shut off valve. Use American Standard “Cadet” or written approved equal.

3. *Bath/Shower.*

- a. Bathtub
 - 1. Grip rail installation
Install new “Tri-Grip Bathtub Rail” #1200 by Frohock-Stewart or written approved equal. Install to manufacturer’s recommendations.

2. *Transfer Bench*

Install new transfer bench with back and grab bar on one side . Use Frohock-Stewart #999 or written approved equal. Install to manufacturers recommendation.

- b. Shower/Barrier Free.
Remove existing bathtub and tub surround and install a new barrier free shower (including anti-scald device with ceramic disk) and hand held shower head with glide bar. Size shall be 36” x 60” or as specified in the bid document.

DIVISION 17 - RECONSTRUCTION

17.A. GENERAL INSTRUCTIONS FOR DEMOLITION BIDS

**CONTRACTOR GENERAL INSTRUCTIONS FOR ALL
SITES/LOTS/STRUCTURES IN DEMOLITION BID**

1. FURNISH PROOF OF INSURANCE PRIOR TO BID AWARD IN THE FORM OF A CERTIFICATE TO THE PROJECT MANAGER.
2. OBTAIN DEMOLITION PERMIT FROM BUILDING INSPECTIONS OFFICE BEFORE WORK BEGINS.
3. TREAT EACH SITE WITH RODENT BAIT AT LEAST 10 DAYS PRIOR TO START OF DEMOLITION ACTIVITY TO INHIBIT RODENT MIGRATION.
4. DO NOT DISTURB ANY TREES ON ANY LOTS THAT ARE 10" (10 INCHES) IN DIAMETER OR LARGER, UNLESS NOTED IN WORK SPECIFICATIONS.
5. BRING IN FULL DIRT WHERE NEEDED WHEN GRADING LOTS SMOOTH TO ENSURE LOT WILL DRAIN PROPERLY AND NOT HOLD WATER.
6. DISCONNECT AND CAP SEWER LINES TO EACH STRUCTURE WHERE SEWER LINES EXIST AS PART OF THE DEMOLITION CONTRACT.
7. CALL CITY INSPECTOR TO SCHEDULE AND OBTAIN A FINAL INSPECTION CLEARANCE FOR ALL PROPERTIES BEFORE INITIATING RECONSTRUCTION ACTIVITIES.
8. ATTACH COPIES OF "PAID" RECEIPTS FROM THE CODE LEGAL DUMP SITES USED TO THE INVOICES WHEN REQUESTING PAYMENT (PAYMENTS WILL NOT BE PROCESSED WITH THESE RECEIPTS).
9. SUBMIT TWO ORIGINAL INVOICES TO REQUEST PAYMENT UPON COMPLETION OF ALL SPECIFIED WORK.

17.B. RECONSTRUCTION GUIDELINES AND SPECIFICATIONS

GENERAL NOTES TO CONTRACTORS

1. Contractor shall provide plans and specifications for the structure whose size is detailed in the Work Write-Up/Bid Document at Contractor's expense. The plans and specifications shall conform to the requirements of this section. **All plans shall be fully accessible.**
2. All labor and materials must comply with "General Specifications for Rehabilitation and Construction", referred to as "General Specifications" in this document, and all codes and ordinances of the city and state in which the work is performed.
3. Contractors must include in bid, and advise the Project Manager as to any item or items, which may have been left off plans that could result in code violations.
4. Contractor, at Contractor's expense, will be responsible for any items not included in bid, but are shown on plans or specified in the General Specifications or required by local codes and ordinances.
5. Penalty clauses will be outlined in contract and bid documents and will be enforced.
6. Project Manager prior to execution, in writing, must approve any violations or substitutions in construction, fixtures, or materials from plans.
7. The following order of precedence shall be enforced: 1) the Plans as presented for bid, including all foundation plans, elevations, floor plans, details and written changes, 2) the following Plan Specifications, which shall serve as a Description of Materials, 3) the General Specifications. Should the above items not address an item, the Project Manager's decision shall take precedence, in writing if time allows. In all cases, the building codes and ordinances of the city and state in which the work is performed shall not be violated.
8. All structures must meet all applicable standards of the Texas Department of Housing and Community Affairs "Texas Minimum Construction Standards" and the "Texas Minimum Construction Specifications". In the case of conflict between different standards and codes, the most stringent shall apply.
9. Contractors must register each project with the Texas Residential Construction Commission. Forms may be obtained at www.trcc.state.tx.us.
10. Contractors must complete the Texas Residential Construction Commission "Builder Registration Form". Forms may be obtained at www.trcc.state.tx.us.
11. All newly constructed units shall be total electric unless otherwise specified on the Bid Document.
12. All newly constructed units shall receive an energy inspection(s) as required at contractors expense.

PLAN SPECIFICATIONS Site Preparation

1. Site prep includes demolition of existing structures **if indicated on the Bid Document**.
2. Add fill sand as necessary to properly elevate foundation location and promote proper site drainage away from foundation and off property.
3. All demolition and site work shall be according to the General Specifications and comply with all codes and ordinances of the city in which the work is performed.

Concrete

1. All concrete slabs and flatwork shall be according to the Plans and meet all code requirements.
2. Driveway and sidewalk shall be dimensioned as per site plan or as detailed in the Bid Document and shall comply with local code requirements.
3. All concrete shall have a minimum 28-day compression strength of 2500 P.S.I. with a maximum slump of 6".
4. Slab and beams shall be as shown on detail.
5. All porches shall be poured monolithically with main slab. The front entry shall be at the same level as the front porch to meet accessibility standards.
6. Top of slab shall be minimum 5 1/2" above existing grade.
7. #5 re-bar set at 12" O.C. shall be stubbed out of main slab and porches for driveways and sidewalks. Re-bar shall extend into slab, driveways, porches and sidewalks a minimum of 24".
8. Driveways shall have a minimum slope away from house of 1/8" per foot.
9. All slab area must be termite treated.
10. All slab area must be covered with 6 mil polyethylene sheeting with 18" overlap prior to setting re-bar.

Framing and Exterior

1. All framing shall be in accordance with the General Specifications and meet all code requirements.
2. All wood in contact with concrete shall be Penta-treated or Wolmanized.
3. Finger-joint members shall be acceptable where code allows, all other members must be #2 yellow pine minimum.
4. All studs in load bearing walls shall not exceed 16" O.C.
5. All studs in non-load bearing walls shall not exceed 24" O.C.
6. All rafters shall not exceed 24" O.C.
7. Hip and valley rafters along with ridge boards shall be one size larger than rafter size.
8. No rafter shall be smaller than 2" X 6".
9. No ceiling joist shall exceed 24" O.C.
10. All ceiling joist spans and sizes shall be code approved.
11. All headers shall be a minimum of 2, 2" X 6" #2 yellow pine.
12. All main plumbing walls shall be framed of 2" X 6" yellow pine.
13. All roof framing shall meet code requirements.
14. All roof decking shall be 1/2" CDX plywood with ply-clips set between each rafter. Code approved 7/16" O.S.B. shall also be accepted.
15. All roof bracing shall be according to plans, the General Specifications and meet all code requirements.
16. Engineer-designed roof trusses may be used in lieu of conventional framing.
17. Two Simpson H2.5 "hurricane" clips shall be installed on every rafter tail.
18. Ridge vents shall be installed along with sufficient soffit vents to meet code requirements.
19. Corner wind bracing shall be installed as follows: minimum 7/16" O.S.B. for a minimum of 48" from corner. Sections of walls longer than 25' shall be braced with same.
20. All other exterior wall sheathing shall be minimum R-3 rigid foam. All seams in sheathing shall be properly sealed.
- 21. Exterior siding, soffit, fascia and trim shall be James Hardie HardiPlank or written approved equal.**
- 22. Structure shall meet the International Energy Code as demonstrated by a RESCheck Compliance Certificate.**

Roof

1. Install 30# felt paper with simplex felt nails over roof decking (overlap felt 4" minimum).
2. Install D drip edge (galvanized) over felt.
3. All flashing and valley material shall be standard 29 gauge galvanized sheet metal.
4. If valley flashing is used, it must be of the V-trough type.
5. Composition shingles to be a minimum of 220 pound class A fiberglass seal tape with 20-year manufacture's warranty. Light color to be specified by owner.
6. All roof penetrations must have approved flashing.

Interior Walls and Ceiling

1. All ceilings shall have 1/2" sheetrock.
2. All walls shall have 1/2" sheetrock.
3. Tape and bed according to General Specifications.

Interior Trim

1. All cabinetry shall be FHA/VA grade or better and must be approved by the Project Manager in writing prior to installation. Use Mill's Pride "York" or written approved equal.
2. Window frame to be sheetrock wrap 3 sides with wood sills.
3. Door trim shall be finger-joint paint grade.
4. Baseboard and shoe mold shall be paint grade.
5. All other trims may be finger joint paint grade.
6. Shoe mold (quarter-round) is required in all vinyl areas.
7. Shelving to be of solid material, minimum 3/4" thick with routed exposed edges.
8. Closet shelves to be supported by rod and shelf brackets.
9. All closets to include clothes rods.
10. All hardware shall comply with the General Specifications.
11. Cabinet doors and drawer fronts may have reversed bevel in lieu of pulls.
12. Owner will select post-form counter-tops.

Floor Covering

1. All floors to be covered with carpet and vinyl. Refer to General Specifications.
2. In vinyl areas all chops and flaws in slab must be filled with floor stone and rough areas stoned down prior to vinyl installation.
3. Clean floors of debris, sawdust and petroleum products in areas to be carpeted.

Exterior Siding

1. Exterior walls shall be "HardiPlank" (or written approved equal).
2. No exposed plywood siding may be used.
3. Fascia shall be installed over wood band nailed to rafter tails. Use "HardiPlank" (or written approved equal).

Plumbing

1. Install new utility services:
 - Water: new line from meter to house
 - Sewer: new line from house to city sewer tap, including code approved two-way clean-outs at end of building drain and at property line.

Note: Verify locations of water meter and sewer tap.

2. Dryer vent must vent outside (not in attic or crawlspace).
3. Range hood shall vent through roof.
4. Water heater shall be minimum 50 gallon electric, Rheem or written approved equal.
5. Fixtures:
 - 6" deep double basin, 21-gauge stainless steel sink with sprayer.
 - 36" minimum bathroom vanity (or as detailed on plan) with cultured marble top and fixture.
 - Fiberglass shower/tub unit with 3 ADA grab bars, showerhead (with glidebar) and fixture (pressure balanced).
 - A.D.A. water closet (high-rise with handrails) code approved 1.6 gallon flush.
 - All fixtures must be pre-approved by Project Manager prior to installation (provide list prior to pre-construction conference).
 - All exterior hose bibbs must be equipped with vacuum breakers.

Central Heat and A/C

1. All heat and A/C units to be sized per code and located on plans. If not noted on plans, install in attic.
2. Duct may be metal, duct board, or foil back flex.
3. Plenum tie-in to unit shall be hard cast steel.
4. **A/C condensing unit to have a minimum SEER rating of 12 (matched to system by manufacturer).**
5. A platform of 7/16" OSB to be constructed in attic for attic mounted units. Platform must extend a minimum of 24" from accessible side of unit.
6. Metal filter grille to be installed in hallway, not to interfere with attic access. (Confirm with Project Manager).
7. Room registers must be metal.
8. Confirm duct drops with Project Manager.
9. A 24" wide walkway from attic access to air handler must be constructed per code.

Electrical

1. Electrical system must be installed per code and the General Specifications.
2. All bedrooms and hallways adjacent to bedrooms must have one hard-wired electrical smoke alarm with battery back-up (wired together on dedicated circuit).
3. Exhaust fan shall be U.L. listed and vented through roof or soffit.
4. Electrical service shall be minimum 150 amp (or as required by code), 120/240 volt.
5. All wiring to be as shown on plans, General Specifications and per code (code shall supersede plans).
6. Telephone wiring to be installed as located by Project Manager.
7. Switched lights shall be installed in attic, whether required by code or not.

8. Ceiling fans with light kits shall be installed at living room and master bedroom.
9. One switched electrical receptacle to be installed under sink to serve as cord and plug attachment for future installation of disposal.
10. As per code, two exterior weatherproof GFCI outlets shall be installed, one on the front half of the house, the other on the back.
11. Any receptacle in garage not dedicated to one appliance (i.e. washer) shall be GFCI.
12. All other GFCI receptacles shall be installed as per code.
13. All bedroom circuits shall be protected by Arc Fault Circuit Interrupters (AFCI). Other locations shall be protected as per code requirements.

Appliances

1. Range shall be one piece GE model number JBS27WHWW or written approved equal.
2. Range hood shall be 30" Broan or written approved equal.
3. Refrigerator shall be GE model number GTS18FBSWW or written approved equal.

Texture and Paint

1. Ceilings: May be blown-on acoustic texture.
2. Walls: Shall be lightly textured (splatter or splatter-drag). Paint shall be semi-gloss.
3. Cabinets shall be stained with minimum two coats gloss lacquer (or pre-finished Mill's Pride "York" or written approved equal).
4. Interior and exterior paint shall be as required in the General Specifications.
5. All exterior wood shall be 3 days dry before painting.
6. All interior painted woodwork shall be done in enamel paint.

Insulation

1. All insulation must meet Federal specifications and city code.
2. Ceiling insulation may be blown-in rock wool, fiberglass, or cellulose, or rollout fiberglass batts. Minimum R-30.
3. Wall insulation may be blown-in cellulose or rollout fiberglass batts. Minimum R-13.

Doors

1. See General Specifications for specs.
2. All interior and exterior entry doors shall be pre-hung 36" x 6'8".
3. Exterior doors shall be steel, six-panel, pre-hung.
4. Interior doors shall be pre-hung masonite raised panel.

Windows

1. All windows shall be HR, single hung, thermopane (double insulated), Low-E with ½ screens or written approved equal. Color choice by Owner.
2. Windows as sized on plans.
3. All windows shall have insulated glass.
4. All windows shall be Low-E.

Miscellaneous

1. Attic access shall be pull-down stairs provide in garage or as designated on plans and specifications (check with Project Manager).
2. Hardware: See General Specifications.
3. Doorstops shall be installed behind all doors.
4. See General Specifications for bathroom accessories.
5. Site shall be kept clean of debris during construction with material to be used kept in stacks and not-usable material in separate stacks.
6. At completion site shall be cleaned and landscaped as outlined below.
7. Erosion control measures must be followed as per city code.

Landscaping

1. Grade must slope away from house uniformly for 5' in all directions.
2. Water must be directed away from foundation.
3. As per city erosion control codes, lot shall be sodded or seeded with a season-appropriate grass species.