

HOUSING INSPECTION SERVICES DIVISION REHABILITATION/RECONSTRUCTION STANDARDS & SPECIFICATIONS

CITY OF DALLAS – HOUSING DEPARTMENT CONTRACTOR GUIDELINES & SPECIFICATIONS FOR THE HOME REHABILITATION PROGRAM

TABLE OF CONTENTS

SECTION 1 - GENERAL REQUIREMENTS (Applicable to rehabilitation and reconstruction)

SECTION 2 - SITE WORK

SECTION 3 - CONCRETE

SECTION 4 - MASONRY

SECTION 5 - METALS

SECTION 6 - WOOD AND PLASTICS

SECTION 7 - THERMAL & MOISTURE PROTECTION

SECTION 8 - DOORS AND WINDOWS

SECTION 9 - FINISHES

SECTION 10 - SPECIALTIES

SECTION 11 - EQUIPMENT

SECTION 12 - RESERVED

SECTION 13 - RESERVED

SECTION 14 - RESERVED

SECTION 15 - MECHANICAL/ PLUMBING

SECTION 16 - ELECTRICAL

SECTION 17 - HANDICAP / ADA REQUIREMENTS

SECTION 18 - LEAD BASED PAINT GENERAL CONDITIONS & SPECIFICATIONS

SECTION 1 – GENERAL REQUIREMENTS

This Housing Inspection Services Division Rehabilitation/Reconstruction Standards & Specifications (the “Standards & Specifications” or “RS&S”), **Exhibit C**, is deemed to be part of the HIPP Triparty Agreement (the “Agreement”) and is subject to its terms and conditions thereof. In this **Exhibit C**, the contractor shall be referred to as “Contractor”, “contractor”, “General Contractor” and/or “general contractor”. The general requirements detailed in this Section 1 is applicable to both rehabilitation and reconstruction.

This document provides for standards for rehabilitation and reconstruction for single-family owner-occupied housing units.

Eligible rehabilitation and reconstruction activities will include all items necessary to bring the structure into compliance with the City of Dallas (hereinafter “City”) written rehabilitation standards and applicable local residential codes; including items recommended as necessary to preserve the property’s structural integrity, historic integrity, weatherization, and quality of living conditions. The scope of work must address all major systems that have a remaining useful life for a minimum of 5 years at project completion, or the system must be rehabilitated or replaced as part of the scope of work. Major systems are identified as structural support (foundations); roofing; cladding and weatherproofing (e.g., windows, doors, siding, gutters); plumbing; electrical; and heating, ventilation, and air conditioning. Improvements to, or demolition of an accessory structure such as detached garage, or small residential structure will be made on a case by case basis depending on the available budget, grant requirements, current building codes, health and safety concerns, and minimum occupancy requirements of residents of the property and in conjunction with the rehabilitation of the housing rehabilitation of the owner-occupied home.

This document is established to provide information to contractors and homeowner on the HIPP and on the standard for the performance of work under each type of assistance. The RS&S shall be followed by contractors submitting bids on work to be financed wholly or in part by City or federal funds in any City-administered HIPP. Conflicts in interpretation of construction work to be performed will be governed by the RS&S and the Agreement. If there is any conflict between the Agreement and this RS&S, the City shall decide which controls, in its sole discretion. This does not preclude the right of the City to request changes to these RS&S upon approval by the Director of Housing and Neighborhood Revitalization or designee (the “Director”). Contractor and homeowner shall cooperate in good faith to reach mutual agreement on reasonable modifications to the RS&S. Such modification shall be in the form of an amendment to the Agreement. The Specifications of Work (“SOW”), the contractors bid, and all loan closing documents constitute the basis of the Agreement for work to be performed.

Waiver of any term or provision of this RS&S or forbearance to enforce any term or provision by City shall not constitute a waiver as to any subsequent breach of the same term or provision or a waiver of any other term or provision of this RS&S. Interpretation of these policies and processes rests solely with the Director.

CONTRACTOR QUALIFICATIONS

The Housing Department for the City of Dallas (the “Housing Department”) sets forth requirements and standards with respect to approving contractors to be placed on a list of firms certified to bid on HIPP projects. Because the City seeks the highest quality work and performance from its contractors, all contractors on the HIPP approved contractors list will be required to submit financials with their bids. The Office of Risk Management (hereinafter “ORM”) shall set the level of risk and insurance requirements. This will allow the City to monitor all contractors to ensure that they continue to maintain expected quality of work and performance. If no changes have occurred, the contractor shall submit a No Change Affidavit, provided by the Housing Department.

Reduced, Limited or Suspended Status: Existing Contractor

An existing contractor’s eligibility status will be reviewed and the contractor may be recommended for reduced, limited or suspended status when the quality of work is lacking and needs to be reassessed (for failure to follow the RS&S or the Agreement), when the City determines that contractor’s financial capacity needs to be reassessed, or failure of the contractor to complete a project(s) by the specified time. A contractor recommended for reduced status shall be limited to the number of projects recommended by their risk level. If a trend of good performance is established by the end of the suspension period, the risk level shall be reviewed for full certification to the level of financial and project performance capacity is reached. If good performance is not established within the allotted time, the contractor’s certification shall be reviewed for further action leading up to suspension and debarment.

A Contractor may be eligible to bid on HIPP projects or be listed as an approved reconstruction General Contractor if all applicable criteria are met. Some of the applicable criteria are listed below. This list is not an all-inclusive:

- Approved as eligible Contractor for the current fiscal year
- No listing of debarment or suspension by the City or the U.S. Department of Housing and Urban Development
- Current City Home Repair License.
- Registered as a Contractor with the City of Dallas
- Registered to transact business in the state of Texas with the Texas Secretary of State
- Trade Contractors’: Licensed Plumbing, Electrical & HVAC Contractors: Current copy of State license
- EPA Renovators and Firm Certification
- Current insurance as specified in the contractor application
- Consistent evidence of compliance with local, state and/or federal requirements and/or guidelines pertaining to HIPP
- Consistent evidence of compliance with required warranty requirements
- Consistent evidence of compliance to begin and end construction per contractual agreement
- Number of projects, private and public do not exceed establish risk level.
- Financials are available to cover additional work to be determined by ORM

PRE-CONSTRUCTION

The contractor will be expected to present samples of materials that could be selected by the homeowner (e.g. interior & exterior paint, roofing material, counter tops, vinyl and carpet). The homeowner's choice of colors will be placed on a selection form, signed by all parties and shall be included in the SOW. At the pre-construction conference, the SOW or the reconstruction documents will be reviewed and a tentative schedule of work will be provided to the homeowner. The sequence of work will be discussed along with special conditions and expectations.

CONSTRUCTION

Only materials conforming to the requirements of the RS&S shall be used in any work covered by the RS&S. Manufacturer names or an equal will be specified to establish a guide as to the quality and type of materials required for the job. Materials commonly accepted as being 'equal to' may be used if approval is obtained prior to installation from the Housing Department inspector (the "Housing Inspector") and may require a material change order. Whenever it appears the materials furnished, and work performed by the contractor fails to fulfill the minimum requirements of the Agreement, the Housing Inspector shall notify the contractor of the non-approved materials. Such inspection will not relieve the contractor from his/her obligation to perform required work in accordance with the RS&S and SOW.

The contractors will ensure that materials on the job site is properly stored to ensure preservation of quality and fitness for installation. Lawns or the structure will not be used for storage purposes without the written consent of the homeowner. The storage of materials and equipment will be permitted only for the duration of the contract and are to be removed immediately upon completion of the project. Further, any damages to the homeowner's property like: lawns, driveways, fences, awnings, or structures resulting from storage of materials, or the delivery of equipment will be repaired by the contractor. The contractor will not use any property belonging of the homeowner such as but not limited to the use of the bathroom, kitchen, equipment, supplies, or tools.

All stored materials and equipment on site will be grouped together and staked in an orderly fashion as not to pose a hazard to people or animals on site. When adjacent property is affected by work conducted by the contractor or his employees, the contractor will take steps necessary to notify the owner of the adjacent property and if damage occurs, be responsible to replace, restore or repair the damaged item to the original condition.

Performance of Work

Repairs to areas impacted by HIPP repair or replacement will be specified in the SOW. All work will be conducted so as to minimize inconvenience to the homeowner. The contractor will be expected to carry out the work activities in accordance with the schedule provided at the preconstruction conference.

Contractors will keep the premises and the surrounding areas clean and orderly during the course of the project. Reconstruction contractors will provide a portable toilet during construction. Hazardous areas will be marked by tape and barricaded as required by the City's building

inspection code. All debris will be removed on a continuous basis and shall not be allowed to accumulate. Contractors will clean the work site on a daily basis without exception.

Materials, fixtures or equipment that are to be removed as a course of the repair or replacement of the repair work will belong to the contractor for disposal. Any materials, fixtures, or equipment requested by the homeowner will have to be removed prior to the start of construction. Materials, fixtures or equipment removed by the homeowner must be stored in compliance with the Dallas City Code and all applicable laws. Materials, fixtures or equipment requested by the homeowner that is left in place at the start of construction will belong to the contractor for disposal. The homeowner may not install, work, provide, or otherwise assist in anyway in the construction of the project. Any materials, fixtures or equipment that were removed by the homeowner prior to the start of construction and then reinstalled after the completion and final of the project will violate the contract and void any warranty associated with the SOW for the life of the materials, fixtures or equipment.

Contractors will supervise their work crews and or sub-contractors and direct all work to be performed to completion. The contractor will be solely responsible for control over the construction means, methods, techniques, and sequences for coordinating all portions of work under the contract. The contractor will be responsible to have a designated person onsite who has knowledge of the work as stated on the SOW and is capable of communicating with the inspector and the homeowner.

Subcontractors will be bound by the terms and conditions of the Agreement and its specifications insofar as it applies to their work, but this does not relieve the contractor from full responsibility to the homeowner for the proper and timely completion of work under the Agreement. The contractor will provide the homeowner and the City with a copy of current subcontractors at every closing and request for final payment. It is the contractor's responsibility to ensure that the subcontractors are not on the Excluded Parties List, as defined in the HUD regulations, or suspended under HIPPA. The contractor is responsible to ensure that all subcontractors' licenses are current, valid and registered with the City per local ordinances.

Contractors / subcontractors will not use the homeowner's bathroom, phone, or kitchen facilities. If necessary or required, a contractor may provide an on-site trailer / office not to exceed a standard size of 8' x 20' if City ordinances allow.

The contractor will provide at least one (1) 5A10BC portable fire extinguisher for the job site for protection against small fires or sparks caused during the daily activities of the work in progress.

General contractors must meet all City of Dallas Building Inspection requirements regarding the fencing and environment protection of the site.

Interim Inspections

The Housing Inspector and the Building Inspector will make periodic visits to the job site. All work will be subject to inspection by the Housing Inspector and/or management. Contractors will fully cooperate during site visits and the contractor shall make accessible all work readily for inspection. Reconstruction contractors shall provide to the inspector any key access, access codes to locks, alarms or any other devices to allow ease of inspections.

Plumbing, electrical or work concealed in wall cavities, work not easily accessible, or work identified at the pre-construction conference will be considered “Called” inspection. The Called inspection will require an inspection prior to the work being covered up, concealed or difficult to verify. Contractors are responsible for calling the Housing Inspector in advance to notify them of any work that will be covered up, concealed or difficult to verify. Photos will not substitute for a Called inspection. The contractor must call the Housing Inspector before 7:45 a.m. if the contractor requests a “same day” inspection. The contractor will indicate the type of inspection and the approximate time of the inspection. Housing Inspectors are available to conduct Saturday Called inspections but must be notified of such request by 7:45 a.m. on the Friday before to the date of inspection. If contractor fails to call for an inspection before such items have been covered up, concealed or difficult to verify, the contractor shall be required to uncover, remove to make accessible for inspection. The contractor, at their own expense, shall reset any materials/assemblies removed to allow inspection to finished conditions.

The contractor will ensure that the worksite will be clean and clear of all debris and waste materials resulting from the work at all times.

Final Inspections

At the completion of the construction contract, the contractor will request a final inspection of the project. The final inspection will be attended by the Housing Inspector, the contractor, and the homeowner. During the final inspection, the Housing Inspector will review with the contractor the Agreement, including but not limited to the SOW and the RS&S, and any change orders for compliance.

The inspector will conduct a final inspection and create a punch list of items that are not in compliance and note any suggestions for repair from the homeowner if merited for repair on the punch list. The Housing Inspector will provide a final punch list to the contractor outlining any remaining work to be completed or redone on the same day via an email or a hand delivered paper copy. The contractor is required to complete all items on the punch list prior to calling for a second inspection. A completed punch list shall be provided to the contractor either by an email or a hand delivered copy. The contractor shall respond via email or sign the hand delivered copy stating acknowledgement of the punch list.

Punch list items not identified prior to acceptance and completion of the work will be addressed as “Warranty” items, unless determined by the Housing Director or designee not to fall under a warranty. If the item does not fall under the warranty, contractor will be required to fix the punch list item prior to final payment. If final payment has been provided to contractor, contractor is still required fix the punch list item within a reasonable time, if the work was not performed in accordance with the Agreement, as determined in the sole discretion of the City.

Draws and Final Payment

HIPP rehabilitation projects will allow up to two (2) draws in \$20,000 increments. If the project is less than \$20,000, one (1) draw will be allowed. (Example: HIPP project at \$35,000 value would have first draw of \$20,000 and second draw of \$15,000).

A completed punch list signed by the homeowner is required prior to submitting the final payment request. The homeowner will sign the payment request at the completion of the punch list. Payment requests submitted prior to the completion of the punch list will not be accepted.

All required documents must be in compliance with the Loan Documents, including but not limited to the SOW, the RS&S, permits, and manufacture warranty and extended warranties. Incomplete submission of required documents will be returned to the contractor for remediation and compliance.

All requests for payment must have the contractor's company name, mailing address, an itemized list of work on the invoice for which payment is requested and a total. The homeowner, contractor, and Housing Inspector will sign the payment request form. Should the homeowner refuse to sign the payment request, the Housing Inspector will meet with Director or designee to review the project and the value of the work determined to be eligible for payment. The Director or designee may request to conduct a site visit to approve or deny payment to the contractor. If the payment request is in compliance of all the contractual agreements, the housing inspections manager will forward payment request to the Housing Department to proceed with the payment process. The payment shall be sent to the Housing Director for review and approval. If the City determines that the work conforms to the requirements of the Agreement, the City will pay contractor for the work. Homeowner understands and agrees that homeowner's acceptance of the work is not required for reimbursement.

Reconstruction contractors must verify the owner has provided the Housing Department with proof of insurance before giving the owner keys to the property.

Documents to Be Provided at Time of the draws and or Final Payment Request (if applicable)

- Request for Payment form with attached invoice
- Schedule of Values (Reconstruction only)
- Affidavit of Completion
- Updated list of subcontractors that require reimbursement of services
- Original Notarized Waivers of Lien from the contractor and each subcontractor
- Letter of Warranty from contractor listing contact, mailing address, and phone number
- Warranty Documents
- Green Tags
- Energy Star Certification, Builders Risk (Reconstruction only)

Upon approval of the final inspection, the contractor's payment or draw request are forwarded to the Department to prepare payment. Contractors are encouraged to sign up with the City's Controller's office to receive electronic payments.

WARRANTY

All contractors and subcontractors shall be required to warranty and guarantee that the work performed under the contract will be free from defects in both materials and workmanship for a period of 12 months and provide a 10-year foundation warranty for reconstruction projects starting from the date following Project Completion, as defined in the Agreement.

The contractor will provide the homeowner any and all applicable operational and maintenance data booklets or sheets for materials or equipment installed on the job that requires any type of scheduled or regular maintenance within the contractor's 12-month warranty. The contractor shall provide the Housing Inspector a list of warranty documents given to the contractor on company letter head. The letter shall state that the contractor has provided the documents listed and has instructed the homeowner in the use and maintenance of the equipment. The homeowner will sign receipt for the warranty documents and all extended manufacturer warranties for the furnaces, air conditioners, water heaters, and any fans, and appliances, etc. Failure of the contractor to provide such warranties as described herein (and in the Agreement), is a default under the Agreement.

Before final payment is approved, the contractor will provide to the Housing Inspector a copy of the warranty paperwork for all products installed with a Manufacturer Extended Warranty with model and serial number written in the appropriate places if applicable. Examples include but are not limited to the following:

- A/C and Heating Equipment
- Water Heater
- Roof
- Any other item with Manufacturer Extended Warranties

The contractors will respond to the homeowner within five (5) business days and correct warranty concern(s) within seven (7) business days, the Director may extend the time to correct warranty concerns, in his/her sole discretion. Health and/or safety issues will be responded to and corrected by contractor within 72 hours of notification.

Warranty Compliance

Homeowners contacting the Department within the defined warranty periods will be directed to contact the contractor and asked to call back if no response is received within 5 business days. If the contractor does not respond to the homeowner within 5 business days to schedule an appointment, the Housing Inspector will send an email to the contractor and copy the housing inspections manager or designee. Non-responsive contractors will be notified by mail that until warranty issues are addressed, action may be taken to change their eligibility status. Failure of the contractor to respond and/or to provide repairs within a reasonable amount of time, as determined by the Director, is a default under the Agreement.

QUALITY ASSURANCE PROCESS

Designated Housing Department staff will conduct periodic post-construction site visits on a designated percentage of HIPP projects to assess the quality and sustainability of repairs. All HIPP projects may be subject to an eleventh-month inspection conducted by a Housing Inspector prior to the end of the required warranty period. The contractor will be responsible to honor the 12-month warranty period and make any necessary repairs required within a reasonable amount of time.

EXCEEDING DI MINIMIS ON PAINTED SURFACE PROCEDURES

The contractor shall follow the federal Lead-Based Paint regulations established by Department of Housing and Urban Development (HUD). The contractor shall adhere to the most current regulations for all residential properties built before 1978. The contractor will receive a copy of the procedures established by the HIPP. These procedures will be followed by the responsible Contractor should a painted surface be disturbed in excess of the Di Minimis as established by HUD. The contractor is to presume all residential properties contain lead-based paint unless paint testing and or a risk assessment has been conducted by a qualified entity.

SECTION 2 – SITE WORK:

02100- CLEARING:

02101- PROJECT PREPARATIONS:

- A) The contractor will survey the work site to verify all existing grades, conditions and location of all utilities and soil conditions. the contractor will provide all necessary barricades, lights, signals, flagging, and other devices as required for safety on the job site.
- B) The homeowner will remove the following code violations prior to commencing of the work, if existent on site, including; all Junk Motor Vehicles, high weeds, illegal storage, unrestrained animals, and obvious hazards or any other structure on the lot outlined by the housing inspector, prior to and as a condition of HIPP assistance. No construction will begin on site as long as these conditions are not met.

02102- SITE CLEARING:

All structures and improvements must be demolished, and debris removed from the jobsite. Remove all rubble, boulders, and large debris within the construction limits. Remove any shrubs, trees and stumps as needed (before removing any protected trees, contact Buildings Inspections and speak to an arborist). When necessary, all stumps & roots larger than 4" in diameter will be removed completely to a depth of at least 2 feet. Remove sod, weeds, or ground cover as needed where new structure will be placed. Do not burn or bury any debris on site; all debris is to be removed and disposed of properly in a landfill and dump receipts must be provided if required.

02103- TREE PRUNING & SHAPING:

Contractor will provide services to prune and trim all trees that are either marked by the Housing Inspector, or that overhang or rub against the structure. This also includes all dead or rotten limbs that pose possible danger to people or damage to the structure. Remove all cut limbs and debris off site and rake area clean. It may be required that the homeowner shape or trim existing shrubs against the structure. If specified in the SOW, shrubs will be trimmed back in a professional manner as to look neat and not provide a security risk around any entries or windows.

02104- TREE & STUMP REMOVAL:

In cases where entire tree needs to be removed, Contractor will safely cut down the tree limbs then the tree trunk so as not to cause any further or new damage to the adjacent structure or roof (before removing any protected trees, contract Buildings Inspections and speak to an arborist).

- A) Stumps will be removed to a depth of 1 ½" below grade in areas where structures will not be placed or constructed.

B) All stumps will be removed completely to a depth of 2' in areas over which new structure(s) will be built.

02105- DEBRIS REMOVAL:

The contractor is to remove all loose debris from the attic or crawl space. This will include specified items on the SOW that may not be considered debris.

02110- DEMOLITION:

02111- BUILDING / STRUCTURE DEMOLITION:

This section refers to any out-buildings on the lot of the subject property (Detached Garages, Sheds, Animal Shelters, Gazebos, Etc.) that are specified on the SOW. When called for, structure is to be completely demolished. Disposal of all debris in a code legal dump site is required. Structure is to be removed entirely to expose the dirt surface beneath, including all wood, masonry, and concrete floors and foundation elements. Area must be raked clean to ensure all sharp objects, glass and debris are removed.

02112- SELECTIVE DEMOLITION:

Contractor will complete all selective demolition on the interior and exterior of the structure as specified on the SOW. When removing walls or room additions, contractor will ensure smooth removal from and safe shoring of main structure. When removing specified assemblies or elements where there is damage caused by water, insect, or simple materials failure, the contractor is to notify the housing inspector before proceeding with any additional work. The contractor shall remove those items in their entirety back to solid and clean materials with an executed change order. All materials removed are to be disposed of in a legal dump-site. No materials with exposed nails and jagged edges that could pose a safety hazard are to be left on site. The contractor will use care when doing selective demolition to protect adjacent surfaces and surrounding areas by shoring or placing protective covering or dust controls as may be necessary. Any materials that are to be re-used such as doors, trim, lumber or fixtures will be cleaned and stored in a proper manner as to prevent damage or hazard.

02200- FOUNDATIONS & EARTHWORK:

02210- SITE GRADING & BACKFILL:

Provide all soil as needed to backfill around the perimeter of the entire foundation, as specified in the SOW in order to create positive drainage to a minimum of 4 ft. away from the structure. The contractor will install level and rake soil around the yard as needed to fill any large holes that may exist that could be considered a tripping hazard on the site. Any leftover materials and debris will be removed from site and site will be left clean and fine graded.

02211- REMOVAL OF SKIRTING (UNDERPINNING):

When removal of skirting is required to accomplish any foundation work, the contractor will remove the skirting with care and reuse such skirting when foundation work is completed and inspected. If skirting cannot be removed easily in order to be reused or if skirting material is in an irreparable condition, the contractor will immediately notify the Housing Inspector to determine an alternate course of action or solution.

02214 ACCESS DOORS TO CRAWL SPACES:

Access doors shall have 2" x 4" pressure-treated pine lumber frames with ¾" B.C. exterior grade plywood or T-111 doors, T-strap hinges, hasp and turnbuckle in exterior grade hardware. Contractor is to trim the outside of the access door with 1" x 4" pine. Caulk trim as needed & prime and paint entire door, frame, and trim with two (2) coats paint. Stops are to be placed on inside of frame preventing door from being forced inward damaging the hinges.

02215 FOUNDATIONS:

02215.1 Post & Footing

Contractor will obtain required permits for any foundation work.

For the purpose of these specifications, "foundation" will refer to all materials below the floor joists (for wood-frame structures) and will include perimeter beams, posts, footings, piers, shims, crawl space, girders and sills. The following L through K, are items that refer to work on the structural foundation or parts thereof:

- A) Foundations that are to be raised and leveled to the best possible plane, will be raised to provide the maximum clearance possible from the bottom edge of the floor joists to the finish grade below, dependent on existing conditions and leveled to best plane possible.
- B) No wooden structural member will be closer to the ground than 18", unless the wood is properly treated to prevent decay or deterioration or is of a species that is naturally resistant to decay, such as Bois D'Arc.
- C) All concrete pier and beam, post and footing, and beam foundation work is to be done as to meet or exceed the requirements of the City's Building Codes & Ordinances and specified by the RS&S.
- D) Dirt at crawl space from post and footing must be removed, raked and leveled.
- E) Footings will be of Concrete 18"x18" square, will extend at least 12" deep into undisturbed soil and will be of 3500 psi compressive strength-. All posts will sit on flat footings and are not to extend more than 2" and no less than 1" into the concrete footings. The bottom of all footings will contain three #4 steel re-bars each way at bottom. (6 total) (See illustration).
- F) Posts, unless otherwise specifically authorized by the SOW, will be of solid concrete, treated wood, or naturally decay resistant woods. Minimum size of all posts will be

8" in diameter or equivalent and will not project beyond the building perimeter framing of the structure.

- G) Concrete posts will be anchored to the footings with a minimum of two lengths of #4 rebar which extend to within 3" of the top surface of the concrete posts. Rebar will extend into the concrete footings and be firmly attached to the rebar mat in the bottom portion of the footing. (See illustration.)
- H) When installing post & footings, spacing will be based upon the span limits of the new or existing members used for the floor beams. Refer to the City Building Codes as applicable to this type of work.

*Rule of Thumb: post spacing: 6 ft. on center for 4" x 6" beams
8 ft. on center for 4" x 8" beams*

- I) All concrete utilized in any type of foundation work will have a minimum content of 5 & 1/2, 94 lb. bags of Portland Cement per cubic yard of concrete and contain no more than 7 & 1/4 gallons of water per bag of cement and a compressive strength of not less than 3,500 pounds per square inch.
- J) When installing new post and footing foundation complete, the contractor will insure structure is raised and leveled to best possible plane. Work will include reinforced concrete footings and posts, steel shims, solid 4x sills (beams).
- K) Shims installed between posts and sills will not exceed a total thickness of 2" and must be of steel.

02215.2

02216- SILLS & GIRDERS:

Sills will be installed to safely support the loads imposed on them. Sills will be a solid 4" x 6" (nominal) in size minimum unless otherwise specified by SOW.

- A) All sills and girders will be properly supported such a manner as to ensure a firm and stable foundation for the structure.
- B) Any girder joint or splice will be supported by a post or pier; when a girder is spliced over a support, an adequate tie system will be provided.

02217- CROSS VENTILATION:

Cross ventilation will be provided in every crawl space, cellar or basement. This will consist of no less than one (1) window, opening or vent located within 3 feet of each corner of the structure. The aggregate ventilation area will not be less than Two (2) SF for each twenty-five (25) LF. of the perimeter wall or 1 square foot for each 150 square feet of floor plan.

- A) All foundation vents will be of galvanized metal or aluminum with screens not greater than ¼" wire mesh hardware cloth. Vents will be 8" x 16" minimum in size unless otherwise specified by Housing Inspector.
- B) When specified, The contractor will re-screen existing foundation vents with 1/8" to ¼" wire mesh hardware cloth.
- C) Vents installed in concrete perimeter beams will be of the masonry type.

02220- EXCAVATING & BACKFILLING OF HOLES:

The contractor will have all utilities located and marked prior to excavation. All excavations will be done in such a manner as to minimize the disturbance of and damages to the yard. All trenches and excavations will be back-filled and compressed to ensure proper restoration of the final grade of the yard. The contractor will rake-out all large loose debris.

02230- LANDSCAPING:

02231- LANDSCAPE TIMBERS & EDGING:

The contractor will install landscape border timbers. Timbers will be a minimum of 4" x 4" (normal) in size, will be of pressure treated timber and will be pinned to the ground using an 18" length of #4 rebar through pre-drilled holes and pounded into soil to secure the timbers in place. Alternate item: Use of 4" metal landscape edging is also approved. NO plastic or PVC edging will be accepted

02232- SEEDING:

The contractor will re-seed & mulch all areas that were disturbed by his operations and construction on site.

02233- SODDING:

The contractor will smooth out all soils and rake smooth then install 1" fresh cut sod to match the ground cover surrounding the newly patched or sodded areas. Contractor will water all areas sodded generously for a minimum of 5 consecutive days.

02234- TREES AND SHRUBS:

The contractor will replace trees or shrubs damaged during repairs or construction or as required by the City of Dallas Landscape Ordinance. Contractor will match existing trees and shrubs as closely as possible.

02250- SOIL TREATMENTS:

02251- TERMITE CONTROL:

- A) Contractor will hire the services of a licensed pest control operator to inspect for active termite infestation. Operator will complete and forward FORM 'RHL-921' to the Housing Inspector with all pertinent information as required to be filed.
- B) If inspection is positive for termite infestation and the Housing Staff authorizes treatment as recommended by the Operator, the Operator will be called back by the homeowner to begin work to eliminate the infestation. Contractor will include the costs of this treatment in proposal. Acceptable levels and concentrations of chemicals are listed in Table One. Effective soil treatment depends upon placing a sufficient amount of chemical so that adequate dispersal in the soil will provide a barrier to all routes of termite entry. All extraneous cellulose debris will be removed from any accessible crawl space under the structure. The use of any approved chemical will be governed by the manufacturer's label requirements and the product must be in compliance with the Federal Laws governing all use and distribution of hazardous chemicals.

A one (1) year renewable guarantee will be provided to the Home Owner by the pest control operator against the recurrence of subterranean termites; this will be submitted on FORM 'RHL-922'.

02252- COCKROACH & INSECT CONTROLS:

A licensed pest control operator will be employed to treat the entire structure for roaches/insect/spiders. The treatment will include the application of approved chemicals in a proper manner to all cracks, crevasses, holes and surfaces as required to eliminate the infestation for a period of not less than thirty (30) days. Re-treatment required within the thirty-day period will be done again without charge to the Owner, Contractor, and the City of Dallas, provided that the Homeowner has cooperated in maintaining a clean house which is not conducive to the harboring of roaches/insects/spiders.

- A) Treat the entire structure for the elimination of cockroaches, other insects, and spiders by the use of approved chemicals and methods so that all insect vermin are eliminated for a period of thirty (30) days. The pest control operator is to notify the housing inspector and the homeowner a minimum of two (2) days prior to the treatment of the interior and or exterior is to occur.
- B) The homeowner is to clear and fully clean all kitchen cabinets of dishes and glassware and all food prior to treatment and to wash all cabinets, floors, walls and appliances so as to have a clean surface for the application of chemicals.

02253- RODENT CONTROLS:

A pest control operator will be used for any and all chemical control measures for rodent elimination. The contractor will first secure the entire perimeter of the structure so as to seal all holes in the walls, floor or roof from rodent infestation, and treat entire structure for the elimination of rodents by use of approved chemicals or traps.

02254- VEGETATION CONTROLS:

When specified on the SOW, Contractor will cut down all tall weeds and overgrown vegetation on the lot that might be harbor to small wild animals and rodents. Once the weeds have been cut down to grade, Contractor will spray a heavy- duty weed killer to stop or slow down the re-growth of the weeds. This especially applies to weeds and vegetation growing around the perimeter of the structure and fence lines.

02500- SITE DRAINAGE:

If specified on the SOW, Contractor to install catch basin with buried PVC drain pipe to drain water away from structure. The Housing Inspector to specify location.

02520- FRENCH DRAINS:

If specified in the SOW, Contractor is to install a drainage system to divert water away from the structure. The contractor is to dig a trench 16" wide and 16" deep around the structure at the drip line of the roof. The bottom of the trench must be lined with 6" of rock and 4" perforated schedule 40 PVC will be placed in the trench with holes to the bottom and then trench will be filled with rock. The contractor is to tie in the trench around the structure to a trench of like dimensions and construction leading to the street. There will be a catch basin installed in the system prior to draining into the street. There will be no reverse flow of run off in the piping.

02540- EROSION CONTROLS:

The term 'Erosion Controls' refers to the use of silt fencing or straw bales or other approved methods of controlling soil erosion from the site into City of Dallas storm sewer systems until sod or grass has been put in place. If the City of Dallas Building or Storm Water Authorities require the use of Erosion control measure for any part of the project and site work, the contractor will conform to all the requirements set forth by the department for the duration of the project.

02550- SITE UTILITIES INFORMATION:

Contractor to ensure all utilities are located and marked prior to trenching or grading.

02600- PAVING & SURFACING:

02610- ASPHALT PAVING & BASE (Residential Drive):

Where called for in the SOW, install a minimum of 5" of compacted crushed concrete and stone mix base, at least 10 ft. wide over a properly leveled and compacted sub-soil with a minimum of 2" asphalt pavement overlay to produce a 9 ft. wide finished driveway.

02611- CRUSHED STONE PAVING:

- A) When specified in the SOW, Contractor will install a minimum of 6" of crushed concrete or gravel with 4" x 6" pressure treated timbers on each side over the entire length of the 9 ft. wide drive. Soil under crushed rock will be leveled and compacted in order to properly support the new drive.
- B) When specified in the SOW, Contractor will add gravel to the existing drive to meet code specifications.

02613- ASPHALT CURBS:

When specified in the SOW, Contractor to install the required lineal footage of 6" asphalt curbs as called for in the SOW, with preparation and installation as required per the TxDOT's "Standard Specifications for Construction".

02617- PAVEMENT SEALING & REPAIRS:

When specified in the SOW, Contractor to make repairs to the existing asphalt pavement by patching holes, cracks, and voids as needed and include all materials and labor to clean areas and fill with new pavement, compact as needed. If required, seal-coat entire pavement area with a bituminous liquid sealer with added silica sand for performance after entire lot has been cleaned off and blown by air to remove all dust and debris. Re-stripe lot as needed.

02700- SITE IMPROVEMENTS:

02710- FENCES & GATES:

All posts, whether steel or wood, will be set with a 2" diameter clearance with a minimum, depth of 2' in a concrete footing over a 4" gravel base. The concrete will be sloped down from the post to surrounding grade to divert water away from the base of the post. The concrete around the base of the posts will be a minimum of 2" thick at any point, except at the bottom of the post where it is to set on 4" of gravel to facilitate water drainage away from the post. Contractor to allow a setting time of 24 hours before stringers and boards are nailed or wire is attached to the posts. Once concrete has set and stringers or wire installed, Contractor to fill the gap between the post and the concrete around it with a tar or caulking seal to provide an expansion collar and aid in preventing moisture from being held against the wood or metal post and causing decay or rust and premature failure.

02711- CHAIN-LINK FENCES:

All chain link fences will be installed in accordance with the Manufacturer's specifications, stretched and secured in a taut and workmanlike manner without sags or voids. All gates will be provided and installed with hinges of sufficient number and strength to prevent gate from sagging and a latching device capable of being secured with a common pad-lock. All metal posts will be capped securely to prevent water entry into the posts. Posts will not be spaced at a distance greater than 9'- 0" OC. unless called for by the Manufacturer's specifications of the fencing system being installed.

02713- WOOD FENCES:

All wood posts will be capped with metal caps and screwed in place or the top of the wood post will be cut at such an angle as to prevent the collection of moisture on top of the post. Posts will not be spaced at a distance greater than 8' – 0" O.C. and installed plumb and true to facilitate installation of modular fencing units. All posts will be no less than 4" x 4" pressure treated lumber for below ground application and all stringers will be no less than 2" x 4" treated lumber with 2 rows of stringers minimum where fences are 5 ft. or less and 3 rows of stringers where fences are over 5 ft. No bottom stringer will be closer than 8" to the natural ground line at the post. All Rails, stringers, pickets or boards used to construct the fence will be securely nailed or screwed in a workmanlike manner to ensure sound and durable construction. 2" galvanized metal posts with post clamps are acceptable in lieu of wood posts.

Treatment of all wood fencing will be accomplished before assembly to ensure that all (six) surfaces of the boards are treated and protected. All wooden fencing materials not naturally resistant to decay will be coated with a protective sealant such as paints, stains, or oil treatments as may be approved for use in the out of doors.

02714- RETAINING WALLS:

When specified in the SOW for purposes of erosion control, Contractor to construct a retaining wall. Retaining wall material will be of poured concrete, concrete block, pressure treated landscape timbers or creosote treated rail road ties. All retaining walls will be lined with landscape fabric, back filled with a minimum of 6" gravel, and filled with clean fill dirt. If treated landscape timbers or creosote railroad ties are used, Contractor to pin first tier to the ground with #4 rebar and spike a dead-man timber every 4' midway or higher on wall. If wall is constructed with poured concrete, Contractor to construct wall according to these specifications and specification 03100 concerning architectural concrete. Contractor to install ¾" PVC weep holes at base of all concrete retaining walls.

02715- PRE-FABRICATED 'OUT' BUILDINGS:

When specified in the SOW by the Housing Inspector, Contractor will install and construct a shed of pre-fabricated metal panels or a wood framed storage shed with cementations fiber paint grade siding Contractor to include skids or cinderblocks and all assembly. Material will be of high quality. All Construction materials and construction methods shall conform with all similar practices as prescribed in previous divisions. (i.e.- Foundation, Framing, Windows, Doors, Roofing, etc.).

02750- IRRIGATION SYSTEMS REPAIRS:

If required, Contractor will make basic repairs to the existing irrigation system to make it operate properly as it was intended. Contractor will make these repairs without charges if in the course of his operations for the project, he/she cut, broke, or removed any parts of the irrigation system.

02752- GENERAL CLEAN-UP:

At the end of each work day, Contractor will ensure that the site is clean and orderly with no loose materials or trip hazards. The contractor assumes liability for any injuries that occur due to material and debris posing a hazard. Construction debris is not to be left on site unless it is placed completely inside an approved dumpster or trailer. **All exposed holes and trenches left open overnight will be protected and clearly marked or flagged to be plainly visible to pedestrian or vehicle traffic or covered safely.**

SECTION 3 – CONCRETE:

03100- ARCHITECTURAL CONCRETE:

03110- ARCHITECTURAL CONCRETE:

All Concrete work will meet or exceed the FHA Minimum Property Standards and City of Dallas Codes & Ordinances that apply. Discharge all concrete within One (1) hour of mixing with water and place successive batches within 20 minutes of each other unless separating with a full expansion joint. Placement of all concrete will also conform to ACI 301 and ACI 304-73 guidelines.

03111- FLAT WORK:

All concrete used for flat-work will be 3500 psi, Portland cement with a maximum slump of 4" unless otherwise specified. All concrete will be placed on compacted virgin soil with compacted sand or gravel base, against straight solid forms, and poured only when the outside temperatures are between 40 and 100 degrees F. All concrete will be free of voids and air pockets and will be protected from the weather while curing for 48 hours. All forms will be stripped from concrete within 24 hours of pouring and backfilling against the new concrete will not occur prior to 3 days after the pour.

All concrete slabs located under living areas within the structure will have a 6 mil, polyethylene film vapor barrier per ASTM C-171 and applicable City of Dallas Codes.

All forms, placement of re-bar steel & wire and compacted soils will be inspected and approved by the City of Dallas, Building and Housing Departments before the contractor will be allowed to pour. Contractor is to provide the Housing Inspector with the approved 'green' tag as part of the contract agreement.

Steel dowels will be used to connect the new concrete to the older existing concrete and set with a concrete epoxy into existing concrete.

03112- CONCRETE STEPS:

- A) Poured in place - Where concrete steps are called for, they will be poured monolithically and according to the requirements of the City of Dallas Building Codes and 03111 at paragraph #4 above.
- C) If pre-cast steps can be substituted or are called for, they must be set level and on a poured concrete pad or ribbons of no less than 6" thick with wire mesh. The steps are to be set flush against the wall or landing and lined up so that the top step is not lower than 7" below the top of the landing or the porch it is servicing.

03113- CONCRETE PORCH & PATIOS:

Where a concrete porch or patio is called for, concrete reinforcing, sand base and other specifications will conform to the City of Dallas Building Codes & Ordinances. The minimum width for the footing will be 12" and the minimum depth will be 6". The minimum width for the porch perimeter beam will be 6" and the minimum thickness for the concrete porch slab will be 4". The concrete porch members will be reinforced with a minimum of 1/2" re-bar throughout. Sand or sand and gravel, or other solid fill will be used only for fill under concrete porches above grade. Flat-work will conform to spec 03111. Finish for porch floors will be of a type that would NOT become a safety hazard when wet and will be sloped away from the house at a minimum of 38" per linear foot so that water will not be collected at the junction where the house and the porch meet.

03114- WALKS & DRIVES:

All walks, Drives and Approaches will be laid out and installed in strict conformance to the City of Dallas Codes & Ordinances. Concrete driveways or sidewalks will be reinforced with 1/2" steel re-bar set 24' on centers in perpendicular fashion (or 3/8" on 16" centers) and supported on plastic chairs sitting over a 3" sand bed.

- A) The contractor will replace existing walkway or drive to the above specifications. Contractor will include demolishing and removal of old material. Contractor will call Housing Inspector for forms and steel inspection.
- B) The contractor will install new walkway extending from the public walk to the front stoop of the structure to the above specifications. Contractor will call Housing Inspector for forms and steel inspection prior to pour.
- C) The contractor will install new driveway extending from the existing apron or driveway approach to an 18' set-back from the front of the structure by 9' wide to the above specifications. Contractor will call Housing Inspector for forms and steel inspection prior to pour.
- D) The contractor will replace existing driveway extending from the existing apron to an 18' set-back from the front of the structure by 9' wide to the above specifications. Contractor will call Housing Inspector for forms and steel inspection prior to pour.

03115- CONCRETE FINISHES:

- A). Finishes for a slab upon which vinyl, carpet, wood or other interior floor finishes are to be installed is to be machine floated and steel troweled to a smooth finished surface free from voids or scratches per ACI 301, Paragraph 11.7.3. Contractor is required to insure the slab is troweled and finished to slope to any floor drains as applicable. Where floors are to receive ceramic or tiled surfaces, a scratch finish per ACI 301, paragraph 11.7.1 will be applicable.
- B). Surfaces on the exterior of the structure such as porches, patios, sidewalks, driveways and approaches will receive either a swirled float finish or a broomed finish with strokes going in the cross direction of the natural flow of traffic per ACI 301, paragraph 11.7.4 or to match existing finish of concrete.

C). The contractor will install a concrete cap over existing surface. If porch is to be capped, Contractor will include steps. New porch finish will be finished as to not create a slip hazard to the Home Owner as per specification #03115 B.

03130- REINFORCING STEELS & MESH:

All reinforcing steel used will meet or exceed the standards for ASTM A-615, Grade 40 and will conform to ASTM A-185 and will also meet all requirements of the City of Dallas Building Inspections Department and all applicable city codes.

03131- PATCHING & BONDING OF CONCRETE:

If patching of concrete surfaces is required, Contractor will use a bonding agent approved or equal to Weld-Crete or use an epoxy adhesive for concrete. Mix and apply per ACI 301, chapter 9 except per manufacturer's recommendations.

03250- CONCRETE ACCESSORIES:

03251- EXPANSION & CONTRACTION JOINTS:

Continuous concrete pours between ½" expansion joints will not exceed 50 feet. Scoring patterns for all control joints will be tooled in or saw cut and be a minimum of 3/16" wide x ¼" deep and will not exceed 5'-0" for sidewalks and will not exceed 12 ½ ft. x 12 ½ ft. sections on drives, approaches and patios unless otherwise specified. Expansion material must be urethane or approved equal.

03252- JOINING PORCH AT STRUCTURE:

The contractor will install a continuous sealant material at the joints between the porch and the structure.

03253- ADDITIVES & SEALERS:

No additive will be allowed to be used in the concrete mix unless otherwise previously approved by the Housing Inspector or the City of Dallas Building Inspector. When specified in the SOW:

- All saw-cut control joints are to be filled with a polyurethane sealer similar to Vulkem 45, with color to match concrete as close as possible. Contractor to include any recommended primers.

03600- GROUTS:

03603- EPOXY GROUTS:

The contractor will use a non-shrink grout per CRD-C 588-78 or CRD –C 621-81, premixed, non-catalyzed natural aggregate grout similar to L&M ‘Crystex’ or W.R. Meadows ‘588 Grout’. Seven-day compressive strength will be a minimum of 4,000 psi, fluid consistency.

SECTION 4 – MASONRY:

4100- MORTARS:

NOTE: Contractor to ensure all Portland materials and cleaning chemicals are contained on site in accordance with chapter 19-118 (6) of the Dallas City Code.

04110- MORTAR & SAND:

Only a type-N Portland masonry / mortar cement will be used with clean & screened mason sand to the recommended mix parts per ASTM C-270 and manufacturers recommendations. *Note: Use only Type S mortars below grade.*

04130- PRE-MIXED MORTARS:

Pre-mixed mortars are allowed only in cases of small patches of openings and tuck-pointing of existing masonry walls and will conform to ASTM C-270 and will be used in accordance with the manufacturer’s recommendations.

04170- ANCHORS & TIE SYSTEMS:

Use anchors and joint reinforcing that meets or exceeds ASTM A-153, Class B-2 requirements similar to Dur-O-Wall, National Wire, or A.A. Wire Products for unit masonry. Use ladder or truss type installed at no greater than 16” o/c. vertically. Galvanized wall ties will be used for brick masonry.

04180- CONTROL JOINTS & FLASHINGS:

- A) Control joints to be installed at all-natural weaknesses in the wall but no further than 20 feet o/c. All control joints in brick will be kept clear of mortar and filled with an expanding, closed cell foam backer rod of appropriate size (a minimum of 30% larger than joint being filled) and sealed with a masonry approved sealant to match brick color or mortar color; verify color choice with Owner.
- B) 20 mil masonry flashing Nervastral ‘Seal-Pruf-H-D’ or Wascoseal ‘Type 20’ or equal will be used with cement approved by the flashing manufacturer. Flashing will be installed at corners and angles to where the concrete brick ledge is covered completely, and material is lying flat.

04200- UNIT MASONRY:

NOTICE: Lay units only when outside temperature is 40 degrees F. higher and there is no threat of rain for that day.

04210- FACE BRICK MASONRY:

Contractor to install all face bricks per the manufacturer's recommendations and will meet requirements of ASTM C-216, grade SW. Colors & textures will either match that of the existing walls or if new construction, color choice is to be selected by the homeowner from standard selection. Tool all exposed joints concave if new, or to match existing if abutting a wall. Clean all brick walls after tooling joints with a damp fiber brush to loosen new mortar and facilitate easier cleaning later. All masonry courses are to be laid level and true.

04220- CONCRETE UNIT MASONRY:

All unit masonry will be concrete block and will meet ASTM C-90, Grade N, or ASTM C-145, Grade N, Type 1, medium weight, moisture controlled, nominal size of 8" x 8" x 16". Do not use chipped, cracked or unsound masonry units. Do not use units that are wet, dirty or frozen. Lay all masonry courses level and true. Fill solid all courses below grade and first course above grade with type 'S' mortar that includes cement. Fill cores of masonry solid as required under all structural bearing points, under window units and at door sills or wall openings.

04270- GLASS UNIT MASONRY:

The contractor will replace missing or broken glass units. Units will be partially evacuated, hollow core masonry units made of clear colorless glass in 8" x 8" or 6" x 6" in a standard thickness of 3 1/2". Use a Decora or Vue style pattern or match existing. Use only type 'S' mortar mix per ASTM C-150 with natural sand or white quartzite type sand. Tool all mortar joints concave and smooth, clean glass block as soon as mortar is set, and thumb print hard. Use only a wet bristled brush and damp cloth to clean glass block surfaces.

04400- STONE:

04410- NATURAL OR CUT STONE:

The contractor will replace missing or broken stone units. Match any natural stone work as required in masonry repairs to existing walls or openings as approved by the homeowner.

04500- MASONRY RESTORATION & CLEANING:

04510- MASONRY CLEANING:

The contractor will clean masonry surfaces. The contractor will use safe methods and chemicals during the process.

Contractor is not to clean bricks with a chemical solution prior to 48 hours after laying them or if temperature is below 32 degrees F.

04520- MASONRY RESTORATION:

The contractor will scrape all loose mortar with wire brush, small masonry chisel or point trowel, brush clean, wet down all joints to be repaired. Point solidly all voids and defective joints making joints match those existing in the wall. Brush clean all joints.

04530- MASONRY PATCHING & REPAIRS:

All masonry patches and repairs will be done in such a manner as to indicate no visual evidence of those repairs and will match the surrounding masonry finishes as closely as possible. Materials used in the repairs will be of conforming style and characteristics and installed to comply with the City of Dallas Building Codes. Contractor is to ensure that masonry units (bricks) are best match possible to existing.

04600- BRICK COLUMN SUPPORTS:

04610- COLUMN SUPPORT CAPS:

The contractor will replace or install a mortar cap to cover the top of the brick column support sloped for positive drainage at exposed surfaces. Cap will embed the base of the wood column and ensure watertight seal for masonry construction.

04620- BRICK COLUMN SUPPORT:

The contractor will construct or replace brick column support with new brick and mortar. Dimensions will be supplied by the Housing Inspector or dictated by the old brick support. New construction of brick column supports will include mortar cap as outlined in spec. 04610.

SECTION 5 – METALS:

05100- STRUCTURAL METAL FRAMING:

05120- STRUCTURAL STEEL:

All structural steel applications will meet or exceed all FHA Minimum Design Standards and the City of Dallas Building Codes.

05500- METAL FABRICATIONS:

05501- ANCHOR BOLTS:

All anchor bolts used on projects to anchor structural framing to structural concrete are to be high strength conforming to ASTM A325, heavy load, short-thread bolts with heavy nuts and hardened washers.

05520- STEEL PIPE HANDRAILS & GUARD RAILS:

- A) All pipe style handrails and railings are to be constructed using 1 1/4" minimum to 2" maximum diameter steel pipe, cut, shaped & welded securely with a continuous weld to construct a handrail or railing that meets all FHA Minimum Standards, A.D.A. requirements, and the City of Dallas Building Codes. All finishes to galvanized or painted according to specification 09950 D.
- B) All railings will be constructed using the 1 1/4" pipe horizontally with a minimum of 1/2" steel vertical balusters designed & constructed so that a 4" solid sphere cannot pass through the balusters. Placement of the bottom rail of the guard rail will be done so that a 6" sphere cannot pass through the triangle formed by the stair treads and the rail. All finishes to galvanized or painted according to specification 09950-D.
- C) All posts will be drilled into existing concrete floors and grouted in securely or attached with approved brackets and anchors. All pipe rails must have a zinc chromate primer coat and two (2) coats of finish paint applied after installation. All finishes to galvanized or painted according to specification 09950 D.

05700- ORNAMENTAL WROUGHT IRON:

- A) Posts for wrought iron railings around concrete porches and steps will have a minimum wall thickness of 11 gauge or 1/8" thick. All rails must be drilled into concrete slabs and set using an epoxy grout or attached with metal floor and wall brackets. Brackets cannot be of aluminum and all anchors must be galvanized and securely installed.
- B) All wrought iron railings installed will have a zinc chromate primer coat and two (2) coats of enamel paints applied after installation. All railings must be fabricated and installed to meet all local and federal / ADA code requirements for height, distance between balusters, and installation (designed & constructed so that a 4" solid sphere cannot pass through the balusters eliminating the chances for injuries to people). Placement of the bottom rail of the guard rail will be done so that a 6" sphere cannot pass through the triangle formed by the stair treads and the rail.
- C) The contractor will repair railing to meet code. Repairs will be made as needed in order to maintain structural integrity and all repairs will blend with the existing railing and not be objectionable to the casual observer. Paint all repairs to match the existing color of the guardrail or handrail.

05711- METAL RAILINGS OTHER THAN WROGHT IRON:

A pre-fabricated tubular steel stair railing may be installed. Material must be of high quality and heavy duty. Railing and anchors must withstand high traffic and heavy use. Railing will be pre-primed and painted prior to installation and Contractor to use approved anchors to install. Any guard- rails installed will conform to City of Dallas Building Code.

05720- SECURITY BARS:

All security bars covering windows and exit doors must meet the minimum requirements of the City of Dallas Building Code.

- A) The contractor will remove and re-install security bars covering windows and doors to facilitate repairs or painting to the structure. On re-installation, Contractor will use only approved fasteners or anchors.
- B) The contractor will repair and make operable specific security bar units. Contractor to include priming and painting of security bars per specifications. The repairs must bring all units to code.

SECTION 6 – WOOD & PLASTICS:

06100- ROUGH CARPENTRY WORK:

All lumber materials, hardware and components will be suitable for the intended use of that item as it relates to the project. All lumber used will bear a stamp with an approved grade marking; any lumber used without the grade stamp will be removed and replaced at the homeowner's expense. All structural wood joist or rafters will be Douglas Fir or Southern Yellow Pine, with an S4S rating.

When the strength of any structural member is compromised or impaired by improper cutting or by excessive defects, they will be replaced or reinforced in a manner acceptable to the Housing Inspector. All holes & penetrations through top plates will be sealed by an approved method. Any small holes less than 1/2" may be poly-sealed.

06110- FRAMING & SHEATHING:

In all cases, unless otherwise noted, the following will be required as customary practice for all rough framing:

- A) Exterior wall framing including studs, corner posts, headers, plates and sheathing will be installed to support standard design loads and be braced in such a manner as to provide adequate resistance to racking under wind loads.
- B) Unless otherwise indicated, all wall studs will be spaced at a maximum spacing of 16" o/c and doubled studs will be installed at all openings of door or window frames.
- C) Constructed partition corners will consist of not less than three (3) full 2" x 4" members, set to receive interior finishes.
- D) All interior framed walls and bearing partitions will have double top plates and if the walls are on a masonry or concrete floor or in a damp location, the bottom plate must be pressure treated and anchored in a manner approved by City of Dallas Building Codes. All top plate splices must offset a minimum of 48".

- E) Wall sheathing will be 1/2" nominal exterior grade CD plywood or OSB and nailed to each stud, top & bottom plates at no less than 6" o/c. All vertical joints will be staggered to provide addition strength. All holes in the exterior sheathing will be sealed by an approved method. All exterior wood sheathing will be protected by installing a moisture barrier over it such as Tyvek, Green Board Insulation Panels or 15 # felt paper nailed over OSB. Nautilus Wall Sheathing may be used in lieu of Tyvek with all joints and seams sealed with aluminum tape.
- F) Diagonal bracing will be nominal 1" x 6" max. square edge pine boards laid at an angle of 45 degrees to the supports, cut in neatly and nailed directly to each intermediate bearing member. Diagonal bracing will be a one-piece section of lumber or can be a metal diagonal bracing member approved by City of Dallas Building Codes.
- G) Contractor will provide all necessary 2" nominal thickness wood blocking for cabinets, plumbing, and ADA requirements.
- H) All headers will consist of two 2" nominal thickness solid wood material or laminated beam style and will be of size required to span the specific opening it is used for.
- I) The contractor will install or replace the top or bottom plates of a specified wood frame wall or structure. Contractor is to install top or bottom plates according to the specifications herein.

06112- ROOF, JOIST FRAMING & RAFTERS:

All structural roof framing members will bear approved grade stamps and will conform to all requirements of the City of Dallas Building Codes.

- A) All roof framing will be done in a workmanlike manner, using good quality framing lumber as specified of sufficient size and capacity to withstand the design loads and spans as required by the City of Dallas Building Codes. Where a complete new roof is required or called for in the SOW, the use of pre-engineered and pre-fabricated trusses is acceptable.
- B) Rafters must be framed directly opposite of each other at the ridge. The size of the ridge board will be 2" greater than the width of the rafters on either side of it. (i.e) 2x8 ridge for 2x6 rafters.
- C) When the repair of a barge rafter is called for, the splice will be made on a 30-degree angle with a metal splice plate used on the back side of the rafter for support. The splice will be made in a workmanlike manner, so as to leave as little evidence of the repair as possible. When replacement of a barge rafter is called for, Contractor is to replace the entire rafter from ridge to tail.
- D) All sheathing used on the roof will be C-D or better APA rated sheathing, Exposure 1, or OSB exterior grade sheathing in a thickness specified by the Housing Inspector and as approved by the City of Dallas Building codes.

- E) Install bracing including purlins and struts as needed to remove sags in the roofline and / or brace up ridge to support new roof & shingles. Purlins must be the same size or larger than the rafter that it supports; braces must be installed at a maximum of six (6) feet on center from the purlin to the wall or beam.
- F) Where air handling units are to be set and supported by the ceiling joists, those joists will be calculated as floor joists with a live load of 65 psf. Where air handling units and water heaters are supported by the rafters, those rafters will be calculated as rafters supporting a drywall ceiling.
- G) The contractor will complete a scab-type repair of a roof rafter. Contractor will use same size as existing framework and span from the ridge to the exterior top plate.
- H) When repairing a rafter tail, the tail must extend a minimum of 48" beyond the top plate into the structure and be mended using a steel plate and nailed as needed.

06113- REPLACE/INSTALL ROOF FROM TOP PLATE UP:

The contractor will replace entire roof from the top plate up. Pre-fabricated, engineered, roof trusses are acceptable in replacement and new construction. All rafters, ridge members, purlins and struts, roof decking, and roofing material will be included.

06120- EXTERIOR TRIM:

Repair of existing exterior trim will include, but is not limited to, corner boards, window trim & sills, fascia, shingle mold, crown moldings, or other trim that is exposed to the exterior. Trim will be neatly cut and removed, then replaced in a workmanlike manner with new materials to match those that are existing. All joints will be mitered to produce a smooth and fitted appearance. When an open soffit and open cornice are a part of the basic roof design, roofing nails will not show on the underside.

- A) Shingle mold will be installed or replaced. When replacing shingle mold, material will match existing. When installing shingle mold, material will be of 1"x2" grade 2 or better wood with no loose knots.
- B) Fascia will be installed or replaced. When replacing fascia, all material will match existing in appearance. When installing new fascia, material will be of a type specified by the Housing Inspector.
- C) All other trim specified for replacement will be of a material to match existing unless specified by the Housing Inspector.

06150- WOOD TRUSSES & JOISTS:

When repair of floor joists or ceiling joists is called for:

- A) The damaged joists will be removed entirely and replaced with new wood joists of same size as the ones removed. The joists will meet or exceed the grade of lumber being replaced to ensure they will meet the same design loads as remaining joists. Unless otherwise specified by the Housing Inspector, the entire wood joist is to be replaced.
- B) In the event that a joist requires reinforcement, a scab style repair will be made by nailing or screwing a similar-sized joist directly to the existing one. Length of reinforcement will be specified by the Housing Inspector.

06155- SUB-FLOORING:

- A) Common boards used for sub-flooring will be not less than 1" nominal thickness (actual 3/4") and not over 8" in width. Boards will be screwed and glued with two (2) 1 ½ minimum deck screws in a four (4) inch or six (6) inch wide board and three (3) 1 ½ minimum deck screws in an eight (8) inch board at EACH END JOINT located over floor joists and at intermediate support joists.
- B) Plywood used for sub-flooring will be a minimum of 3/4" in thickness. Unless otherwise called for by the Housing Inspector, new sub-flooring in a bath will include the area underneath the bathtub. Nail size and spacing for plywood will be #8d common nails spaced six (6) inches each panel end edge over floor joists and ten (10) inches on intermediate joist supports. If nailing, use a good quality construction glue (contact glue) such as "Liquid Nails" or pre-approved equal. Screws may be used in the same manner and spacing as nails, except no glue is required. Each course of plywood sub-flooring will be "staggered"; in other words, each 4' (four foot) end of a plywood sheet will be "centered" with the middle of the sheet of the next row or course.

If both sub-floor and underlayment assembly are being replaced, but the installation of said floor assembly is not of sufficient thickness to meet the level of the surrounding floors, then "furring" of existing floor joists will be required.

06160- NEW WOOD PORCHES:

- A) All new wood porches will be framed of pressure treated #2 yellow pine wood.
- B) All new porch flooring will be constructed using the tongue and groove area treated with a penetrating wood preservative.
- C) The contractor to install new wood deck. Deck boards to be 2" nominal thickness boards. The contractor will include all materials, posts and footings. Contractor to install railings as specified and required by code.

06165- REPAIRS OF WOOD PORCHES & STEPS:

- A) Replace all rotted and unstable wood joists and wood sills with SPF Grade or better dimensional lumber of not less than 2" x 6" for the joists and not less than 4" x 6" for the sills, depending on required spans and loads.

- B) All wood columns will be a minimum 4" x 4" dimension and will extend from the porch floor continuously to bearing beam of the porch roof and will be securely fastened to the porch floor (i.e. metal bracket bolted to concrete) and to the supporting beam of the porch roof. Any wood columns placed directly on a concrete slab, footing, or masonry must be treated with a preservative of approved type, or the column must be of foundation grade redwood or cedar.
- C) Where the finish floor of porches or stairway to a porch is more than 30" above the finish grade of the soil around it, then handrails / guard railings will be provided. Such guard railings will meet all requirements as outlined in these specifications and all applicable City of Dallas Building Codes.
- D) The contractor will install wolmanized T&G 3/4" Plywood decking for porch flooring. Contractor to use zinc coated deck screws or galvanized ring-shank nails to attach flooring to floor joists.
- E) The contractor will install all new wood porch flooring with tongue and groove type. New 1"x4" flooring will be side-nailed in the "tongue" as in hardwood flooring. 1"x6" porch flooring will be attached in the same manner, except one "deck screw" will be secured in the center of each 1"x6" board. Nails/staples attached in the tongue will meet industry standards for exterior use.
- F) The contractor will replace or install new posts and footings under the porch according to the specifications in this manual for all foundation work.

06166- PORCH CEILINGS:

Remove, cut, re-nail, or sand, as required in order to obtain a smooth surface on the existing porch ceiling. Prime and paint with two (2) coats of finish exterior paint. Color to match existing trim where possible.

- A) The contractor will replace or repair the T&G ceiling boards. Material will be of like kind to existing material and will be installed with quality workmanship and have a finished appearance.
- B) The contractor will remove the ceiling's moldings and install 3/8" AC grade exterior plywood on porch ceiling either to cover existing material or to cover open ceiling joists. Joints must be spaced as evenly as possible.
- C) The contractor will install or replace 1/4" thick lattice strips over all joints and trim entire perimeter with 2" bed molding.

06170- INTERIOR WALL FRAMING:

- A) Unless reinforced, studs will not be notched more than 1/4 of their depth or drilled through the wide face more than 1 1/4" in a 4" stud or 2 1/4" in a 6" stud.

- B) All studs will be of continuous length with no splices and will be set 16" on center typically.
- C) Studs are to be doubled at all door, window or framed openings.
- D) Partition corners will not have less than three (3) full 2" x 4" members typical.
- E) All bearing partitions will have double top plates.
- F) The bathroom wall partition for vent stacks and plumbing will be constructed of 2" x 6" studs at 16" o/c typically to allow for passage of plumbing vents and pipes.
- G) Install 2" nominal thickness wood blocking as needed for all cabinets, handicap grab bars, plumbing and hardware.

06200- FINISH CARPENTRY WORK:

06210- INTERIOR FINISH TRIM & MILLWORK MATERIALS:

All interior trim will be Select or Better Grade White Pine or Poplar. All millwork will be accurately milled with clean cut moldings and profiles. All millwork will be planed, scraped and/or mill sanded to produce a proper surface for painting or staining.

- A) The contractor will install or replace window stool and apron using 1" nominal thickness material for the stool and casing material for the apron.
- B) Contractor to install plain door casing material around specified door openings when new installation of trim is called for. When replacing door trim, Contractor is to use best matching material to match existing.
- C) The contractor to install or replace crown molding. 3/4" quarter round will not be acceptable. When replacing crown molding, Contractor is to match existing.
- D) The contractor is to install or replace trim on paneling. Trim is to match existing paneling in color and be installed in the manner for which it was manufactured. i.e. angle, corner, crown, door, seams, and base.
- E) The contractor to install or replace wood baseboard. Baseboard is to match existing trim or will be specified by the Housing Inspector.

06220- MILLWORK INSTALLATION:

All joints will be carefully fitted, with mitering of all external angles and coping of all internal angles. Use 8d finish nails to fasten all door and window casings, and aprons and baseboards. Use 1 1/2" casing nails or brads to fasten door and window stops. Stools will be blind nailed to the ends with 3d finish nails so that the side casings will conceal the nail heads. Finish nails will be properly set, and all holes filled with wood putty or plastic wood (caulk not accepted) and lightly sanded ready for paint.

Millwork with any hammer indentations, chips, flaws or improperly filled nail holes will not be accepted.

06240- LAMINATED PLASTICS & TOPS:

Counter tops will be caulked to prevent water from entering from between the wall and the back-splash. The installer is to use a clear or matching color silicone caulk between the back-splash and the counter top to seal the connection of the two pieces. All seams in corners will be mitered and will be done in a skilled workmanlike manner insuring use of the proper brackets and supports as needed.

A) Bathroom vanity tops are to have a minimum 3 1/2" back splash and be of a length specified on the SOW. Bathroom vanity sinks will be installed neatly with no portions of the cut-out showing beneath the rim. All areas where the sink meets the countertop will be caulked with a silicone colored or clear caulk. *Note: Colored caulks will be of a matching color to the countertop.*

B) Kitchen countertops will be of a length specified by the SOW and be installed with a tall back splash whenever possible.

06300- WOOD TREATMENTS:

06310- PRESSURE TREATED LUMBER:

Where required, use only pressure treated materials that conform to ASTM A- listing approved for ground contact; 40% saturation.

06400- ARCHITECTURAL WOOD & CABINET WORK:

06410- CABINET WORK & INSTALLATION:

All cabinets will comply with the requirements of the American National Standards Institute (ANSI A-161.1) 'The recommended minimum construction standards for kitchen cabinets'. Cabinets will be installed plumb and true, in accordance with manufacturer's specifications. All Cabinets will be attached with 3" screws into studs or other framing members as may be available. Trim out all joints between cabinets and walls or ceilings with pre-finished trim to match the cabinets finish. All holes, cut-outs, and grooves will be filled with caulking to eliminate insect penetration and nesting

Cabinets to be Kraft maid, Armstrong, American Woodmark, Republic or equal. All cabinets installed within a structure will all be color matched and uniform throughout the installation. All cabinet hardware (to include pull handles and spring-loaded hinges or catches) will be of high quality and all cabinet interiors will have a smooth & pre-finished interior cavity for ease of cleaning & maintenance.

A) The contractor will install quality wall cabinets in the kitchen or laundry area. The size and location of installation will be specified by the Housing Inspector. Preparation and demolition/removal of old material is to be included.

B) The contractor will install quality base cabinets in the kitchen. Cabinets will be secured firmly to the wall and aligned with the plumbing for correct installation of

the countertop and sink. Preparation and demolition/removal of old material is to be included. Removal and re-installation of appliances is to be included.

- C) The contractor will install quality sink base for vanity in bathroom. Vanity will accommodate a 17"x19" vanity top unless otherwise specified by the Housing Inspector. Contractor to include sink, faucets, and waste lines in the installation. Preparation and demolition/removal of old material is to be included.

06411- MEDICINE CABINETS & SHELVES:

The contractor will replace/install medicine cabinet. Medicine cabinets will be of standard 14" width and made of PVC or ABS plastic body with (2) shelves and a fully hinged, magnetic latched, mirrored door with either a stainless-steel border or a wood frame to match the existing cabinets unless otherwise specified by the Housing Inspector.

06412- CABINET REPAIRS:

- A) The contractor will repair wall cabinets. Cabinets will be secure to the wall, shelves sturdy and level, doors and catches working properly and all hardware functional.
- B) The contractor to repair base cabinets. Drawers, doors and catches to work properly, shelving is to be sturdy and level, and all hardware functional. When specified, Contractor will install 3/8" or 1/2" plywood in the bottom of the sink base.
- C) The contractor to repair bathroom sink vanity cabinets. Doors and catches to work properly, shelving is to be sturdy and level, and all hardware functional. When specified, Contractor will install 3/8" or 1/2" plywood in the bottom of the sink base.
- D) The contractor to repair linen pantry in bathroom. Doors and catches to work properly, shelving is to be sturdy and level, and all hardware functional.
- E) The contractor to install or replace cabinet hardware. Each Price unit will include hinges, catch and door pull. Hardware will be of quality corrosion resistant material and be of a matching appearance to existing.

06420- PANELING:

- A) Paneling will be 1/8" or thicker in a pre-finished plywood grade. Composition or pressboard paneling is not acceptable. All pre-finished paneling will conform to the standards of the US Dept. of Commerce 'PS 51-71' for decorative plywood standards and it will have a Class C minimum flame spread rating.
- B) All paneling will be installed per the manufacturer's specifications, using adhesives and pre-finished colored nails as required. Cover all nail holes using a putty stick in a color to match the paneling. Pre-finished moldings, if used, will be of wood base or flexible plastic with color to match the paneling used.

- C) Existing trim (except at ceilings) will be left in place and the new paneling will be cut and fitted around all door and window casings and butted against the baseboards. Contractor is to caulk around all door & window frames and ceilings as needed with a caulk that closely matches the color of the paneling.
- D) The contractor will repair existing paneling by replacing trim, replacing a panel or removing paneling and repairing the wall. Replacement trim and paneling will be of a like material in appearance to match existing.

06425- SHELVING:

- A) The contractor to install shelving in closet or cabinet. Shelf will be a minimum of 12" in depth and braced appropriately to handle intended load. If installing in closet, closet rod and brackets to be included. New shelf will include a prime coat and one coat of paint.
- B) The contractor to install wall shelving. Shelf will be a minimum of 12" in depth and braced appropriately to handle intended load. New shelf will include a prime coat and one coat of paint. Housing Inspector will specify location and length of shelf.

06430- WOOD STAIRS & STEPS:

All stairs either interior or exterior will have a rise of every step of less than 6" nor greater than 7" with a run of no less than 11" nor greater than 12" typically, unless access is via a ladder or folding stair to attic space.

A) Interior Stairs:

All construction of interior stairs will conform to the City of Dallas Building Codes. Prime and paint all exposed wood as per Division 09900 – Painting. Also see handrail requirements in Section 06440.

B) Exterior Stairs:

All construction of exterior stairs will be either treated with a penetrating wood preservative prior to installation or be a Pressure treated lumber and will conform to the requirements of the City of Dallas Building Codes. All new wood used for exterior stairs will be primed and ready for finish paints prior to installation. Also see handrail requirements in Section 06440.

C) Exterior Wood Steps:

New wood stringers will be cut from 2" x 12" SPF Grade or better dimensional lumber. Stringers will be set on a pressure treated foot or a metal stand anchored to a concrete footing sufficient in size to carry the loads to be imposed on the steps. All treads will be of 2" nominal dimensional lumber SPF Grade or better and not less than 11" wide.

D) Landings:

Every landing will have a dimension measured in the direction of traffic not less than the width of the stairs themselves. Such dimension will not exceed 44" when the stair has a straight run. There will not be more than a 12' vertical rise between landings.

E) Tread Replacement:

The contractor to replace individual treads on existing stairway. On interior stairs, material will be hardwood and cut to match existing stairs. Contractor to include stair covering to match existing. On exterior tread replacement, material will be treated and of a nominal size to match existing. Contractor to include paint or wood treatment.

06440- HAND RAILINGS & COLUMNS:

- A) All stairways will have handrails on both sides if they are greater than 44" but less than 88" in width. Stairwells between the 36" and 44" widths or those with four (4) risers or less will require only one (1) handrail provided it serves a single user/family dwelling in Group R, Division 1 or 3 Occupancies.
- B) Handrails will be installed not less than 34" or more than 38" above the nosing of the treads and landings. All handrails will be continuous the full length of the stair and will extend in the direction of the stair run not less than 12" beyond the top riser nor less than 12" beyond the bottom riser and both ends will be terminated back to the wall or to a newel post. Placement of the bottom rail of the guard rail will be done so that a 6" sphere cannot pass through the triangle formed by the stair treads and the rail.
- C) All Guard rails will be installed securely and will conform to all applicable City of Dallas Building Codes and will not be less than 36" nor exceed 42" in height above the floor and the vertical balusters will be spaced in such a manner that a 4" solid sphere cannot pass through the openings between them. Placement of the bottom rail of the guard rail will be done so that a 6" sphere cannot pass through the triangle formed by the stair treads and the rail.
- D) The contractor to repair existing handrail to meet code. Handrail will be sturdy. Railing will be smooth, and balusters will be placed so that a 4" solid sphere cannot pass through the openings and a 6" sphere cannot pass through the triangle formed by the stair treads and the rail. Type of repair will be noted on the SOW.

SECTION 7 – THERMAL & MOISTURE PROTECTION:

07100- WATERPROOFING:

07110- MEMBRANE WATERPROOFING:

- 6.1 Tyvek or an approved equivalent building wrap over OSB or plywood (Spec. #06110 E) will be secured with plastic cap nails with seams taped with appropriate materials; window and door openings sealed according to DuPont window and door Flashing Systems installation guidelines at the link below. See appendix

- a. Nautilus Wall Sheathing can be used in lieu of Tyvex with the seams and joints sealed with flashing tape and installed to manufacturer's specifications. See appendix.
- b. Green board insulation panel over OSB can also be used with the seams and all joints sealed with manufactures recommended tape and installed to manufacturer's specifications.
- c. Fortifiber Building Systems, "Weather Smart House wrap" and all the required components must be install as a system as recommended by Fortifiber Building Systems Group. See appendix.
- d. All house wraps not previously approved will be required to be removed and replaced with an approved equivalent.

Also See section 07610 – Flashing as part of the weatherproofing requirements.

07190- VAPOR BARRIERS:

Where called for, use only 6 mil thick, heavy duty polyethylene vapor barrier rolls of appropriate size to cover area of installation with a minimum of joints / overlaps. Protect from punctures, holes or tears until vapor barrier is covered with finish material. Tape all holes or tears with an approved plastic or sheathing tape as needed.

07200- INSULATION:

07210- BUILDING INSULATION INSTALL:

All fiberglass blanket or batt *, reflective or rigid fiber-boards, and foam bead insulation will be installed and used according to the manufacturer's specifications only. When nails are used, they will be galvanized, or other non-corrosive nails and all insulation will meet or exceed specification recommendations of Fed. Spec. HH-I-521D and bear a UL listing for safe use. Approved manufacturers such as Dow, Owens Corning, and Amoco or equal may be used and where needed, Contractor will use an approved sheathing tape to seal all tears, ruptures or end joints between blankets as required by the manufacturer.

Insulation / R-Value minimums will be as follows:

A) Ceilings:	R – 38 Rating
B) Exterior Walls:	R – 13 Rating

07211- LOOSE FILL / BLOWN-IN INSULATION:

Loose fill insulation will be installed if requested in the SOW by the Housing Inspector. All blown in fiber/wool insulation will meet all applicable City of Dallas Building Codes. Typically, the blown-in insulation will be rated at an R-38 value. Contractor is to verify that the ceiling will bear the weight of the new insulation.

07300- SHINGLES & ROOF TILES:

07301- STRIP TO LATHE:

When specified in the SOW, Contractor will strip all roofing materials including wood shingles down to the existing lathe. Contractor to remove all nails and loose debris and notify Housing Inspector if any lathe material needs replacement.

07302- STRIP TO DECK:

- A) The contractor to remove all roofing material including felt. When specified, all material constitutes a single layer. Contractor to remove all nails and loose debris and notify Housing Inspector if any decking needs replacement.
- B) The contractor to remove all roofing material including felt. When specified, all material constitutes multiple layers. Contractor to remove all nails and loose debris and notify Housing Inspector if any decking needs replacement.

07303- STRIP TO FRAME:

The contractor is to strip all material including lathe or decking, on the roof complete to the framework. Contractor to remove all nails and loose debris and notify Housing Inspector of any damaged frame members.

07310- COMPOSITION SHINGLES:

- A) Contractor is to verify and inspect roof system and its components. All surfaces will be inspected by the Roofing Contractor and the G.C., and all surfaces will be clean, secure, dry, and in acceptable condition.
- B) Execution of work over the inspected substrate system will constitute its acceptance and is the responsibility of the General Contractor and Roofing Installers.
- C) In all cases, a minimum 235 lb. /sq., 3-tab, straight edge, standard shingle will be used as manufactured by Owens Corning, Johns-Manville, Tampco or equal with a class A fire rating and a written 25-year manufacturer's warranty and a three (3) year installer's warranty on workmanship. Roofing installation shall include properly installed ice and water shield membrane, starter strip and meet Asphalt Roofing Manufacturers Association (A.R.M.A) specifications or the Housing Department specifications whichever is more restrictive. Color selection by homeowner per contractor grade.
- D) All shingle roofing materials will be installed with continuous ridge vents over dry, sound and stable sheathing with a layer of 15# rag felt stapled to the sheathing per manufacturer's recommendations. Installer is to replace all flashing, valleys and metal drip edge moldings with FHA type or approved equivalent in conjunction with installing a new roof system. Prior to new roof installation, Installer will verify the condition of all wood sheathing and notify the Housing Inspector immediately if any wood sheeting needs to be replaced.

- E) All nails used will be of a non-corrosive type so as to penetrate into the decking a minimum of $\frac{3}{4}$ ". Staples will not be used.

07311- COMPOSITION ROOFING REPAIRS:

When a repair only is required, the repair will require replacing any damaged or defective shingles and any other shingles surrounding the damage that might be causing the water-leak or related problems. When making repairs only, the work will be performed using approved industry methods. Match the color, design and if possible, Contractor to use the same manufacturer's brand as the existing shingles or match as closely as possible. Contractor to warranty roof repairs for one year.

07315- ROOF DECKING & SHEATHING:

- A) If new decking or sheathing needs to be installed after tear-off. A minimum of 7/16" CDX plywood/OSB over frame. Decking material will be saw cut and installed with 1/8 of an inch spacing on all edges and be supported by a minimum of three rafters if applicable. No edges shall overlap each other and will be fastened flush with 8d nails. Fastener maximum spacing will be 3/8" at the ends, 6" at the support edges and 12" in the intermediate. Gable ends wall framing shall be spaced 6" on center in the intermediate. Seams of each course will be staggered and not on the same rafter as the course before or the following course for all rafters with spacing greater than 16" O.C. H clips shall be required except for decking applied over lath. If bracing is required of the roof structure to ensure its stability, install sufficient bracing to repair and prevent future sagging and to maintain as true and level of a plane as possible. All bracing will be done to impose all roof loads down to a load bearing member or wall only. If specified on the SOW, select deck boards will be used to replace missing or rotted decking. Deck boards will match nominal thickness of existing. Housing Inspector will specify quantity of board feet to be replaced.
- B) The contractor to install 1/2" CDX grade plywood/OSB over existing lathe. Contractor to notify Housing Inspector before replacing any rotted or damaged lathe.

07420- COMPOSITE & AB SIDING:

When siding repair or replacement is called for, the new siding installed will conform to the existing siding materials as closely as possible and will be painted to match existing if a pre-finished color does not match.

07430- METAL SKIRTING:

Newly installed underpinning (skirting) will match existing or new siding as closely as possible. The skirting will not come in contact with the ground; a minimum of two inches (2") clearance from ground level is required. That portion of the skirting in contact with the ground will be constructed with 22-gauge galvanized, sheet steel a minimum of 9" wide with treated 2"x4" frame. It is to be installed in such a manner as to extend behind the other skirting material a minimum of 2" and into the ground a minimum of 5" and

backfilled as required. All metal skirting will be prepped and primed on exterior surface prior to installation using a high grade, zinc oxide galvanized metal primer. Skirting to be finished painted to match exterior of structure as close as possible.

07460- SIDING & TRIMS:

When installing wood siding, it will match existing profiles and will be pre-primed on all sides prior to installation. Nail to framing or sheathing as required ensuring all galvanized nails used are hidden by the following row of siding; once installation is complete, finish paint as specified under section 09900 – Painting.

- A) The contractor will replace or install new wood drop siding to match existing on the structure. Housing Inspector will specify location and quantity. Siding installation will include all appropriate trim. Contractor will stagger rows of siding when installing to insure smooth and regular lines.
- B) The contractor will replace or install plywood T-111 siding. Housing Inspector will specify location and quantity. Siding installation will include all appropriate trim.
- C) The contractor will replace or install wood novelty siding. Housing Inspector will specify location and quantity. Siding installation will include all appropriate trim. Contractor will stagger rows of siding when installing to insure smooth and regular lines.
- D) The contractor will replace or install cementitious fiber siding. Housing Inspector will specify location and quantity. Siding installation will include all appropriate trim.

07461- SOFFITS:

All soffit material will be 3/8" B.C. plywood (exterior grade) or better and will be fastened to the 2" x 4" lookout boards at each rafter with galvanized or aluminum nails. A smooth horizontal surface will be maintained. Soffits will be prime-coated immediately after installation, to avoid water damage.

07465- VINYL SIDING, SOFFITS & TRIMS:

If called for, either as a repair and replace or as a new installation, use a 9" wood grained, colored vinyl siding over 3/8" rigid insulation sheets installed, and joints sealed with appropriate tape per manufacturer's recommendations. All existing trim boards are to be covered with a matching color, vinyl trim to match the siding. All new wood to be installed under vinyl siding or coil stock must be primed. When installing vinyl soffit panels over existing soffit vents use a metal vent cover with screen and paint to match or compliment siding color or perforated panels may be used instead.

- A) The contractor is to replace vinyl siding and trim with a matching material. Housing Inspector will specify location and quantity.

- B) The contractor to install new quality vinyl siding and all associated trim over existing siding or sheathing.
- C) The contractor will install vinyl trim to compliment vinyl siding. Trim to either match existing or new siding in color and texture.
- D) The contractor will install aluminum trim to compliment vinyl siding. Trim to match existing or new siding in color or texture or Contractor to paint to match with acceptable metal paint.

07500- MEMBRANE ROOFING:

07510- BUILT –UP BITUMINOUS ROOFING:

All roofing systems are to be installed per the Manufacturer's Recommendations Install and glue in all perimeter cannot or edge strips and install all pressure treated wood nailers. All Roofing Contractors will be approved and licensed if required by the manufacturer as an authorized installer of the product being installed.

07600- FLASHING & METALS:

07610- FLASHING & VALLEYS:

All exterior openings exposed to the weather will be flashed to make them waterproof by installing a 28-gauge, galvanized carbon sheet steel corrosion resistant metal with a power coated paint finish, or approved equivalent, extending two inches (2") above the trim and through the finish siding. Over the top and outside edges of the trim will be turned down over the outside edge so as to form a drip edge. All flashing and metal will be installed using only galvanized fasteners and installed per approved industry standard methods. Roof valleys will be properly installed ice and water shield membrane and meet Asphalt Roofing Manufactures Association (A.R.M.A) specifications

07631- GUTTER & DOWNSPOUTS:

The contractor will install all required gutters and downspouts as needed to divert all rainwater off roof onto the ground. Color to be matched to existing or if new, choice by owner from samples submitted. All gutters are to be aluminum with supports and fasteners as recommended by the manufacturer. All new gutter installations are required to be of the seamless type. All downspouts are to be terminated above exterior grade and provide splash blocks as per industry standard may be required.

07660- GRAVEL STOPS & DRIP EDGES:

- A) The contractor will install gravel stops or rain diverters over exterior doorways. Housing Inspector will specify location.
- B) New galvanized metal drip edge will be installed on all new roof applications. When specified on the SOW, Contractor will install new drip edge on existing roof.

07661- SHINGLE MOLD:

The contractor will install 1"x2" shingle mold either to replace existing or complement a new installation of roof.

07800- ROOF ACCESSORIES:

07810- SKYLIGHTS & ACCESS HATCHES:

Work on sky lights and access hatches will be limited to remove/re-install for re-roofing purposes and sealing leaks by caulking and proper flashing.

07820- VENTS & LOUVERS:

See Division 10, Section 10200, for information and guidelines for vents and louvers.

07900- SEALANTS:

07950- JOINT FILLERS, BACKINGS & GASKETS:

All joint fillers or backer rods will be non-staining, expanding, closed cell materials, square or round dependent on application and availability, and will be at least 30% larger in size than the joint width and will be compatible with the sealant being used.

07951- SEALANTS & CAULKING:

Appropriate caulking will be applied around the perimeter of all plaster expansion joints, masonry expansion joints, around all window, door and vent frames (*inside and outside*) all connections from the frieze board and walls, exterior siding and all other joints which may allow air and moisture to infiltrate the structure. Also, caulk interior joints such as joints between countertops and backsplashes and walls, around tub enclosures, where gypsum board abuts other finish materials, around windows and doors and where water conditions may arise and cause damage if not caulked. All joints and spaces to be caulked, will be clean and free from dust and loose materials and will be dry. All joints larger than 1/2" deep will be packed with a rope yarn of foam filler rod to within 3/8" of the surface before applying the caulking with a nozzle & gun or with a putty knife as required. Remove all excess caulking and leave surface neat, smooth and clean of all caulk and tapes. All joints will be watertight and neat. Install all caulking per the manufacturer's recommendations. Use only Acrylic latex, silicone sealants, adhesive caulk or Elastomeric Sealants as per the manufacturer's requirements.

SECTION 8 – DOORS & WINDOWS:

08100- METAL DOORS & FRAMES:

08101- INSTALLATION OF ENTRY DOORS & FRAMES:

Installation of all new doors UNITS will be done in a workmanlike manner. New pre-hung exterior door units will be properly sized to the rough opening and will be properly

fitted, so as not to allow air or light infiltration after the weather-stripping has been installed.

08110- INSULATED METAL DOORS & FRAMES:

Unless otherwise specified by the Housing Inspector, all exterior Doors will be 36" wide will be insulated metal type or fiber glass and will meet the Model Energy Code requirements as adopted by the City of Dallas.

All metal doors will bear a UL listing and meet NFPA requirements. All doors will have an ASTM A-336 cold rolled steel shell of no less than 24 gauge and have a R-14.50 insulation rating. All doors will be painted per Section 09900 specifications. All glazing used with metal doors or frames will be tempered as needed. Also see section 08710 through 08740 for hardware & weather-stripping requirements.

When replacement door unit is called for, remove entire assembly of existing door and frame, re-install a pre-hung metal or fiberglass door and frame unit with aluminum threshold, 1 ½ pair of 4" butt hinges, magnetic weather-stripping, door stop and brass door viewer. Solid blocking is required behind hinges and at strike plate(s) to meet requirements in chapter 41 of Dallas Building Code. Install new wood casing and trim as needed to match existing and caulk and paint as required. Prime and paint door, frame and casings per Section 09900.

08111- REPAIRS:

The contractor will adjust door fit, replace all weather-stripping, threshold and/or lock set. If not existing, Contractor will also install a brass door viewer device for security.

08120- ALUMINUM ENTRY DOORS & FRAMES:

08130- STORM & SCREEN DOORS:

If an aluminum storm or screen door is called for in the SOW, the door will be a heavy-duty door and will include all hardware necessary for a proper and secure installation. Unit will be installed plumb, level and true and will be secured in accordance with the manufacturer's printed instructions. A self-closing mechanism and a stop spring-and-chain will be installed on all storm and screen doors.

- A) The contractor will install an aluminum storm door. Door glazing will be shatter resistant glass or acrylic and door and frame will be of .060 extruded aluminum with a solid wood core and three 4" Oilite type bearing hinges with a 16-18 aluminum screen and ensure proper installation and closing of the unit as needed. Homeowner is to select color as per standard color selection
- B) The contractor will install an aluminum screen door. A metal framed screen door will be installed with all hardware and latching devices required per the manufacturer's recommendations.

- C) The contractor will install a wood screen door. A wood framed screen door will be installed with all hardware and latching devices required per the manufacturer's recommendations.

08200- WOOD & PLASTIC DOORS:

08201- INSTALLATION OF WOOD DOORS & FRAMES:

- A) Installation of all new doors and frames will be done in a workmanlike manner and will be fitted properly sized and fitted to the opening, so as not to allow air or light infiltration after the weather-stripping has been installed.
- B) All exterior grade wood doors will be solid core type and will be 1 3/4" thickness painted and sealed on all six (6) surfaces.

08210- FLUSH WOOD DOORS:

All interior wood doors will be hollow core type, wood Luan type installed with all hardware as in Section 08710. All doors will be sanded and sealed, ready for finish paint. All interior doors will be a minimum of 1 3/8" thickness and have one pair or two (2) 3 1/2" butt hinges, door stop and be hollow core.

- A) The contractor to replace wood door in existing door jamb. Contractor to conform to this specification in workmanship and materials.
- B) The contractor to install pre-hung door unit. Contractor to include all hardware and removal of existing door unit.

08212- PANEL WOOD DOORS:

All panel doors will match the style of the existing ones within the structure; if new, all doors will be of pressed hardboard with solid wood frames as manufactured by Mohawk, Weyerhaeuser, Legacy or equal. Doors will be sanded and sealed, ready for finish paint.

08230- DOOR JAMB REPAIRS OR REPLACE:

The contractor to repair door and/or hardware to make operable. Repairs could include: remove damaged frame or jamb and install a new jamb, trim both sides with new casing, install weather-stripping if an exterior door, caulk as needed, replace hinges, replace door knob and catch, and/or install threshold where required. Paint all new wood jambs as required per Section 09900.

08231- REMOVE DOOR AND CLOSE IN OPENING:

Where removal of a door is required, and the opening is to be closed in, all door and frame components will be removed entirely. The opening will be properly framed and covered with conforming interior and exterior wall materials and finishes as to remove all trace of the previous opening, based upon visual inspections. At an exterior door being

closed in, Contractor will install R-13 insulation before closing it in with the interior finishes.

08232- CLOSET & SLIDING DOORS:

- A) The contractor to install new closet door. Door could be sliding, pocket, or swing type. Contractor to include workmanship and materials.
- B) The contractor to repair closet door to make operable. Repairs could include: remove damaged frame or jamb and install a new jamb, trim both sides with new casing, caulk as needed, replace hinges, replace door knob and catch, and/or install threshold or door track where required. Paint all new wood jambs as required per Section 09900.

08320- METAL OR WOOD DOORS – FIRE RATED:

Where called for, use fire rated, UL listed metal door with approved rated hardware (NFPA Standard No. 80 or 101). Door & frames will bear a minimum of one-hour fire rating and will be approved by the Fire Marwill.

08330- PULL-DOWN STAIR/DOOR:

If stated on the description of services (SOW will install a pull-down attic stair where required. Stair will be placed conveniently to the HVAC equipment in the attic If applicable and where there will be sufficient clearance for stair to pull down as well as clearance to gain access above. Rough opening for stair unit will be framed on all sides with 2"x6" nominal thickness lumber and secured with screws. Stair opening will be large enough to accommodate the equipment. Weather-stripping is to be applied to opening to seal door from attic air filtration.

08350- OVERHEAD / SECTIONAL DOORS:

For garage style overhead doors, use a sectional steel style door in either a 8' or 16' width by 7' tall (standard) with normal lift tracks. Unless otherwise noted, install all springs, steel shaft, on wood jambs (residential application) and ready for a motor operator. Door manufacturers such as Barcol, Clopay, Crawford, Raynor, Overhead Doors or Dalton are approved for use. Install weather-stripping as needed for the door to seal all air and light gaps. Housing Inspector will specify size of opening in SOW.

08351- OVERHEAD DOOR REPAIRS:

The contractor will repair and insulate with weather-strip the overhead door. Repairs could include: replacing springs, replacing cables, replacing rollers, installing weather strip, replacing bar-lock or replacing a panel.

08500- WINDOWS:

08501- NEW WINDOW OPENINGS:

The contractor will install a window opening. Openings will be framed to provide a rigid enclosure for the installation of the windows; all openings will have double studs each side and the jamb studs will extend from the sole plate to the header above. Sill trimmers will not cut into the jamb studs more than ½” typical.

All framing or door openings will conform to all requirements of the City of Dallas Building Codes and Ordinances.

08502- CAP WINDOW OPENING:

The contractor will frame in and close a window opening. Contractor will include drywall, R-13 insulation, and TBT on the interior and matching siding on the exterior.

08510- ALUMINUM OR VINYL FRAME WINDOWS:

All new replacement windows will be of extruded .062 aluminum frame or vinyl framed and be either single or double hung with double paned insulated glass. When specified by Housing Inspector, new window units will meet the Energy Star Rating and current Model Energy Code requirements as adopted by the City of Dallas. New window units will be sized to fit the existing rough opening. If this is not possible, the contractor will re-frame the rough opening and trim it out so that it looks acceptable and fits with the treatments of the existing structure. All windows will be installed plumb, straight & level as required by manufacturer’s instructions. All new windows will be adequately sealed with approved caulking and will be left clean, tight and weatherproof. The homeowner to select color by manufactures standard. Vinyl windows can be substituted as long as they meet or exceed the requirements listed above.

Include with all windows, an approved screen of 16-18 mesh aluminum or fiberglass wire screen. All windows will have a cam locking device with a tilt action sash.

- A) The contractor will install single pane aluminum windows on all specified openings. Removal of existing window unit and re-sizing of the rough opening will be included, as necessary.
- B) The contractor will install double pane insulated windows in all specified openings. Removal of existing window unit and re-sizing of the rough opening will be included, as necessary.

08520- WOOD WINDOWS:

New wood windows will match the existing windows in style and size and will be installed per the manufacturer’s instructions. Wood windows will be pre-primed prior to installation and painted after all trim has been installed. All windows and trim will be caulked as required.

08570- REPAIR OF EXISTING WINDOWS:

Repair of windows or replacement of frames, sills, sash, trim and hardware will match all existing work in design, dimensions and colors unless otherwise specified in the SOW.

- A) When sash cord is to be replaced, only the highest quality nylon cords are to be used. Also, a minimum of two (2) window lifts and One (1) locking device will be installed on all sash replacements.
- B) When new sashes are installed into existing frames, the contractor will check all window parting stops, sash weights, and sash cords for any that may be missing, rotted or impaired. Proper window operation will be the full responsibility of the contractor will do whatever is needed to comply short of replacing the window unit.
- C) All cracked, broken or missing glass will be replaced with new glass meeting any and all requirements of the specifications under Section 08800. All glazing compounds will be flexible vinyl dry-glazing for horizontal sliders or snap-in glazing bead for single or double hung windows of aluminum construction.
- D) When called for the SOW, replacement window sills, stools will match existing details and finishes as close as possible.

08575- SCREENS:

- A) The contractor will repair existing screens. Repairs could include replacement of frame pieces, replacement of screen tabs and channels, repair of screen cloth or re-installation of screen.
- B) The contractor will install new screens on existing windows. New screens will match existing screens as closely as possible.
- C) The contractor to re-screen existing framework. Material will be of gray or brown nylon insect mesh unless otherwise specified.

08576- SHUTTERS:

The contractor is to install exterior decorative wood shutters to match existing. Material will be of either wood or PVC. New shutters will be primed and painted to match existing.

08700- HARDWARE & SPECIALTIES:

08710- FINISH HARDWARE:

When entry, privacy or passage sets are called for, they will be of Schlage 'F' series or an approved equal. All new hardware will match existing hardware as closely as possible or if all new, it will be of chrome or satin finish to include door bumpers or door stops.

- A) Exterior Doors:
All Exterior doors will have three (3) 4" butt hinges and be reinforced for security provisions. Use Heavy Duty lock set and a 1" hardened rim dead bolt with thumb

turn on the inside, on all exterior doors. Both locks are to be keyed alike and both will be heavy duty rated and installed per the manufacturer's instructions. Self-sealing magnet type weather-stripping on metal doors and closed cell foam on wood doors is required and an aluminum threshold compatible with interior floor finish type.

B) Interior (Secured) Doors:

Should there be a requirement, install an interior grade lock-set (keyed alike to exterior doors) on an interior door.

C) Bathrooms & Master Bed Room:

All bathrooms and the Master Bedroom will have a thumb turn style privacy lock with a pin hole release mechanism on the outside.

D) Bedrooms & Other Rooms:

All bedrooms, closets and other doors not listed above will receive standard interior passage sets.

E) Other Hardware: *(If required)*,

- 1) Install a door viewer on front exterior door, of brass similar to Brainerd #648 or equal.
- 2) Install a heavy-duty door closer similar to Ideal #SK-3015 or equal.
- 3) Bath accessory sets to include all items as listed in Section 10800 or per the Housing Inspector and the SOW.

08730- WEATHERSTRIPPING & SEALS:

Use only quality weather-stripping materials, such as manufactured by 3M or better.

08740- THRESHOLDS:

All thresholds are to be Heavy Duty Aluminum type, of proper height and width, and properly cut and fitted to the door opening to ensure a tight fit. The threshold will be of such height as to allow for ½" clearance over the floor covering and be sealed on the underside using a clear adhesive silicone caulk and include a vinyl insert for a positive seal to the bottom of the door.

08800- GLAZING:

08810- GLASS:

All glass will meet or exceed the requirements of The City of Dallas Building Code.

08820- INSULATING GLASS UNITS:

All insulated glass units will be sealed against moisture penetration between panes and will conform to and meet all applicable energy code requirements.

08830- MIRROR GLASS:

All mirrored glass installed will be ¼" and have all edges ground and polished smooth and installed using either mastic adhesives to the drywall or by using an approved mechanical fastening system with anchors. All installations will be left clean and free from stickers, marks or finger- prints.

08850- RE-GLAZING OF WINDOW UNITS:

- A) All cracked, broken, or missing units, or units with holes in them will be replaced with glass meeting the requirements from Section 08810. All glazing materials will be of good quality and grade and always applied to the manufacturer's specifications. All wood sashes will be treated with linseed oil and allowed to set a minimum of 24 hours prior to application of glazing compounds.
- B) Where necessary to re-putty glass in wood or steel sash windows, all cracked, loose or unsound glazing materials will be removed, and the proper holding devices will be installed. Glazing compounds will be installed per the manufacturer's specifications and instructions.

SECTION 9 – FINISHES:

09100- LATH & PLASTER:

09110- FURRING & LATH:

09150- GYPSUM PLASTER:

09200- GYPSUM WALLBOARD:

09260- GYPSUM WALLBOARD SYSTEMS:

When gypsum board or drywall is called for, the installation will include screws, glue, tape, bedding and texture to match the existing texture in that room. If new, then all texture will be uniform throughout the structure unless otherwise noted by the Housing Inspector. Housing Inspector will specify the type of texture to be installed.

09261- DRYWALL INSTALLATION:

- A) Install water-resistant gypsum board in all 'wet' locations such as behind water closets, behind sinks in bathrooms and kitchens and behind any laundry equipment. Durock or an equivalent equal or a cementitious fiber will be installed around tub & shower enclosures,

- B) No gypsum board will be delivered to site or installed unless all weather protection and windows have been installed in the structure.
- C) At all times, gypsum board will be installed so that the end joints occur on framing members and allow at least a $\frac{3}{4}$ " support. Fasteners will be spaced not less than $\frac{3}{8}$ " from edges and ends of the board and will be applied as not to fracture the face paper with the fastener head. All fasteners for single layer drywall installation will not exceed seven (7") inches on ceilings, eight (8") inches on walls and where ceramic tile and cement base will be adhered to the drywall, then fastener spacing will not exceed six (6") inches on center. Nails used in the installation of gypsum board will be annular ring nails or 5CC with $\frac{1}{4}$ " heads and 1 $\frac{1}{4}$ " minimum length.

Note: 'Drywall' Screws are approved and recommended in lieu of nails and will be driven so the screw head rests in a slight indentation formed by the driving tool. The spacing of the screw fasteners can be increased to twelve (12") on ceilings and behind ceramic installations and sixteen (16") inches on center on the walls.

- D) Gypsum board joints will be filled with bedding compound, sealed with paper drywall tape bedded to produce a smooth and even joint feathered at the edges and then textured to match the surrounding surfaces. Each layer of compound is to be completely dry before adding the next. Finished wall is to reveal no evidence of a repair occurring. All tape must be covered.

09280- GYPSUM WALLBOARD ACCESSORIES:

Corner bead will be used in all applications where an outside corner to a wall exists. Paper or fiber mesh tape will not be permitted on outside corners. The metal bead will be installed using drywall screws and set per the manufacturer's recommendations. No portion of the metal corner bead will be showing except the point of the corner.

09290- GYPSUM WALLBOARD REPAIRS:

A) CEILINGS:

Cracks in drywall on ceilings will be repaired by opening up the crack to form a 'V' groove no less than $\frac{1}{4}$ " deep and $\frac{1}{4}$ " wide and filled with joint compound and tape, then finish coated, sanded and ready for paint, unless otherwise indicated by the Housing Inspector. Any drywall patching on ceilings will be cut out joist to joist and replaced. "Butterfly" or "Plug" patches are not permitted on ceilings.

B) WALLS:

Cracks in walls over openings or in panel fields will be repaired by carefully cutting drywall out between supporting studs on either side of the defect and installing new drywall of the same thickness, then filling all joints with joint compound and tape, and bedding to a smooth feathered finish. Drywall holes smaller than 1" can be patched with approved spackling. Holes larger than 1" will be repaired with a "Butterfly" or "Plug" patch or cut out stud to stud and replaced.

09300- CERAMIC TILE:

09310- INSTALLATION & REPAIRS:

All ceramic and natural stone tiles may be set in a Portland cement mortar, in dry-set Portland cement grout, or installed using approved water-resistant adhesives. Tile will be set firmly in place with finished surfaces in true planes and all joint spacing will be straight and uniform in width and will be solidly filled with the finish grout. All completed work will be free from hollow sounding areas and loose, cracked or defective tiles. All cutting, and drilling of ceramic tiles will be done with the proper tools and done neatly and professionally without marring or scratching the surfaces. All surfaces receiving ceramic tile will be squared and center-laid. There will be no cut surfaces against trim pieces. All holes for piping must be drilled. All repairs and tile installations will be done in a workmanlike manner and any replacement of tiles will match existing in color and texture or be as close as possible in case that the exact color or texture is no longer available. In all bathroom and kitchen applications where tile work will hold excessive moisture, a water-resistant grout additive will be used.

09320- CERAMIC TUB SURROUND:

The contractor will install ceramic tub surround approximately seven (7') feet from finished floor. In all ceramic tub surround installations, "Durock" or equal concrete wall board will be installed on all walls where tile is to be laid. Contractor is to set tile so that all cut edges are abutting at the wall angles. There will be no cut edges against the trim. Contractor to insure the correct adhesive is used in installation per manufacturer recommendation.

09321- CERAMIC TILE REPAIR - BATHROOM:

The contractor will repair existing ceramic tile. Repairs may include replacing missing or broken tiles, re-grouting, and/or re-setting ceramic accessories.

9540- WAINSCOT:

- A) When a wainscot for bathroom walls is called for, it will require Fiber Glass Reinforced Panels (FRP) with all required trim as per manufactures specifications or ceramic tile.
- B) Walls will be smooth, bondable, solid, straight and clean prior to the application of panels. A balanced layout should be achieved for best appearance minimizing panel joints. The door and window casings are to be left intact and moldings will be installed against the existing trim and caulk to achieve a clean and water-tight installation.
- C) For tub and shower stall applications, panels and moldings will be cut and dry fit prior to installation and nails of any sort **will not** be used. Adhesive must be recommended by manufacturer. Apply adhesive over the entire back side of the panel (leaving a minimum of 1" around the edges) with a comb spreader to provide contact ridges as recommended by the panel manufacturer.

D) Caulk around the tub before installing molding and then caulk molding after installed. All seams and inside perimeter of all plumbing openings will be caulked to completely waterproof all edges. Contractor is to remove all excess adhesive and caulk, leaving all wall surfaces and fixtures clean.

09550- SUB-FLOORS & FLOOR REPAIRS:

09551- CONCRETE FLOOR REPAIRS:

All cracks over ¼” wide will be chiseled open to form a ‘V’ all along the crack's length which is to be repaired. The crack then will be brushed clean of all debris and dust, then prepared by applying a white ‘latex’ concrete adhesive mixture, and filling crack with an epoxy floor patching grout. Contractor to finish smooth with the existing surface and broom clean area after patch has hardened and is safe to walk on.

09552- HARD-WOOD FLOOR REPAIRS:

All damaged and rotted wood floor areas will be removed and new wood flooring to match existing will be installed. New wood flooring is to be laced into the old flooring, properly nailed, sanded, sealed and finished to match the existing as closely as possible.

09555- SUB-FLOORING:

Common boards used for sub-flooring will not be over eight (8”) inches wide or less than ¾” thick. All boards will be nailed with two (2) nails in four (4”) and six (6”) wide boards and three (3) nails in eight (8”) boards at each joint and intermediate supports.

09556- PLYWOOD SUB-FLOOR:

Plywood used as sub-flooring will be a minimum of ¾” thick when placed on 16” on center supports or it will match the thickness of the sub-flooring around it. Fasten all ¾” plywood sub-flooring using 1 ½” minimum coated or galvanized deck screws pattern not to exceed 6” on center around perimeter of panel and 10” on center on the intermediate supports. Dry wall screws will not be allowed.

09558- UNDERLAYMENTS:

Plywood underlayment will be used in all kitchens, baths, and utility rooms where washer & dryer are located. Plywood will be of exterior BC grade and will be no less than 3/8” thick and will be installed with a tight fit and smooth surface over which the finished flooring can be placed without showing any cracks or raised places. Cracks, holes, or indentations are to be filled with ‘floorstone’ or a pre-approved equal, properly sanded to a smooth and even surface prior to the installation of any floor coverings. Gypsum products will not be allowed.

- A) All underlayment will be nailed using 5d ring shank nails or deck screws spaced a minimum of six (6") inches on all panel edges and eight (8") inches for the field areas.
- B) Inspections will be called for once underlayment has been completed and before the floor covering has been installed. Housing Inspector can have the contractor remove the floor covering to re-expose the underlayment for proper inspection as required.
- C) When installing underlayment in bathrooms, it is to extend under the water closet and the setting ring will be raised to be on top of the new underlayment and the water closet reset properly over the new floor coverings.

09600- WOOD FLOORING:

09601- WOOD STRIP & PARQUET FLOORING:

The contractor is to repair wood strip or parquet flooring with matching material. Contractor is to match existing stain and finish.

09605- RESILIENT FLOORS:

09610- INSTALLATIONS:

All installations of resilient flooring will include a "cap" of 3/8" plywood under the sheet goods per specification 09558. Installation of vinyl floor tiles and sheet goods will include all materials, such as glues, adhesives, seam sealants, equipment and labor to properly install the materials called for and will be installed per the manufacturer's recommendations. All resilient flooring will meet or exceed the FHA minimum housing standards. Home Owner must select color and pattern from Contractor samples.

All floor covering installations will also include metal strips between sheet goods or tiles and other types of floor coverings or types of floor surfaces and will include the replacing of shoe or quarter-round moldings. Prime and paint all moldings prior to installation on floor and caulk as needed after installation. All corners will be mitered or coped to fit and touched up with paint or caulk as needed. Remove and re-installation any and all fixtures or appliances as needed will be included. All vinyl seams will be sealed and edges abutting walls will be sealed with water-proof, color coordinated caulking.

09660- RESILIENT TILE FLOORING:

Floor tile will not be used unless specifically called for in the SOW by the Housing Inspector. If used, install floor tiles using an approved adhesive as required by the manufacturer. All vinyl floor tiles will be center-laid with cut edges on all sides.

09665- RESILIENT SHEET FLOORING:

When installing sheet goods, underlayment will be installed and conform to requirements of Section 09558. Color and pattern of cushioned sheet vinyl flooring is to be selected

by the Owner. Contractor to remove all removable appliances and fixtures prior to installing sheet flooring, i.e.: stove and refrigerator. Contractor to ensure that underlayment is dry prior to installing sheet goods. Use water-resistant adhesives only and as recommended by the flooring manufacturer and apply in strict accordance with the manufacturer's instructions. Seams will be permitted only if room dimensions are larger than stock material sizes of the flooring material. Any seams will be placed in inconspicuous locations, away from heavy traffic areas. Seams will be welded together, and all fitting and cutting will be done carefully so as to produce a workmanlike job. Use aluminum edge trim at all doors and archways.

09680- CARPETING:

09681- INSTALLATION:

- A) Installation of all carpets and pads will include all materials, such as tack strips, glues, adhesives, equipment and labor to properly install the materials called for and will always be installed per the manufacturer's recommendations. All resilient flooring will meet or exceed the FHA minimum housing standards.
- B) All floor covering installations will also include metal strips between sheet goods or tiles and other types of floor coverings or types of floor surfaces and will include the replacing of shoe or quarter-round moldings if required. Prime and paint all moldings prior to installation on floor and caulk as needed after installation.
- C) All carpet installation is to be done by professional carpet installers trained and knowledgeable in their field.

09691- CARPET:

Carpet padding and carpets will comply with all local Minimum Housing Standards. Carpet padding will be a minimum thickness ½" re-bond or foam. Carpet will conform to local Minimum Standards UM-44A, 'Use of Materials' for all moderate traffic areas as listed below:

Type of Carpets:	Min. Pile Yarn Weight (0z/sq yd.):	Min. Weight Density Factor:
Wool	25	70,000
Acrylics	25	70,000
Monacrylics	25	70,000
Nylons	22	56,000

CARPET REQUIREMENTS:

- A) Installer is to use the appropriate tack strips and other means of securing carpet and pad as recommended by the manufacturer's installation instructions.
- B) Installer / Contractor will undercut doors as needed to clear the carpeted areas by at least 3/8" and no more than 3/4".
- C) Carpet is to be installed in all closet areas within the rooms being carpeted.

09900- PAINTING:

09910- PAINTING REQUIREMENTS:

Except where otherwise specified, these specifications will cover the painting of all interior and exterior surfaces on the project. Unless specified by the Housing Inspector, all painting required will include all preparation and priming.

- A) Prior to any painting or finishing, the responsibility for the inspection of the work lies with the General Contractor. If any surface cannot be put in proper condition for finishing by the methods described in the section, the General Contractor must notify the Housing Inspector at the Pre-Construction meeting. If such notification is not made, the General Contractor will assume all responsibility for any unsatisfactory finish resulting and will correct the same.
- B) All paints, varnishes, enamels, lacquers, stains and similar materials must be delivered in their original containers and all seals must be unbroken and all labels intact.
- C) All basic painting materials such as oils, shellac, turpentine and other thinners, driers, etc., will be pure, of the highest quality. They must all bear identifying labels on the containers and must not be stored in other than their original containers.
- D) The Manufacturer's directions on the container labels of all materials will be followed at all times.

09920- WORKMANSHIP:

- A) All surfaces to be painted or finished will be clean before painting. The painting Contractor will inspect all surfaces before painting and will perform minor surface preparation as is normally required by good painting practices. Painting Contractor will also ensure that all caulking, nail pops, scratches, defects and major flaws in the drywall finish have been addressed by the General Contractor before painting the surfaces.
- B) The contractor will at all times protect work and adjacent work areas and materials by using suitable covering or other methods during the process of his work. Contractor will remove all paint, markings and spots from floors, glass, mirrors, and other surfaces when work has been completed, and will remove all rubbish and accumulated materials and will leave work area in clean, orderly and acceptable

condition. This will apply to all interior and exterior painting work called for in the SOW.

- C) All materials will be properly applied to provide for adequate coverage and will be free from runs, sags, skips or defects.

09930- PREPARATION OF EXTERIOR WALLS & PORCH:

- A) Exterior wood surfaces will not be painted when air, paint or surface temperatures are below 50 degrees F., and will not be painted in wet weather or at temperatures above 105 degrees F.
- B) New wood used for exterior finish or stairs will be prepared for paint and will be painted with prime coat and two (2) coats of paint.
- C) Surfaces to be coated will be free of all dirt, wax, grease or any other foreign matter. All loose paint, mildew or chalky surfaces will be scraped, brushed, cleaned and sanded where needed to
- D) Produce smooth finish, prior to primer coat. Cracks, crevices and nail holes will be filled, and all loose, deteriorated caulking will be replaced prior to painting. See Section 07951 on caulking.
- E) New wood used for exterior stairs, railings and structural items will be painted with exterior grade enamel, color to match existing exterior paint or trim colors.
- F) New wood porch flooring must be primed with an oil-based primer prior to its installation. Paint new wood porch floor with a continuous coverage of oil-based porch and deck paint only, painting to include any and all preparation which may be required by the manufacturer's recommendations prior to the application of new paint finish.

09940- PREPARATION OF INTERIOR WALLS:

Interior surfaces will not be painted when air or paint surface temperatures are below 50 degrees F. or above 105 degrees F. All finish painted wall surfaces will be of the highest quality and with full and even coverage.

- A) All surfaces to be painted will be clean, dry and free of dirt, grease wax and any foreign matter. Loose or scaling paints will be scraped and removed. Paint preparation will include the following: Tape, bed and texture all cracks and other obvious defects so that when the paint work is done, all surfaces will match and show no evidence of the repair or previous defect.
- B) Interior wood surfaces are to be painted with enamel or latex enamel paints and will be cleaned and sanded prior to painting and will be sanded between coats in order to ensure a good bond and finish.

- C) Interior paint over new wood or new sheet-rock or new wallboard will be applied only after the surfaces have been primed with a primer that is compatible with the finish coat.
- D) Paints used for the baths and kitchens will be enamel and all preparations will be semi-gloss enamel.

09950- FINISH MATERIALS:

A) Primers:

Primer will be an exterior grade alkyd undercoat that can be used under both latex and oil based exterior paints and will be white or may be tinted to act as a base to the finish colors.

- 1) Application of primer will always include: The priming of knots, sapwood and bare wood spots prior to priming same.
- 2) After priming has been completed, the homeowner will call the Housing Inspector to schedule an inspection to verify the primer has been completed per the SOW.

B) Paints:

Materials for finishes as follows:

- 1) Exterior latex or oil-based paints will be applied only after the surface has been completely cleaned and is dry. Two (2) coats are required on all jobs. Note: Only high-quality paints will be used.
- 2) Interior latex or flat or enamel paints will be of high quality, washable, and durable.

C) Other Materials:

Stain and Varnishes will be applied in accordance with the manufacturer's recommendations. *Colors will match those existing in the structure.*

D) Metal surfaces shall be primed and painted with two (2) coats of paint which is recommended for metal surfaces and shall be a spray on type finish.

09960- IMPORTANT NOTICES TO PAINT CONTRACTOR:

- A) Owner may pick colors as long as two exterior and one interior colors are used, and that the Owner understands that once the colors have been selected, no changes can be made once construction starts.
- B) The use of lead-based paints or materials are strictly prohibited by law.
- C) No water blasting with pressure washer of exterior wood surfaces is permitted. Structure may be washed with a high-pressure nozzle attached to a garden hose.

09961- SCOPE OF WORK:

- A) The contractor to prepare, prime and paint entire exterior of structure. This will include any scraping, sanding, caulking and cleaning involved in the preparation. Painting, preparation and materials will follow the specifications outlined in this manual. (09900)
- B) The contractor to prepare, prime and paint the cornice and trim of structure. This will include any scraping and caulking involved in the preparation. Painting, preparation and materials will follow the specifications outlined in this manual. (09900)
- C) The contractor is to prepare and paint only specific areas of structure to bring to code. Contractor will match existing color as close as possible. This will include any scraping and caulking involved in the preparation. Painting, preparation and materials will follow the specifications outlined in this manual. (09900)
- D) The contractor to prepare and paint interior room or complete interior. Housing Inspector to specify area to be painted. Contractor to include all caulking and sanding and/or minor crack filling. Painting, preparation and materials will follow the specifications outlined in this manual. (09900)
- E) The contractor to prepare and paint bathroom and/or kitchen in semi-gloss enamel. Contractor to include all caulking and sanding and/or minor crack filling. Painting, preparation and materials will follow the specifications outlined in this manual. (09900)
- F) The contractor to prepare and paint kitchen or bathroom cabinetry. Contractor to include any sanding, de-greasing, and caulking. Cabinets will be painted inside and out with a durable oil-based paint. Under no circumstances will Contractor paint over shelf paper or contact paper. Painting, preparation, and materials will follow the specifications outlined in this manual. (09900)

09962- WALL COVERINGS:

Installation of wallpapers, wood paneling, tub surrounds, or other decorative finish panels will be in accordance to the manufacturer's recommendations. All required trim and accessories will be included with the installation of any new wall board, paneling or papers.

09963-WOOD PANELING:

All wood paneling will be 1/8" or thicker pre-finished plywood. Composition or pressboard paneling is not acceptable with new installation. Pre-finished plywood paneling will conform to the standards of the U.S. Department of Commerce; PS 51-71 for hardwood and decorative plywood's and have a Class C flame spread rating. All paneling should be applied in accordance with manufacturer's specifications. Use only pre-finished, color coordinated nails made to match the paneling. Panels are to be nailed only in the grooved portions of the paneling. Extend any electrical boxes as needed to accommodate the new paneling. Pre-finished moldings will be of wood base or flexible

plastic in a color matching the new paneling. When possible, Contractor to use approved panel adhesive in addition to nails during installation of paneling. Existing trim (except ceiling such as crown or cove moldings) will be left in place and paneling carefully cut and fitted around all door and window casings and butted against the baseboards. Contractor to caulk around casings to the panel as needed to conceal saw cut defects and or gaps between panels.

09964- VINYL WALL COVERINGS & PAPERS:

The contractor will install wallpaper. All wall papers will be fabric backed, solid vinyl or vinyl laminated. Use paste as specified for use by manufacturer of wallpaper. Apply in accordance to standard practice, including joining of seams and edges. All paper will be carefully trimmed where it meets all adjoining surfaces. Patterns will be matched at all seams.

09990- ADHESIVES:

Wallboard adhesives are approved for use and will be applied by using a continuous bead of adhesive to the center of all studs, joists or furring strips. Where two (2) pieces of wallboard join on a single framing member, use a zigzag form of bead. The size of the adhesive bead will be no less than 3/8" round, so when the board is in place, it will be held by a band that is at least 1" wide x 1/16" thick. Use temporary nailing or bracing to ensure full contact of the panel to the studs until the adhesive develops the required bonding strength.

SECTION 10 – SPECIALTIES:

10200- LOUVERS, VENT & SCREENS:

10210- LOUVERS & VENTS:

Contractor is to include all labor and material costs to install wall louvers and/or roof vents as needed per the City of Dallas Building Codes. All louvers & vents will be installed per manufacturer specifications and installation to include all sealing & caulking as required. All louvers and vents will accommodate all local codes for ventilating attic spaces properly. All of the area behind the louvered areas of the vents will be open to the attic or crawl space.

- A) All wall louvers will be of the horizontal blade style with bird screen attached behind the louvers. All louvers are to bear the AMCA seal and will be painted to match the exterior wall color without painting the bird screen behind.
- B) All Roof vents will be made of either aluminum or of galvanized metals. Install all vents in quantity enough to satisfy local codes for attic space ventilation requirements.

- C) The contractor to install soffit and or crawl space vents. Crawl space, cellar or basement vents will be located within 3 feet of each corner. Soffit and or crawl space vents will be spaced at a minimum of one per every ten (10) feet or 1 square foot for every 150 square feet of floor plan. Contractor to vent soffits by drilling holes or cutting out all the soffit material behind the louvered area and covering opening with aluminum screened grill.
- D) The contractor to install bird-block vents. Bird block vents will be spaced at a minimum if one (1) per every ten (10) feet or 1 square foot for every 150 square feet of floor plan. Contractor to vent bird block by drilling holes and cutting all of the area behind the louvered area and covering openings with aluminum screened grill.
- E) The contractor to install turbine roof vents. Turbine roof vents will be of a galvanized steel material and Contractor to include all cutting of holes, flashing and sealing of vents in installation. Turbine vents will be installed as per the manufacturer's specifications and this spec. Turbine vents will be located near the highest ridge. If two turbine vents are called for, they will be located near the terminating end of the highest ridge. The top edge of the rotating turbine will be on a true and level plane after the finished installation. Vents will be of the proper size and number to meet code and factory venting requirements.
- F) The contractor to install attic gable vents. Gable vents may be triangular type which fits on the gable wall directly under a gable roof overhang or a rectangular gable vent can be installed at the same location. When the vent is installed on wood siding and trim at other kinds of siding will require trim to match the existing siding and trim scheme. Gable vents will be of the proper size and number to meet Code venting requirements.

10241- GRILLS & SCREENS:

All grills and screens used will be of aluminum or galvanized metal type with an aluminum frame or galvanized metal frame and will meet all requirements of the City of Dallas Building Codes for quantity installed, locations and installation methods. When specified, Contractor to re-screen existing exterior vents. Screen mesh will be a maximum ¼" metal mesh.

10300- FIREPLACES:

10302- FIRE BOX & CHIMNEY REPAIRS:

The contractor to repair fire box or chimney. Repairs could include inserting metal sleeve, brick and mortar repair, chimney cap and/or spark arrestor. Housing Inspector will specify repairs.

10400- IDENTIFYING DEVICES:

10430- ADDRESS / STREET NUMERAL SIGN:

The contractor will install street address numerals on face of house in an appropriate location as to be visible from the street frontage and all numerals will be a minimum of 5" tall in white over a black background of painted wood blocking. Secure to face of structure using screws as needed.

10550- POSTAL SPECIALTIES:

10552- EXTERIOR MAIL BOXES:

If required, install a quality metal mailbox as approved by the US Postal Service requirements either attached to the structure or on a 4" x 4" post at the street as may be required by the Postmaster for a particular location.

10800- TOILET & BATH ACCESSORIES:

10810- TOWEL BARS:

The contractor will install metal towel bar or ceramic towel bar. Towel bars will be installed at a height and location specified by the Housing Inspector. Metal towel bars installed on drywall will be anchored with molly bolt fasteners.

10820- TISSUE HOLDERS:

The contractor will install metal tissue holder or ceramic tissue holder. Tissue holder will be installed at a height and location specified by the Housing Inspector. Metal tissue holders installed on drywall will be anchored with molly bolt fasteners.

10830- SOAP DISPENSERS:

The contractor will install metal soap dispenser or ceramic soap dispenser. Soap dispensers will be installed at a height and location specified by the Housing Inspector. Metal soap dispensers installed on drywall will be anchored with molly bolt fasteners.

SECTION 15 – MECHANICAL/PLUMBING:

15010- GENERAL PROVISIONS:

15015- MECHANICAL/PLUMBING GENERAL REQUIREMENTS & CONDITIONS:

- A) The following specifications are to be considered minimum requirements and will govern except that all Federal, State and or Local Codes and Ordinances will govern when their requirements are in excess hereof. All applicable portions of Division 1 – Contract Requirements, are to be considered as included with this Division. The contractor is responsible for having all utilities marked and located prior to excavation.
- B) All work will be executed in accordance with the most City adopted code at the time the permit is pulled, or the work commences, IRC, IPC, IMC Codes, and IFGC and

the EPA regulations pertaining. All fees in connection with the work including but not limited to permit fees, utility charges, tap fees and related labor expenses to these items, will be paid by the mechanical Contractor.

- C) Should any changes in the specifications or the scope of work be required in order to comply with local or state requirements, the contractor will notify the HRP Inspector prior to submitting bid package. After entering into contract, the contractor will be held to complete all work necessary to meet the local or state codes and requirements without additional cost to the Owner or the City of Dallas.
- D) Where the work required by the SOW is above the standards set forth herein, it will be completed as specified in the SOW.
- E) The Mechanical/Plumbing Contractor will provide all items, articles, materials, operations or methods listed, mentioned, scheduled or implied in the SOW and or construction drawings and herein including all labor, materials, and incidentals necessary and required for their completion and basic operations.
- F) Where job conditions require minor deviations and/or reasonable changes in indicated locations and or arrangements, such deviations or changes will be made without extra costs to the Owner or the City of Dallas
- G) The City of Dallas Housing Department does not advocate water line repairs under concrete foundations; the alternative being abandoning the existing supply and re-piping through the attic.
- H) All exposed holes and trenches left open shall refer to specification 02101 (A)

15030- LOCAL CONDITIONS, RECORDS & INSPECTIONS:

- A) Examination of site and existing conditions will be made by the Mechanical/Plumbing Contractors before submitting bids and all Contractors will satisfy themselves as to the conditions under which the work is to be performed. NO allowance will be made on behalf of the homeowner for any extra expenses to which he/she may put due to failure or neglect on his/her part to make such examinations to the site.
- B) The contractor will verify all locations and elevations of the storm, sanitary, gas, water services, sprinkler system, and electrical lines. This verification will be done prior to the beginning of work at the project. Any damages to any utilities will be the sole responsibility of the contractor
- C) Contractor is to arrange and secure for all applicable inspections in connection with the work. All 'yellow_or green tags' will be provided to the Housing Inspector for record keeping purposes.

15044- GUARANTEES & MAINTENANCE MANUALS:

- A) The contractor will provide a One (1) year written guarantee that he will make good at his/her expense any imperfections in materials and workmanship which may develop under ordinary use within that period of time starting upon the date of that all the required paper work is submitted of final acceptance of the project and.
- B) The contractor will upon completion of his/her work, give the homeowner all original manuals and data sheets, presenting full details for care and maintenance of all equipment requiring periodic maintenance or basic repairs.

15045- RESULTS EXPECTED:

All work will be executed and inspected in accordance with the City Plumbing & Mechanical Code, IPC2, IRC, IFGC, and specifications listed herein., All work completed will be done in a professional and workmanlike manner.

15049- MATERIALS & MANUFACTURERS:

All materials used will meet or exceed all specifications and outlined standards as written by the FHA Minimum Housing Standards, the International Residential and Plumbing Codes as adopted by the City and these specifications.

Manufacturers listed, are used to illustrate a standard for use as a guideline. Any manufacturer that has a product line similar or equal to the one listed in the specification may be used with prior knowledge of the Housing Inspector.

15050- PLUMBING BASIC MATERIALS AND METHODS:

15056- VALVES AND VALVE BOXES:

Valves which control the water supply to a residence building and its outside hydrants will be ¼ turn brass ball valves and located in minimum 12” round valve box or a standard 12 inches in width rectangular valve box and sufficiently deep enough to allow three inches (3”) of "pea" gravel to exist inside the box and allow approximately 3" of clearance between the valves and the gravel. The top of the valve box will be at grade. Valves and service lines will be a minimum of 12” and no greater than 18” below finished grade.

15060- BLACK IRON PIPE:

If used as gas or compressed air lines, all fittings will be made of malleable iron. All pipe will be supported no more than five (5) foot on center with approved anchors and straps. All gas piping in living area will be concealed in wall cavity. Any exposed gas piping in the living area will require previous approval of Plumbing and/ or Housing Inspector. All penetrations at finished interior and exterior walls will be sealed with a caulking and covered with a chrome-plated escutcheon. All Penetrations at masonry walls will be sealed with mortar to match existing.

15061- CSST (Corrugated Stainless-Steel Tubing)-Pending

15062- COPPER PIPE:

Copper pipe will be in accordance with ASTM B-88 standards and will be used in all new water services and water distribution systems per ASTM B-42 standards. All copper used above grade will be type 'M' and below grade, type 'L'. Any copper lines located below concrete slabs or inaccessible locations will be type 'L' or thicker and be of one (1) piece without joints to a point where the pipe is accessible. In the event that it becomes necessary to join lengths of type L pipe beneath a concrete slab, joints will be brazed with a minimum 5% silver alloy brazing rod. All copper pipe passing through concrete slab foundations will be sleeved in appropriate color-coded sleeve material.

NOTE: All water service piping from the City meter to the water heater shall be a minimum 1" diameter to meet IPC 2006 Code requirements. 1" polyethylene (PEX) plastic tubing, 1" polybutylene tubing, or 1" polypropylene tubing may be used with approval of the Housing Department prior to installation.

15063- PLASTIC / PVC PIPE:

All plastic drainage pipes and fittings will be Schedule 40 polyvinyl chloride (PVC) plastic drain waste and vent (DWV) pipe in accordance with ASTM D-2665 standards. Use only approved glues and primers as per the manufacturer's recommendations and local codes.

15064- PEX WATER SUPPLY PIPING-Pending

15065- PIPING SUPPORTS & HANGERS:

Install all supports and hangers as needed to secure pipes in place as to prevent vibrations and loose pipes, to maintain grading by proper adjustment, provide for expansion and contraction of pipes, and to make a neat and professional appearance.

15105- FAUCETS & TUB AND SHOWER DIVERTERS:

All faucets will be of chrome coated metal, single lever, washer less faucets with a five (5) year drip-free guarantee and a maximum water flow of two (2) gallons per minute. All kitchen faucets to include a spray attachment and an 8" long supply spout with aerator nozzle. Use the same manufacturer for all faucets through-out structure. Approved manufacturers will be Moen Co., Delta Faucet Co. & Kohler Co.

A) Lavatories:

Single lever 4" deck mount center set with a 2.5 GPM water flow complete with all supplies, tail piece, aerator, pop-up drain. Faucet is to be of high quality chrome over brass NAME BRAND i.e.; Moen, Price Pfister. Plastic handles will not be accepted.

B) Kitchen Sinks:

Single lever 8" deck mounted center set with vegetable sprayer. Faucet is to be of high quality chrome over brass NAME BRAND i.e.; Moen, Price Pfister. Plastic handles will not be accepted.

C) Tubs / Shower Combo:

- 1) Install Tub Faucet set to include tub spout. Single lever "scald free" faucet set to be of high quality chrome over brass NAME BRAND i.e.; Moen, Price Pfister.
- 2) Install Tub/Shower set to include shower diverter, shower arm, and shower head. Shower head will be of a water-saver type. Faucet set to be of high quality chrome over brass
- 3) Shower and tub-shower combination valves shall be balanced pressure, thermostatic, or combination balanced-pressure/thermostatic valves that conform to the requirements if ASSE 1016 or CSA B125.

D) Laundry & Service Sinks:

Single lever or 2-handle, 4" deck mount center set with a gooseneck faucet and all supplies, tail piece, aerator, pop-up drain. Faucet is to be of high quality chrome over brass NAME BRAND i.e.; Moen, Price Pfister. Plastic handles will not be accepted.

15110- FIXTURES:

All fixtures used will meet or exceed all local, federal or state requirements for use, water flow and compliance to Minimum Housing Standards. Use only one manufacturer throughout the project when possible. All fixtures are to be white unless otherwise noted by the Housing Inspector (See Section 15-450). Approved manufacturer for plumbing fixtures are Kohler Co., American Standard, Mansfield Co., Briggs Co., and Eljer Fixture Co.

A) Bathrooms - Counter-top style:

Counter top lavatories for bathroom and various other locations in general will be self-rimming vitreous china or cultured marble with cast-in place soap dish and complete with 4" center set spacing, adjustable 'P' trap, tail piece, faucet and mounting hardware as needed. Similar or equal to American Standard Co., Renaissance models, in a 19" round (#9019.444) or a 17" x 20" oval (# 9020-444) in white, unless otherwise noted.

B) Bathrooms - Wall hung style:

Wall hung unit will be of vitreous china with cast-in place soap dish and complete with 4" center set spacing, adjustable 'P' trap, tail piece, faucet and mounting hardware and legs as needed.

C) Kitchens:

Counter top sinks will be of stainless steel and be of double compartment, self rimming, 4-hole mounting deck, and is to be 33" x 22" x 6 1/2" deep, medium gauge steel with a satin finish and underside will be completely undercoated. Similar to Elkay Co., model # LR-2918-S, with a duo-strainer for both sink compartment. If a garbage disposal exists: a duo-strainer for one compartment and disposal ring for the other side (See disposal specifications in this section).

D) Water Closets:

- A) Water closet shall be ADA dual-flush high efficiency, ultra-low water consumption complete with toilet seat and must meet the requirements of ASME A112.19.14; or be certified by the EPA WaterSense program and labeled accordingly with a maximum of 1.3 gallons per flush (GPF), such as Gerber DF-21-118 Maxwell Dual Flush Elongated ERGO Height Toilet or a Glacier Bay Elongated Dual Flush Model # N2316 or an prior approved equivalent by the housing department.

15115- TUBS & SHOWERS:

A) Tubs:

Standard 30" x 60" tubs are to be of porcelain finish over steel one piece typical. Installed and secured per the manufacturer's recommendations. Approved manufacturers are Kohler, American Standard, or Eljer Co. in white unless otherwise noted. *No plastic tubs or repairs to plastic tubs will be allowed.*

B) Shower pans:

- 1) Vinyl type under all ceramic tile and concrete finishes will be no less than .40 mils thick with a 15# felt base and after laid and secured in place, the pan is to be filled with water to the top and checked for leaks.
- 2) Pre-formed plastic or Acrylic shower pans will be of a solid and sturdy plastic or acrylic style pan mounted and secured per the manufacturer's recommendations. Approved manufacturers are Eljer Co., and Kohler Co., or equal. 30" x 30" minimum size with a 2" drain at center and 2" drain lateral.
- 3) New ceramic tile shower units will include non-slip ceramic floors set over approximately 2" of concrete "bedding" floated over the new shower pan. Said finished ceramic tile floor will have a slope to the drain so as to have no water standing in shower floor area.
- 4) New shower units will include drain "P" trap, and waste arm connection.

15120- SLEEVES & ESCUTCHEONS:

Contractor will provide sleeves for all piping and ducts passing through masonry, cement or metal paneled floors, walls and ceilings. Pipe sleeves will not be required in walls above ceilings unless ceiling space is used for an air plenum. Sleeves used below grades or in crawl spaces will be of galvanized pipe, black pipe or schedule 40 PVC sufficient in size to permit free movement of the pipe. Areas around the pipe sleeve and the wall, floor or ceiling materials will be filled with either mortar or caulk as needed to seal properly. Contractor to ensure all piping passing through monolithic slab foundations are sleeved in color coded plastic sleeve material as required by the International Plumbing Code.

Contractor will provide chrome plated escutcheon plates over all sleeves and all piping penetrations in finished areas or living spaces. The inside diameter will fit properly around the insulation or pipe itself when not insulated, and the outside diameter will cover the sleeve made to install the pipe

15121- PIPE ROUTING:

No piping of any type will be routed through new or existing foundation vents, doors, or crawlspace access. (Exception: only with prior discussion and approval with inspector, if no other means possible.

15125- DRAINS AND TRAPS:

All interior sink drains and traps will be of a chrome plated brass or PVC. All drain and trap fittings will conform to the requirements of the Uniform Plumbing Code as adopted by The City of Dallas.

15140- FLEXIBLE CONNECTIONS:

All flexible connections for gas appliances will be installed as per the International Plumbing Codes and will be of a stainless-steel flex-tube connector. All flexible connectors for water supply shall be of chrome-plated brass or stainless steel braided reinforced type. Flexible connections will not exceed 60" in length and will be installed per the manufacturer's installation instructions. All flexible connection pipes will bear a UL listing of approval for the required installation.

15150- INSULATION:

Insulate any piping for the domestic water supply and hot water supply systems in the crawlspace, attic, exterior wall, or the exterior of the house with ½" polyethylene foam insulation. Contractor will ensure proper installation and sealing of joints with approved foam insulation tape. Insulation shall be of recommended size for the existing pipe diameter and will be the "Peel and Stick" type. All joints will be sealed with duct tape or better.

15152- COLD & HOT WATER PIPING:

15157- UNDERGROUND PIPING:

1" thick foam insulation will be used at all locations where underground copper, black iron or galvanized metal piping is being sleeved through existing masonry or concrete walls and or floors or ceilings to act as an isolation control from the masonry or concrete materials. An appropriate colored plastic sleeving can be used prior to pouring concrete

15200- WATER SUPPLY & TREATMENT:

15201- GENERAL:

The contractor will provide all items, articles, materials, operations or methods listed herein including all labor, materials, equipment and incidentals necessary and required for their completion and safe operation. Contractor will refer to material specifications 15049 – 15157.

15210- WATER SERVICE LINE:

The water service line into the house will be a minimum of 1” diameter copper piping continuous to the water heater. 1” polyethylene (PEX), polybutylene, or polypropylene plastic tubing may be used and buried 12”.

15300- WASTE WATER DISPOSAL & TREATMENT:**15301- GENERAL:**

Soil & waste disposal will include all connections to fixtures and drains in accordance with all City of Dallas Building & IRC, and IPC codes and as specified in the SOW by the Housing Inspector. All new soil & water disposal systems will be in PVC piping unless otherwise specified in the WWU or required by job site or field conditions. All “new” rough shall consist of schedule 40 PVC throughout. (No mixing of different types of piping.)

15302- REPLACE LEAD BEND:

The contractor will replace lead bend and flange for water closet. Contractor will assume responsibility for any breakage or leaks that occur during replacement. Contractor is responsible for obtaining green tag when required.

15303- DRAIN/WASTE/VENT REPLACEMENT:

The contractor is to replace/install complete drain/waste/vent system if allowable by Lead-Based Paint Di minimis levels. All new D/W/V material will be of schedule 40 PVC. All work will be completed to conform to the 2006 IRC and IPC Code and the specifications herein. Contractor to include any drywall replacement involved in the job. Green tag required on all plumbing work.

15303.10- MECHANICAL (STUDOR) VENTS

Mechanical (studor) vents may be installed per manufacturer’s specifications with the prior approval of the Housing Inspector.

15304- TWO INCH DRAIN LINE:

The contractor is to replace or install two (2) inch drain line from drain outlets to the main line. All couplings and tees will be included. All work will be completed to conform

to the City of Dallas local Code and the specifications herein. Green tag required on all plumbing work.

15305- SEWER LINES - CLEAN OUT:

Contractor is to clean out sewer lines from the entry point into the structure to the City tap. Acceptable methods are a rotating sewer cable and hydro-jet. Contractor is to assume responsibility for any tips or cables that may be broken off in the line and will notify the Housing Inspector if either becomes permanently lodged in the line. Contractor to insure there are no apparent blockages or breaks in the sewer line by running a video camera through affected piping after cleaning out or unstopping, with HRI present.

15306- SEWER SERVICE:

The contractor will replace sewer service from city tap to house main. Contractor will include dig-out, pipe removal, proper sand, soil or gravel bed, pipe installation, clean-outs, test-tees, connectors and back-fill. All new schedule 40 PVC sewer pipe and clean-outs with screw on caps will be laid over a proper bedding.. Back fill dirt will not contain large stones or debris and will be properly compacted. Green tag required from the Plumbing Inspector.

15307- DRAIN ARMS - TRAPS - DRAIN LINES:

The contractor to replace fixture drain arm, trap and/or drain line. Work and material will meet the requirements of the local code and the specifications herein. Contractor is to include all connections. Mission coupling connectors are not permitted unless specifically authorized by the Housing Inspector for that exception. Accordion style PVC traps and drain arms are not permitted. Contractor to include any drywall replacement involved in the job.

15310- SEWAGE EJECTORS:

In special circumstances an electric pump/ sewage ejector with a float switch sensing device will be properly sized and installed to remove raw waste & sewage up to the Sanitary Waste System as needed. System will include all needed PVC piping to Sanitary System and connection to electrical power.

15361- SEPTIC TANKS & FIELDS:

A) REMOVAL / DEMOLITION:

Where required, the holding tank will be vacuumed clean and the top of the holding tank will be either removed and hauled away or crushed-in by way of a back-hoe and the entire tank is to be filled with a clean, class A, compacted sand & gravel fill, then install approximately 4" to 6" of top soils above sand fill to match existing grades around the tank area and sod.

15423- CLEAN-OUTS:

When specified in the SOW and in all installations on new schedule 40 PVC sewer line, Contractor to install double clean outs to match sewer line pipe size. Contractor to install (1) clean-out for every 90 lineal feet of horizontal sewer pipe or per IPC Section 708. All clean out openings must be extended to finished grade.

- 1) Yard or Line Clean-outs: If installed in an open area such as the yard where no vehicle traffic will occur, a PVC riser and a standard Schedule 40 PVC clean-out with a round screw in type top may be used.
- 2) Underground Clean-outs: Where called for or required, install clean-outs with a cast iron riser and a cast iron clean-out with round solid cover specifically recommended for installation in concrete or masonry applications.

15400 – GENERAL PLUMBING & TOP OUT:

15424-DOMESTIC WATER HEATER INSTALLATION REQUIREMENTS:

- A) Water heater, gas: the contractor is to install gas water heater unit to include removal of the old unit, and installation of a 30 or 40-gallon water heater which meets the Underwriters Laboratory and American Gas Association's (A.G.A.) seal of approval. The water heater must have the necessary clearance per code on all sides. The water heater will have a factory warranty which gives a six (6) year guarantee on all parts. Contractor to insure the existing water risers, gas risers and vent flue are adequate to meet International Residential and Plumbing code requirements. Contractor to include installation of gas and water valves and temperature pressure relief valves "T & P" if they do not exist installation of a 3/4" (inch) relief line, and installation of screened fresh-air vents in floor and ceiling, if water heater is located in a closet. The contractor will bear the sole responsibility for ensuring that the finished installation will be fully functional to meet requirements for Green Tag from the City Plumbing Inspector. If conditions of the existing water or gas piping are such that a green tag can't be obtained without additional work or a water or gas re-pipe, then the water heater replacement will not begin, but will be delayed until after further consultation with the Housing Inspector and a resolution of technical difficulties. Contractor is to provide a water heater factory warranty to the Inspector. All water heater replacement will require a permit and green tag.
- B) Plumbing, water heater, electric: includes a property-rated dedicated circuit and applicable items of specification 15424 A to be included as part of water heater installation and installation of an electrical disconnect.
- C) Plumbing, water heater, service relocation or update will require a green tag: the contractor must relocate or update the water heater service This includes new water risers (gas and electric units), gas risers and double-wall vent stack with roof flashing (if gas unit), installation of new wiring and circuit (green tag), if electric unit. Contractor may be directed to re-install the old water heater in the new location.

- D) Plumbing, water heater, T & P relief valve: the contractor is to install or replace a complete, approved Temperature and Pressure Relief Valve which will open when the temperature or pressure in a water heating system reaches a predetermined maximum limit. The sensor of the T & PR valve will be located in the top six (6") inches of the water heater tank. The rating of the T & PR must meet/exceed 100,000 BTU, code & manufacturer's requirements.
- E) Plumbing, water heater, relief line: When the contractor is to install T&P relief drain line. The drain line (discharge) from the temperature and pressure relief valve will include the three-quarter inch (3/4") hard-drawn copper "relief line" of same type fittings. This relief line will be permanently attached to new T & P relief valve, will be soldered together with "lead-free" solder, and will extend from the T & P relief valve to the outside of the building without traps. The relief line will not exit to the exterior through a foundation vent or a foundation access door. The end of said relief line will terminate at the exterior of the house with the terminal end of the relief line not closer to the ground than six inches (6"), nor any further than twenty-four inches (24") with the end turned downward.
- F) Plumbing, heating flues, single or double wall vent: the contractor is to install a double walled vent flue to the gas fired water heater per IFGC 2006. The vent for gas-fired appliances and all combustible fuel heating appliances will be a double-wall type employing proper galvanized steel "vent jack" with drip collar (caulk collar with "adhesive" caulk) and appropriate vent cap attached with screws, and a securely fastened metal escutcheon at ceiling. The vent flashing will be properly installed per roof flashing specifications. The vent for gas-fired appliances will have a minimum of one-inch (1") clearance from combustible materials.
- G) Plumbing, combustion air vents: the contractor is to install combustion air vents to bring existing appliance to code.
- H) Pan and drain line: the contractor will install a water heater pan and drain to comply with the City of Dallas plumbing code.

15429- LAUNDRY WALL BOXES & ACCESS COVERS:

- A) Laundry wall boxes: Install a standard 6" x 8" x 3 1/2" plastic wall box with trim ring at a convenient point behind the proposed location for the laundry machine. Place no more than 42" high and it will include both hot and cold 1/2" copper water lines with appropriate valves and outlets and a 2" PVC waste drain with waste vent and trap. Insulate pipes in wall if in exterior wall.
 - 1) The contractor to install complete washer connections to include all new piping and drain lines.
 - 2) The contractor to move existing washer connections to an approved wall box inside the wall.
 - 3) The contractor to install dryer vent. Duct for vent will be 4" round metal-type duct. Dryer vent will terminate on an exterior wall with a PVC dryer vent hood.

B) Access Covers: All access covers used for interior applications will be made in one of two (2) ways as follows:

- 1) Cut access hole in sheet rock to be as large as reasonable so that Plumber and future Owners can work or have ready access to plumbing pipes and valves. Minimum size will be 14 ½" x 20" and will have a ¾" A/C grade plywood panel made to fit into a 1" x 3" wood frame around the cutout opening. Secure with four (4) Phillips head screws at the corners typical. Paint all exposed wood parts as per Section 09-900.
- 2) Purchase and install a pre-made plastic or acrylic access panel frame and door and install per manufacturer installation instructions. Minimum size to be 14 ½" x 18" and have a cam style latching device and piano style hinges.

15430- GENERAL SYSTEM PIPING:

The contractor to provide complete copper or PEX piping to structure. This will include all risers to all plumbing fixtures and the water heater. No PVC or CPVC piping will be allowed for water supply lines. All piping will be installed without critical damage to the structural members. No notching, cutting or drilling of holes over two (2") inches square or in diameter will be done per IRC R502.8. All pipes will be supported with appropriate hangers with spacing and size according to IPC Table 308.5.

When installing the water piping system, Contractor will provide cold and hot water to all fixtures except to water closets which only require cold water. A shut-off valve will be installed on each water riser and be accessible for operations by the Owner. All pipes will be a minimum of ½" or as required by the IRC and IPC Code and be installed so as to be concealed unless otherwise approved or noted by the Housing Inspector. All water pipes located under the structure within a basement or crawl space will be insulated per specifications under Section 15150–15155.

15431- REPAIR WATER LINE LEAKS:

The contractor will repair water line leaks in existing copper lines as determined by the Housing Inspector. Repairs to galvanized water supply systems will be limited to supply risers only.

15432- INSTALL/REPLACE YARD HYDRANT:

The contractor is to install yard hydrant. All exterior hydrants are to be insulated. When an exterior hydrant is extending from the water supply system and wall mounted, it will be frost proof and flange attached. All installations of exterior hydrants will include vacuum breaker.

15442- GAS PIPING & ACCESSORIES:

All gas piping will be done in strict accordance with the IRC and IFGC.

All gas piping will be installed in such a manner as to be concealed from view unless otherwise specified or approved by the Housing Inspector. A green tag will be required for all work done to the gas lines. All work to the gas system will only be done by a licensed plumber in the State of Texas. Any work in and or around a gas main will be coordinated with Local Gas Co.

- A) The contractor to install/replace approved gas stop to existing gas lines. Gas stop to be of a type that can be turned without tools.
- B) The contractor to install/replace gas flex line from the gas stop to the existing or new appliance. Flex line to be only of approved material, size and length.
- C) The contractor to remove existing space heater and cap off line in the wall. When removing inset space heater in bathrooms, Contractor to include construction of enclosed shelf in the open space. The contractor is to perform a gas line test. Pressure test should follow the specifications outlined in the IRC and IFGC.
- E) The contractor to replace all gas piping to structure. Material will conform to requirements in the IFGC and IPC. Contractor to remove all gas piping supplying open flame heat sources and leave lines capped in wall. Contractor to insure all gas appliance. Inspection and green tag required.
- F) The contractor to install new gas service from gas meter to structure. Material and workmanship to meet 2006 IFGC specifications.

15451-LAVATORIES & KITCHEN SINKS:

- A) Bathrooms – Counter-top style, complete fixture:
The contractor is to install counter-top style lavatory in existing or new vanity/counter top. Bowl will be centered, and all sink clips will be used. Bowl will be secure and without obvious damage. Contractor to caulk around the rim of the sink bowl to ensure water will not run under the sink. Faucet and drain lines to wall and ¼ turn ball valves will be included in installation.
- B) Bathrooms – Wall hung style:
The contractor to install a wall hung lavatory. Lavatory will be secured to the wall with an appropriate hanger and stabilized with chrome or stainless-steel legs at the front. If installed as a handicap lavatory, all supply and drain lines will be insulated with a vinyl lined insulation for that purpose. Faucet and drain lines and ¼ turn ball valves will be included in installation.
- C) Kitchens:
The contractor is to install a 33"x22"x61/2" deep double bowled stainless steel sink in the kitchen countertop. Sink will be centered and secured with the appropriate number of sink clips. Contractor to caulk around the rim of the sink to ensure water will not run under the sink. Faucet and drain lines and ¼ turn ball valves will be included in installation.

15452- WATER CLOSETS & SEATS:

A) Water Closets:

The contractor is to install an elongated ADA compliant water closet. Water closet will be secure to the floor and level with at least 24" of clearance in front of the bowl. Contractor is to include replacement of the bend and flange.

B) Seat:

When specified in the SOW, Contractor to replace existing water closet seat. Seat will be of approved material and brand and be firmly secured to the bowl. Contractor is to include removal of the existing seat and assume responsibility for breakage of the water closet.

C) Flush assembly:

The contractor to replace flush assembly with UL approved flush valve and water control valve. Contractor is to assume responsibility for breakage of water closet.

15454- FAUCETS & TUB AND SHOWER DIVERTERS:

Installation of all faucets and shower diverters are to include removal of existing. Faucet and shower sets will be of approved brand and type and installed per the manufacturers recommendations and the International Plumbing Code. Contractor is to assume responsibility of excessive damage during the process of removal.

15455- TUBS & SHOWERS:

A) Tubs:

The contractor is to replace or install new tub. Contractor to include removal of existing tub and a maximum of 8" of wall above the tub for purposes of removal, if possible if tub area is confined, Contractor to notify Housing Inspector of extra costs in repairs after removal. Contractor to include faucet, shower and drain lines in installation.

B) Shower Pans:

The contractor is to install approved model of shower pan. Pan base will be level and shower pan will be secure. Shower pan to have a 2" drain line.

C) Laundry Tubs & Service Sinks:

The contractor is to install a wash sink. Laundry tubs to be a minimum of 22" x 20" x 14" deep, in a solid off-white plastic, with 18" steel legs and a heavy-duty faucet. All tubs are to be secured to the wall and/or floor as recommended by the manufacturer.

15456- OTHER SPECIALTIES:

1) Disposal:

Install a model #70, In-Sink-Erator brand, ½ hp., 120v. motor or equal.

2) Hydrants & Hose Bibb:

Hose bibs other than frost proof are authorized only in installations of ground risers and will be re-enforced with re-bar and insulated to below ground level. All hose bibs are required to have a vacuum breaker installed.

3) Toilets-1.3 GPF or less ADA height HET.

4) Lavatory and Kitchen Faucets-2.0 GPM or less Single Handle or 2 Handle with Lever Handles brass bodied washer less valve. All handles must be metal.

5) Tub/Shower Enclosures

6) Kitchen/Lavatory Sinks

15457- SHUT-OFF & CONTROL VALVES:

A) Exterior:

Valves which control the water supply to the residence will be located in a valve box approximately 18" x 12" x 12" deep (min.). The top of the box will be flush with final grade or at least $\frac{3}{4}$ " below the top of the grass or finish surface. Stop valves in this box will be located at least 4" above the bottom of the box. The installation of the box will be on top of at least 4" of pea-gravel and backfilled securely as not to move when stepped on. Valves and service lines will be a minimum of 12" and no greater than 18" below finished grade.

B) Interior:

Shut-off valves will be located not less than 12" from any lavatory center set or water closet and no more than 18" from any kitchen faucet set. All water supply lines to fixtures and washer dryer connections will have an approved $\frac{1}{4}$ turn ball cut-off valve.

15458- SHOWERS & TUB SURROUNDS:

The contractor to install a high quality, ABS plastic tub surround kit with a minimum 5-foot panels .090." thick with integral soap dish and shelves to be installed as a complete unit with troweled on recommended adhesive behind all surfaces of the tub surround. Color choice of white or bone is to be determined by Owner. Installation is to include $\frac{1}{2}$ " Durock or pre-approved equal or cementitious fiber board behind enclosure from the tub rim to ceiling and all caulking as needed. Surrounds are to be similar to those manufactured by Universal – Rundle Co., in white or bone. When and a window is in place, Contractor is to install a ceramic tub surround. All wood trim is to be removed and replaced with ceramic tile, sill to have a slope to divert water away from the window to prevent water penetration.

15650- HEATING, AIR CONDITIONING & VENTILATION:

15651- GENERAL:

The following are minimum requirements and will govern except that all federal, State and / or International Plumbing and mechanical Codes and Ordinances will govern when their requirements are in excess hereof. A 'green tag' will be required for work completed under this section.

Where installation of heating, ventilation, and air conditioning equipment is required, installation will comply with the requirements of the latest IRC. Installation will also comply with the warranty requirements of the manufacturer. All materials used will be of high quality and manufactured by a nationally recognized manufacturer. The UL labels must be visible. A report form supplied by the Housing Department will be required.

When the structure already has a central heating unit, central air conditioning unit or a combination, a report must be obtained from the mechanical Contractor concerning the condition of the heat cell and burners and the overall operation of the system. A carbon monoxide tester must be used to detect leakage. The report form will be supplied by the Housing Department.

When HVAC equipment is installed in an attic, a "drop down" style stair unit with 1"x6" framing must be installed.

Each room designed to be living space will have a minimum of one duct and vent except where the size of the room would require more than one. Ducting requirements will be calculated using industry standard duct calculations based on the heat and cooling load required by each room. The exception to this would be in bathrooms where there is electric heat and an electric ventilation fan. The return air grill and thermostat will be placed within the structure in a manner that will allow good air circulation and high performance of the heating and cooling cycle. Contractor will insure system balance by the practice of undercutting doors or installing door grills.

The air conditioning will perform to maintain a 20-degree temperature drop, measured at the vent closest to the evaporator, from the outside temperature or a maximum of 85 degrees, whichever is warmer. There should not be an excess of 5 degrees temperature variation measured at the vent furthest from the evaporator. Heating equipment should be able to maintain a minimum of 68 degrees in each room intended as living space.

All installations of HVAC equipment must meet the requirements in the International Mechanical Code chapters for natural and mechanical ventilation requiring 2 complete air changes per hour with one fifth of the air being outside air. In unusually tight houses, a make-up air duct is required.

When installing HVAC equipment, Contractor to include gas riser and electrical circuitry, work area and walkway (minimum 5/8" at 24" o.c. floor/ ceiling joints), and for attic installed unit's drop-down attic stairs with 1"x6" framing.

All cutting of floors, walls, ceilings and partitions and subsequent repair work will be performed by the contractor. All debris and abandoned HVAC equipment will be removed and disposed of by the contractor.

15652- INSPECTION:

The contractor is to clean and inspect furnace or central furnace for safety and function. Housing Inspector will provide inspection form to be filled out by licensed heating and air conditioning Contractor.

15660- CONDENSING UNIT:

- Unit will have a 16 SEER rating or better, scroll type compressor, and the coil will be of copper and aluminum fin.
- There will be an electrical service disconnect within arm's reach of the unit and the wiring must be placed in a water tight flexible conduit with water tight connections.
- The condensing unit will be free of obstructing vegetation and walls with a minimum of 10" and a maximum of 24" clearance from the nearest wall, 18" on the side of the service panel, and 10" clearance on the remaining sides. If the unit is installed under an awning, there must be 36" clearance from the top to allow for heat distribution and a method of deflection from under the awning.
- The condensing unit must be placed on an approved poured concrete, base and must be level.
- The suction/vapor line will be insulated with 3/4" Armflex or equivalent pipe insulation and the 24-volt thermostat line will be attached to the vapor line by means of zip ties. The 24-volt wire must enter the condensing unit through a rubber grommet. Low voltage wire must be installed in a conduit.
- There will be a liquid line dryer installed either within the condensing unit or externally on the liquid line.
- The cooling capacity of the condensing unit will be adequate to efficiently cool the structure. Capacity will be measured at 12,000 Btu per 400 square feet of living space. The figure will be adjusted to accommodate vaulted ceilings, poor insulation or inadequate windows.
- A cage secured to the concrete pad with a lock and key will surround the condensing unit.

15661- REFRIGERANT LINES:

- Refrigerant tubing will be refrigerant grade, dehydrated and sealed copper tubing of a length and diameter recommended by the manufacturer.
- Refrigerant lines will be brazed with a silver alloy material at all connections including those to the condensing unit and the evaporator. Flared connections will not be authorized due to refrigerant loss from vibration.
- Suction line will be insulated fully from the condensing unit to the evaporator using un-split lengths of 3/8 pipe insulation material. All joints in the insulation will be taped fully.

- Any holes cut in the soffit or wall of the structure for passage of wires or tubing must be sealed with a silicon caulk.
- Wherever possible, the refrigerant lines and thermostat wiring will be run within the wall or through the crawl space. As a last resort, the lines and thermostat wiring must be encased in a sheet metal chase from where the lines meet the wall horizontally up to where the lines enter the soffit.

15662- EVAPORATOR/COOLING COIL:

- Evaporator will be of such size and capacity to accommodate the needs of the condensing unit and should be of a make that fits proportionately to the furnace/blower unit.
- Contractor is to assure that the appropriate sized orifice or expansion device is in place.
- Evaporator should be affixed to the blower unit with hex-head sheet metal screws and sealed with UL-181 metal duct tape and approved mastic to include the openings for the refrigerant lines and the drain line.
- A manufactured insulated sheet metal transition is to be used when the evaporator is not proportionate to the blower unit.
- Condensation waste lines will be of ¾" PVC and must be in accordance with applicable codes, i.e. draining into a wet drain to prevent gasses from entering into the climate control system. Examples of an acceptable drain would be the washer drain or the tub overflow.
- When the unit is installed vertically in a closet with no possible way to send condensate waste to an approved drain, the Plumbing Inspector can authorize draining to the outside. Plumbing Inspector will specify where the drain will be placed.

Note: In attic installations, a secondary drain pan is required to accommodate the full size of the blower unit and evaporator unit. The secondary drain line is to be in accordance with applicable codes. The secondary drain must not flow onto or near the condensing unit or over any door. The Housing Inspector and contractor will specify where to place the secondary drain i.e.; by the living room or kitchen window, or over the tub.

15760- FLOOR FURNACE UNITS:

The contractor is to install 35,000 or 50,000 BTU or larger gas floor furnace. Work will include; removal of the old unit, all necessary cutting and floor framing, installation of the size of furnace as called for, installation of new thermostat heating controls, installation of a gas flex line, gas stopcocks and connections and black iron gas pipe (not to exceed approximately 5 linear feet) if the gas pipe is not close enough to the furnace, and a double-wall vent pipe which will vertically rise through the roof within the confines of an interior or exterior wall. If a heavy-gauge sheet metal floor-pan is needed in the crawl space to prevent contact of the floor furnace with the soil or from flooding or water penetration by groundwater, it will be required and will be waterproof.

Contractor to provide a factory warranty covering the floor furnace unit to the owner and a copy of the warranty to the Housing Inspector. Installation will require a green tag.

15761- GAS WALL FURNACE, 35-50K BTU:

When specified in the SOW, Contractor to install 35,000 or 50,000 BTU or larger gas wall furnace. Work will include; removal of the old unit, installation of a WALL HEATER, manufactured by "Cozy" Furnace Company or equal, all necessary gas pipe, flex lines, gas stopcocks and connections to meet plumbing code, double-wall vent pipe with roof flashing, thermostat controls, all necessary wall cutting, trimming and re-framing with required clearances of flues, hot surfaces from walls and gyp. Contractor to include a blower kit and circuit, if called for, required pressure tests and green tag from the city Plumbing Inspector. If called for on the SOW, work will include a proper connection to an existing circuit in such a manner as to prevent overloads. The heat exchanger of said wall furnace will carry a full ten (10) year warranty and will be die-formed from heavy cold-rolled steel. The blower kit will be thermostatically operated. Contractor to provide a factory warranty covering the wall furnace unit to the owner and a copy of the warranty to the Inspector.

15763- FURNACE/BLOWER UNIT/AIR HANDLER:

- Central Heating will be either natural gas type or electric resistive heat.
- Gas or electric heating units will be sized to accommodate the size of the structure at a formula of 5 Btu per cubic foot at a minimum and will meet manufacturer's recommendations when installing with air conditioning equipment.
- All central heating appliances will be installed to accommodate central air conditioning equipment even if air conditioning will not be installed at that time.
- Venting and combustion air installation on gas fired units will meet the requirements of chapters 17 and 18 of the IRC.
- Where possible, **attic installation is required** due to the condensate waste requirements and noise prevention unless requested and authorized by the Housing Inspector.
- Installation of forced warm air furnace will comply with the IRC, the City Mechanical Code and the manufacturer specifications regarding access and clearances whether it is installed in the attic or in a closet.
- Warm air furnaces installed in attics must be suspended by metal strapping when it is structurally possible, and unit must be level.
- There will be a work space platform with access to the removable panels to the unit and a walk way to the unit made of 5/8" or better thickness plywood.
- In attic installations, the return air grill must accommodate an easily accessible filter. The Home Owner should not have to gain access to the attic in order to change the air filter.
- In all closet installations, it is required that the door to the mechanical closet be sealed with weather strip to prevent the return air from pulling from the attic or crawl space.
- Gas fired furnaces must have a readily accessible gas cut-off valve near the unit and all gas piping must meet Code requirements.

15770- PACKAGED HEAT & COOL UNITS:

Package heat/cool and window units are not authorized for installation unless specifically requested by the Housing Inspector and approved by the department. Under these circumstances, all installations will be of quality workmanship and comply with all standards set forth in the City of Dallas Mechanical/Plumbing/Building Codes.

15800- AIR DISTRIBUTION:

The following are minimum requirements and will govern except that all federal, State and / or City of Dallas Codes and Ordinances will govern when their requirements are in excess hereof. A 'green tag' will be required for work under this section.

15820- FANS & BLOWERS:

If required by Housing Inspector, install a properly sized blower motor in the existing unit and or replace such unit with one comparable in size and capacity.

15829- EXHAUST FANS:

Exhaust fans used in both bathrooms and the kitchen will be ducted with a minimum of a 4" round duct and to outside of the structure (Ref. 2003 IRC Sect. M1502) with all necessary flashing and louvers / covers with damper to limit air infiltration. Exhaust fans in all bathrooms will include an air delivery rate of not less than 80 CFM. Those in kitchens will not be less than 180 CFM and include charcoal grease filters, be of a two-speed fan type with a light. All grills are to be chrome or brushed aluminum. Installation will include all wiring, wall control switch and ducting. Fans will be similar to those manufactured by Nutone Co. or better.

15840- DUCTWORK:

- The return and supply plenums must be of a manufactured type, insulated with at least 1/2" insulation inside and sized according to the manufacturer's specifications and the load requirements of the structure.
- Straight connections for flex ducting may be done using 4" duct collars. Branching connections must be made using insulated duct-board diffuser boxes and 2" metal collars.
- Duct boots must be of the flanged type and registers must be attached to the flange with sheet metal screws.
- Duct material will be flexible UL approved ducting and duct boots that have an R value of 8.0 or better. If the structure has existing duct work, it must meet current code requirements and current manufacturer's specifications as well as insulation requirements of the Housing Department.
- Duct work must meet the requirements of the IRC. Ducting will be installed at a downward slope from the evaporator to the duct boots with no hills, valleys or sags whenever possible to avoid friction.

- Registers must be of the three-direction type with a closable damper. Registers must be placed in the rooms at a point furthest away from the return air passage to maximize circulation.
- All connections of flexible ducting to metal collars or duct boots must be made with appropriate sized zip ties and sealed with UL approved fabric duct tape. Collar connections to the plenums must be secured with sheet metal screws and UL 181 metal duct tape. Contractor is to ensure that there are no air leaks in ducting, connections and plenums.
- All trunk line and take-off ducting are to be sized according to the industry standard based on the heating and cooling load required by each room IRC. Ductwork calculation work sheet is available at the Housing Department.

15872- CEILING & WALL GRILLS / DIFFUSERS:

Size all grilles and diffusers to proper dimensions and locate them as to achieve an optimum air distribution and balance. Titus, Kruger, Tuttle & Bailey are acceptable manufacturers, or an equivalent will be accepted as long as they meet the intent of these specifications.

15881- DISPOSABLE FILTERS:

Disposable filters are required in all new units as well as replacement of such in all existing units. Filters will be appropriate in size and thickness as recommended by the furnace manufacturer for the specific unit installed on site.

Contractor is to instruct the Owner on methods of installation as well as the required filter changes as recommended by the manufacturer.

15907- INSPECTIONS, TESTING & BALANCING:

Once the complete system is installed, the contractor, will INSURE AND GUARANTEE balance of the entire air distribution system as to provide adequate air flow to all rooms, insuring that all ducts are clear and flow freely, thermostats work properly and test the entire HVAC system to ensure that all components are in proper working order and ready for Owner Occupancy. Contractor is to complete form provided by the Housing Inspector regarding system operation.

15931- THERMOSTATS:

Thermostats will be of highquality type with mechanical settings as manufactured by Carrier, Honeywell or White-Rodgers Co. and installed in a central location as to provide the best possible coverage area.

15990- GUARANTEES:

All system components will be guaranteed free from defect through manufacturer or workmanship by the Installer for a period of no less than One (1) year from the date of

acceptance by the Housing Inspector. Equipment will carry a manufacturer's warranty of no less than three (3) years.

15991- ELECTRICAL SERVICE TO EQUIPMENT:

- All wiring must be in accordance with the National Electrical Code 2005.
- Electrical installation will consist of power supply wiring to the condensing unit and indoor unit as well as low voltage control wiring between the thermostat, indoor unit, and the condensing unit.
- Electrical circuitry and over-current protection must be in accordance with the rating on the data plate located on the condensing unit and indoor unit.
- There will be an electrical disconnect located within arm's reach of the condensing unit, a service switch located within arm's reach of the indoor unit and a 110v receptacle within 25 feet of the installation of each unit.
- Low voltage wiring must remain sheathed until passage through the rubber grommet into the unit.
- Electrical service to HVAC equipment will include an attic space light with a switch at access opening.
- All systems must have a mercury type or digital thermostat control.

Fig. 1-1

Refrigerant Line length in ft.						
Con. Unit (Tons)	0-24		25-49		50-74	
	Line Diameter (in OD)					
	Su c	Liq	Suc	Li q	Suc	Liq
1.5	5/8	1/4	3/4	3/8	3/4	3/8
2	3/4	3/8	3/4	3/8	3/4	3/8
2.5	3/4	3/8	3/4*	3/8	7/8	1/2
3	3/4	3/8	3/4**	3/8	7/8	1/2
3.5	3/4	3/8	7/8**	3/8	1-	1/2
4	7/8	3/8	1-1/8	3/8	1/8	1/2
5	7/8	3/8	1-1/8	3/8	1- 1/8 1- 1/8	1/2

* 7/8 required for full ratings

**1 - 1/8 required for full ratings

SECTION 16 – ELECTRICAL:

16010- GENERAL PROVISIONS:

- A. Equipment, fixtures, material and installation shall conform to the requirements of the local Building Department, the serving utility companies, the National Electrical Code,

National Electrical Safety Code, Life Safety Code, Occupational Safety and Health Act, and applicable national, state and local codes, ordinances and regulations.

- B. All equipment shall be equal to or exceed the minimum requirements of NEMA, IEEE, and UL.
 - C. Should any change in drawings and or specifications be required to comply with governmental regulations, the homeowner shall notify the Housing Inspector prior to execution of the Work.
 - D. The provisions of Standards, Codes, Laws, Ordinances, etc., shall be considered minimum requirements. In case of conflict between their published requirements, the Housing Inspections Manager shall determine which is to be followed and his decision shall be binding. Specific requirements of this specification or the drawings, which exceed the published requirements, shall take precedence over them.
 - E. All local fees, permits, and services of inspection authorities shall be obtained and paid for by the homeowner. the homeowner shall cooperate fully with local companies with respect to their services. Contractor shall include in his bid any costs to be incurred relative to power service (primary and/or secondary) and telephone service if applicable.
- SCOPE OF WORK

- F. Install and coordinate the electrical work in cooperation with other trades installing interrelated work. Before installation, make proper provisions to avoid interferences in a manner approved by the Housing Inspector. All changes required in the work of the homeowner, caused by his neglect to do so, shall be made by him at his own expense.
- G. It is the intent of the drawings and/or specifications to provide a complete workable system ready for the Owner's operation. Any item not specifically shown on the drawings or called for in the specifications, but normally required to conform with the intent, are to be considered a part of the Contract.
- H. All materials furnished by the homeowner shall be new and unused (temporary lighting and power products are excluded) and free from defects. All materials used shall bear the Underwriter's Laboratory, Inc. label provided a standard has been established for the material in question.

16015- GENERAL ELECTRICAL:

The installation will be so that its component parts function together as a workable system. It will be complete with all accessories necessary for its operation and will be left with all equipment in proper adjustment and in operative condition.

Electrical Contractor will provide all items, articles, materials, operations or methods listed, mentioned or scheduled on the SOW, in the specifications and per local electrical codes, including all labor, materials and incidentals necessary and required for their completion and proper operation.

In the event of any discrepancies between the SOW and or the requirements of the project, immediately notify the Housing Inspector. Do not proceed in areas of discrepancies until such matters have been addressed or resolved.

16020- WORK NOT INCLUDED:

Service work from the Power Pole or Supply to the Structure will be by the Utility Co, Contractor to schedule all work to be provided by the Utility Co. so it coincides with completion of his/her work as required by the contract.

16021- WORK INCLUDED:

Work by the Electrical Contractor will include, but is not limited to (*dependent of each project scope*) all the following items:

- A) Complete lighting and power wiring system, including lights, lamps and devices as needed to complete the system installation to local code.
- B) Where required, provide all telephone, cable and low voltage wiring as needed.
- C) Complete wiring to all mechanical and plumbing motors, starters and switches.
- D) Smoke detectors and push button doorbell system for the front door.
- E) Coordination of Utility Company work and activities.
- F) Deactivation and removal of any abandoned or defective wiring and fixtures.
Note: All knob and tube wiring found in the structure must be deactivated and removed.
- G) Electrical panels and power distribution components including system grounding, electrical meter and secondary wiring from meter to panels. Contractor will comply with Housing Specification 16040.
- H) Electrical installation will consist of power supply wiring to the condensing unit and indoor unit. Electrical circuitry and over-current protection must be in accordance with the rating on the data plate located on the condensing unit and indoor unit. There will be an electrical disconnect located within arm's reach of the condensing unit, a service switch located within arm's reach of the indoor unit and a 110v receptacle within 25 feet of the installation of each unit.

16023- PERFORMANCE OF WORK:

All new wiring will be concealed to the maximum extent possible using only non-metallic sheathed cable with copper conductors. All cutting of walls, floors, ceilings and partitions for the passage of electrical wiring and boxes and the removal of all debris caused by such activities will be the responsibility of the Electrical Contractor. The

Electrical Contractor is to cut all holes into the walls, ceilings and floors in an orderly fashion so as to facilitate the patching and sealing of such holes without complications that will not exceed De minimis levels (2 square feet per room or space). The Electrical Contractor will insert a backer strip behind the wall and secure it with drywall screws and plug the holes with existing and or new drywall and secured with appropriate screws and seal the repair with caulk or install a similar material, or blank electrical cover plates if the homeowner chooses. the homeowner will be responsible to achieve clearance if the cut holes exceed De minimis levels.

16025- CODES, PERMITS & CONFORMANCE:

Codes/Permits

The contractor is expected to secure all necessary permits and ensure that all licenses and required insurances are current and valid prior to the start of work. Permits and Yard Job Signs will be visible. The General Contractor will pay for all required building permits, fees, and inspections necessary for proper execution and completion of all work under this contract. The contractor will not perform work to be contrary to local laws, ordinances, codes or manufacture's installation guidelines. Contractors will be fully responsible for all contracted work to be completed properly and will bear costs associated with correcting work completed that does not comply with the project's specifications or the current local codes.

The contractor is responsible to ensure that all workers conducting any type of electrical work at the jobsite are licensed and or are supervised by a licensed Electrician and must have the license available for viewing at the request of the Housing Inspector.

All rules of the Utility Co. will be complied with. Contractor to contact the Utility Co., and the Building Electrical Department (to verify current local code requirements) prior to submitting bid for any work or costs associated with the installation of new utilities or the condition of the existing service, and the contractor will also verify the condition of the site and the work conditions that all work can be completed as bid for the work required under this contract. After entering into the contract, the contractor will be held responsible to complete all work necessary to meet Local Code requirements without additional cost to the Owner or the City of Dallas.

The Electrical Contractor will apply and pay for all costs associated with the required permits for the electrical work to be completed on this project.

16030- TESTS:

City Electrical Inspectors and the Housing Inspector will be satisfied as to the condition of the entire system and upon final approval the City Electrical Inspector will issue a 'Green Tag' and the Housing Inspector will sign off on final payment request if and when all "Required Documents" have been submitted.

16040- PANEL IDENTIFICATION & DIRECTORIES:

Electrical Contractor will identify and label all components of the electrical system. Include a clearly permanent pen written on the metal panel / circuit index at all power or lighting panels. If requested by the Housing Inspector or the City of Dallas Electrical Inspector, the contractor will provide an 'AS-BUILT' sketch or drawing indicating location of all plugs, switches, equipment and branch circuits as installed. Drawing will be completed on an 8 ½" x 14" sheet and include all pertinent information as requested by the City of Dallas Electrical and Housing Inspectors.

16100- BASIC MATERIALS & METHODS:

16101- GENERAL:

All materials used will be new and bear the Underwriter's Label.

Approved manufacturers of electrical components are Appleton; Steel City; Crouse-Hinds; General Electric; Square D; Leviton, Bussman Manufacturing Co.; Rome Wire; Simplex; National Electrical Products; Hubbell; P & S; Simmons Co. or Blackhawk or Fire-X Co. Other manufacturers may be approved, but at the discretion of the HRP or City Electrical Inspectors prior to installation of such materials.

16111- CONDUITS:

A) INTERIOR (EXPOSED OR SURFACE MOUNTED):

Contractor to use either galvanized metal conduit with set screw or pressure cast compression couplings as required or a flex metal conduit where may be applicable. In locations where the conduit must be surface mounted in a finished living area, then Contractor will use a 'wire mold' type conduit in a color closely matching the wall. Minimum conduit size will be ½" and will be run concealed where ever possible.

B) EXTERIOR:

All conduits used in an exterior, in crawl space, underground or under slab application will be of rigid heavy wall PVC type with a ground conductor, unless otherwise noted.

16120- WIRES & CABLES:

All building wire will consist of copper conductors insulated with UL approved 600-volt insulation and all insulation will be color-coded as required by code. All wire will be of XHHW for feeders and THHN or THWN for branch wiring and all conductors of size #12 AWG and smaller will be solid were applicable by local codes, and all conductors of size #10 AWG and larger will meet local codes requirements.

Minimum size of conductors for lighting and general power system will be to current to local code requirements.

NOTE: Provide a ground / neutral to each device location as required by code.

16130- CABINETS & PANELBOARDS:

Cabinets and panels will be code gauge steel flush or surface mounted with concealed hinges and flush locks all keyed the same on any one given project site. All will be gray baked enamel finish and bear the UL label. Panel-boards will have set screw connectors throughout and have a solid neutral bar with service main as required by local code with copper bussing.

16140- SWITCHES, RECEPTACLES & BOXES:

A) BOXES & PLATES:

All receptacles and switches will consist of approved steel or plastic outlet boxes of patterns adapted to the special requirements of each outlet, securely fastened in place in an approved manner. Outlet boxes for receptacles and switches will be rectangular in shape and all lighting outlets in ceilings will be 4" octagonal in shape. Provide shallow boxes if required per job conditions as needed. Back to back or through-wall boxes are not permitted for use.

All cover plates will be of either .04" thick beveled satin finish stainless steel plate or a plastic cover plate in a color to match that of the device.

B) SWITCHES:

All switches will be rated at 15 amps. 120/240 volts, in single or two-pole or three-way operations as may be needed. Color of device will be determined by the homeowner to match existing in use or as may be specified by the Housing Inspector.

C) RECEPTACLES:

All duplex or single receptacles will be rated tamper resistant at 15 amps or 20 amps were applicable and will meet the local code requirements. 125 volts, three-wire as required. Either a standard, GFCI (ground fault circuit interrupter type), or a weather resistant rated receptacle will be required. Housing Inspector will review with the contractor the requirement and location of each.

All outlets, switches and covers must match in color and style.

16170- TYPICAL MOUNTING HEIGHTS & LOCATIONS:

Except as otherwise noted or requested, all outlets, switches and devices will be mounted as herein specified. Only exceptions are if box to be installed is blocked by an immovable object or materials, is to be located in masonry where dimension put the box in a joint or web, or if the box will be too close to an existing condition that the Owner wishes it moved. In all cases, the proposed box location will be moved either to the left or right of the proposed locations. All heights are to be maintained to the best of the contractor's ability.

Receptacles:

Wall: 18" AFF to Center
Counters: 46" AFF to Center

Switches: 48" AFF to Center

Telephone / Cable:

Wall: 48" AFF to Center
Desk: 18" AFF to Center
Cable: 18" AFF to Center

Panels & Meter: 72" AFF to Top

Service Entrance: 12' (min.) AFG to Center of Weather head

All plugs & switches will be located as required by code; in some cases, additional locations may be as required by the Owner's existing needs or as otherwise noted by the Housing Inspector.

16180- OVERCURRENT PROTECTION (GFCI) DEVICES:

GFCI protected devices and circuits will be required per Code in locations where wet applications exist such as bathrooms, kitchens, utility rooms, garage, and exterior locations. All devices will bear the Underwriters' seal and be installed per all state and local code requirements.

16182- CIRCUIT BREAKERS:

Breakers will be molded plastic cast type AC rated, quick-make, quick-break with a trip free operating handle, position indicator and thermal magnetic trip device. Two-pole breakers will have a common operating handle and trip mechanism.

Trip ratings will be as required by Code with a minimum interrupt capacity of 10,000 amperes at 120 volts. All breakers will be snap in type and all from the same manufacturer within the same panel.

Arc-Fault breakers will be installed, as per local code requirements.

16185- GROUNDING:

Contractor to provide, install and connect a complete and adequate system of grounding for all equipment and structure. A good mechanical and electrical connection will be made with approved grounding connectors in accordance with current local code requirement.

All receptacles and switches are to be of a grounding type with non-current carrying metallic parts connected to the grounding contact.

All electrical devices, boxes, cabinets and equipment will be grounded to the electrical grounding system as required by local codes.

16200- POWER SUPPLY & GENERATION:

16201- GENERAL:

16205- ELECTRIC COMPANY SERVICE / SUPPLY:

16210- GENERATORS:

No generator will be connected to structure wiring at any time for any reason without approved isolation devices in place.

16400- SERVICE DROPS & DISTRIBUTION:

16401- GENERAL:

The installation will be so that its component parts function together as a workable system. It will be complete with all accessories necessary for its operation and will be left with all equipment in proper adjustment and in operative condition.

Electrical Contractor will provide all items, articles, materials, operations or methods listed, mentioned or scheduled on the SOW, in the specifications and per local electrical codes, including all labor, materials and incidentals necessary and required for their completion and proper operation.

16410- ELECTRIC SERVICE REQUIREMENTS:

In cases that the entire electrical system is being replaced from the meter box into the structure, no service will be installed which is less than 150 amps, 220 v., single phase. Where indicated on the SOW, install a 200-amp, single phase service. Change service riser, meter box and meter accordingly and verify that existing service wires will deliver the capacity required for the new service. If capacity is insufficient, coordinate change of such wires with the local Utility Co.

16411- UNDERGROUND ELECTRIC SERVICE:

In cases where underground service is required, Contractor is to provide two (2) 3" schedule 40 PVC conduits from the power pole location to the meter location on the structure. Run a minimum of 2'-6" below grade, provide long radius sweeps at both ends and a conduit riser at the pole to 48" AFG. Verify exact pole location with the local Utility Co.

16412- OVERHEAD ELECTRIC SERVICE:

Where an overhead service exists or is required, Utility Co. is to provide the required wiring from the power pole to the weather-head at the structure provided and installed to code by the Electrical Contractor.

Minimum entry height at the service entry point will be no less than 12 feet above finish grade.

16421- EMERGENCY & TEMPORARY SERVICE:

Electrical Contractor is to furnish all needed temporary electrical power and lighting for the project while service is interrupted for his work. Once permanent power has been restored, remove all temporary power and light measures as needed.

16500- LIGHTING:

16501- GENERAL:

Electrical Contractor is to furnish and install all fixtures as listed below where called for in the SOW. These fixtures will be completed in every detail, including plaster frames and all hardware as may be needed, all required lamps in proper wattage and correct bulb type, properly wired and connected with circuits supplying same. All fixtures installed will bear the Underwriter's and Electric Testing Laboratory seal of approval. All fixtures provided by the contractor will be new and undamaged and include installation of such to code and manufacturers recommendations.

If a fixture listed herein is not available or has been discontinued from its manufacture, a substitute may be installed provided that it is of comparable design, style and cost and is not objectionable to the Housing Inspector or the Owner.

All existing fixtures in the structure that are to remain will be cleaned and re-lamped by the Electrical Contractor as he makes inspection of such fixture to ensure that the fixture is sound and safe to remain in place.

16510- INTERIOR LIGHT FIXTURES:

A) KITCHEN & DINING ROOMS:

In all kitchen and dining room locations, install a (2) LED bulb (*75 watt*) enclosed glass dome fixture with brass trim in an appropriate ceiling location with a wall switch.

B) BEDROOMS:

In all bedroom locations, install a (2) LED bulb (*60 watt*) *open* sided glass fixture in an appropriate ceiling location with a wall switch.

C) BATHROOMS:

1) In all bathrooms, install a ceiling or wall mounted light fixture in the close vicinity of the vanity & lavatory with a wall switch and LED bulbs.

- 2) Over wet areas such as a shower or tub, if required, install a 6" recessed light fixture (R-30, 100-watt x 1) with a water-resistant glass cover & trim.

D) LIVING AREAS:

Where called for in living areas, install a two (2) bulb with square glass light diffuser ceiling mounted light fixture in an appropriate location as centered as possible unless otherwise instructed by the Housing Inspector.

E) OTHER FIXTURES:

- 1) Florescent fixtures where called for will be surface mounted type made of 20-gauge CRS in white enamel coatings with a clear acrylic plastic lens. Fixture to include (2) bulbs, (34-watt, CW x 2) with type 'P' ballasts.
- 2) Where exhaust fans are required, they are to be provided and ducted by the mechanical Contractor and wired for power with a switch by the electrical Contractor.

16530- EXTERIOR LIGHT FIXTURES:

PORCH LIGHTS

1. Wall:
In cases where a wall mounted fixture is required, install a water resistant exterior grade single bulb jar type exterior light fixture.
2. Ceiling / Soffit:
In cases where a ceiling mounted fixture is required, install a water resistant exterior grade fixture specified by the Housing Inspector.

B) OTHER:

- 1) Security light:
Where required per the SOW, install a two (2) bulb LED flood light fixture either on wall or under the soffit as needed to provide adequate outside lighting for exterior entry/exit doors
- 2) Pole / Accessory structure:
Where specified by the Housing Inspector, Contractor to install sodium vapor type light fixture on a pole or on the exterior of the accessory structure. Contractor to include pole as specified.

16540- CEILING FANS:

Install a 52", 5-blade, ceiling mounted electric fan unit with a minimum of a 3-bulb light kit. Installation is to include 2 wall on / off switch control for the ceiling fan and the light kit for individual operation. Ceiling fan will be better than builder grade model with a minimum 15-year warranty.

16550- LAMPS & BULBS:

Lamps and bulbs will be of appropriate base size and wattage required by the fixture and will not exceed the maximum levels recommended by the fixture manufacture. All lamps and bulbs will be as manufactured by General Electric, Sylvania or Phillips Co. All lamps will be white bowl or inside frosted unless otherwise noted by Housing Inspector.

16600- SCOPE OF WORK REQUIRED:

The contractor to provide the below mentioned electrical repairs or installations. All work will be completed to the specifications herein. Contractor to insure the work called for is safe and functioning correctly. Contractor to verify correct amperage load on all called for repairs and installations. All GFCI will trip independently of each other and shall not trip light fixtures

- A) Contractor to re-wire entire structure in accordance with section 16 & sub parts if applicable. Contractor to complete work to local code requirements. All work will meet the requirements of these specifications. When complete re-wire is specified, work is to include re-wiring all existing devices and adding additional devices to bring service to current code requirements. Work also includes replacement of all exterior and interior light fixtures unless specified otherwise on the SOW. Contractor to replace fixtures with like quality and function as existing if possible. Contractor to include all work listed in specification 16-021 when a complete re-wire is called for. *All knob & tube & wiring must to be deactivated and removed.*
- B) Contractor to install 30 amps 220v circuit where directed by the Housing Inspector. Contractor to include receptacle or disconnect. Inspector to specify if circuit is to be a dedicated circuit.
- C) Contractor to install 20 amps 110v circuit where directed by the Housing Inspector. Inspector to specify if circuit is to be a dedicated circuit (Ref. spec. #16140 C).
- D) Contractor to install a 20-amp GFCI circuit where directed by the Housing Inspector. Contractor to include receptacle (Ref. spec. #16140 C).
- E) Contractor to install GFCI receptacle in specified location. Contractor is to include complete wiring in the installation (Ref. spec. #16140 C).
- F) Contractor to install receptacle and cover plate in specified location. Contractor is to include wiring in installation (Ref. spec. #16140 C).
- G) Contractor to install switch and cover plate in specified location. Contractor is to include wiring in installation.
- H) Contractor to install or replace J-boxes in attic. Contractor to include covers and insure the box is secured firmly in place. Contractor to insure all wire clamps are in place. Housing Inspector will specify location.

- I) Contractor to re-wire defective locations in attic or rooms. Includes replacing box or electrical box. Housing Inspector to specify locations.
- J) Contractor to install 200-amp service panel and meter base. Contractor to insure panel is secure and service mast and head are correctly flashed and sealed if extending through the roof. Contractor to insure the mast is correctly braced to handle the weight of the service wire. Housing Inspector will specify location of installation. Service mast is to be plumb above finish roof.
- K) Contractor to install door-bell system to the specifications in this manual.
- L) Contractor to install service to accessory building. Service wire to be buried a minimum of 18" deep in 2" conduit. Contractor to include service panel rated at 60 amps if specified by the Housing Inspector on the SOW (Ref. spec # 16180).
- M) Contractor to install attic circuitry with service lighting and receptacle at the attic entry point if attic stairs are installed.
- N) Contractor to install complete wiring and circuitry for HVAC installation as per specification (Ref. spec. #. 16021 J).
- O) Contractor to install a dedicated circuit electric heater in bathroom. Housing Inspector will specify location. (Wall or ceiling.)
- P) Contractor to install appropriate interior light fixture as specified by the Housing Inspector. Contractor to include necessary wiring Ref. spec # 16510.
- Q) Contractor to replace existing light fixture in existing electrical box. Contractor to verify that the wiring is correct, and the box is secure and of approved material.
- R) Contractor is to replace electrical outlet in existing box. Housing Inspector will specify if GFCI is required. Contractor is to verify that the wiring is correct, and the box is secure and of an approved material and in an appropriate location. Contractor to include cover plate. Ref. #16180
- S) Contractor to replace exterior light fixture in specified location in existing box. Contractor to verify that the wiring is correct, and the box is secure and of an approved material.
- T) Contractor to install exterior light fixture as specified by the Housing Inspector. Contractor to include necessary wiring.
- U) Contractor to install new ceiling fan in existing location. Contractor to verify that the wiring is correct, and the box is an approved box for ceiling fan installation.
- V) Contractor to replace specified cover plates for outlets and switches.

W) Contractor to install vented exhaust fan in the bathroom. Housing inspector will specify location. Exhaust fan is to operate with a separate switch from the light switch. Exhaust fans used in bathrooms will be ducted with a minimum of a 4" round metal duct and vented to the outside of the structure (Ref. 2003 IRC Sect. M1502) with all necessary flashing and louvers / covers with damper to limit air infiltration. Exhaust fans in all bathrooms will include an air delivery rate of not less than 80 CFM.

16725- FIRE & SMOKE DETECTORS:

All fire and smoke detectors will be as manufactured by FireX Co or equal and be permanently wired to the 120volt electrical system and inter-connected with a battery back-up. All detectors will be of the ionization type, dual chamber and have provisions for manual testing and have an LED power indicator. All detectors will be in conformance with all applicable Federal, State or local codes, as well as bear the Underwriter's Laboratory seal of approval. Locate all detectors as required by the City of Dallas Building Code.

16740- TELEPHONE:

All work done to the phone lines on the inside of the structure will be done at the responsibility of the homeowner, whereas the work from the service entry point to the pole will be the responsibility of the Telephone Service Provider.

If required on the SOW, all wire to be installed will be a two (2) wire insulated conductor copper wire approved for use with all standard residential phone systems and equipment. Provide a phone outlet in the Kitchen, Living Room and/or Master Bedroom or as may otherwise be directed by the Housing Inspector.

SECTION 17 – HANDICAP / ADA REQUIREMENTS:

17100- HANDICAP / ADA REQUIREMENTS:

17110- RAMPS & WALKS:

All ramps and walks leading up to a ramp will be a minimum of 42" wide with the walks being made of concrete with a non-slip broomed finish with no more than a 1:12 slope in any direction or treated wood. Ramps to not exceed 30'-0" without a landing break. A handrail will be installed along one side of the walk. Ramps are to be constructed one of the two ways indicated below.

A) Concrete Ramps:

Ramps will be constructed of 4" minimum thickness concrete with concrete or masonry sides on a footing sufficient in size to maintain the weight and loads imposed on it. Ramp will have a slope that is not greater than 1" in 12" and will have an approved handrail on both sides from 12" before slope begins to 12" beyond end of slope at the landing. Finish on ramp is to be a non-slip broomed finish run perpendicular to the flow of pedestrian traffic.

B) Wood Ramps:

Ramps will be constructed of wolmanized exterior grade dimensional lumber with 4" x 4" posts, 2" x 6" joists and 2" nominal thickness flooring run in opposite direction of the flow of pedestrian traffic. Ramps will be not have more than a 1" in 12" slope with an approved handrail on both sides to local code requirements.

Ramp will have a non-slip sand surface painted on the decking and deck enamel coating on the structure and handrails typical. Color to be approved by the Owner.

17120- LANDINGS:

All landings at the top or bottom of a handicap ramp will be 5' – 0" x 5' – 0" in size and be unobstructed to allow for free movement of a wheel chair unit.

17125- HANDRAILS:

All handrails provided and installed will not be less than 1 ½" in diameter so as to provide satisfactory grip and have a minimum of 1 ½" clearance from an adjacent wall or surface.

All handrails will be smooth to the touch, continuous and uninterrupted in the vertical and horizontal plane. Handrails will extend a minimum of 12" beyond both ends of any stairs or ramp. Rails will be turned down or turned into the parallel wall surface.

Handrails will be mounted at a height between 2' - 6" and 2' - 8" from the deck or surface of the ramp. There will be a parallel handrail mounted between the top rail and the ramp deck surface at a height of 1' 9" from the surface.

17130- DOORS & OPENINGS:

All doors for handicap access will be a minimum of 32" clear opening and unobstructed where possible. This will mean that no door is to be installed that is less than 2'-8" in size unless otherwise noted. All exterior doors will be 36". All exterior doors installed for handicap access will have a threshold not higher than ½". From finished floor.

17140- SWITCHES, PLUGS & PHONES:

All wall switches and phone heights will be placed at a maximum of 48" above finish floor to the center of the box, and electrical outlets are not to be installed lower than 1' - 6" to the center of the box above the finish floor.

17150- HALLWAYS:

All hallways will be a minimum of 42" clear and be unobstructed from any projections or items on the walls of the hallway.

17160- GRAB BARS:

Grab bars will be a minimum of 1 ½" in diameter and will be mounted with solid wood backing in such a manner so as to provide adequate strength to support the entire weight of the Owner or handicapped person it is intended for.

Heights of grab bars will be determined by the homeowners needs or as a default requirement, consult the Federal ADA guidelines.

17170- ADAPTIVE FIXTURES:

Water Closet Seats:

For barrier free and or ADA applications, toilet seat will be heavy duty injection molded, white plastic seat with open front with cover complete with check hinge and a 2" lift kit similar to Olsonite #L-210-NNC or Bemis Co. #L-1955 C.

Water Closet:

Water closet installed for a handicapped application will meet or exceed ADA specifications.

Faucets:

All faucets used for handicapped applications will be a single lever center set with a gooseneck faucet with a minimum of 6" clearance and be able to swing from side to side.

Showers:

Shower and tub diverters will be of the single lever style with a concealed thermostatic mixing valve with built-in strainer and check-stops. Shower heads will be connected to a flexible hose and mounted within 48" of the shower or tub floor.

Barrier Free Shower:

Barrier free shower is to be a minimum 48" x 36" interior dimension fiberglass. Shower is to have a maximum of 2" dam, hand rails and optional fold down seat. Housing Inspector will specify if Contractor is to include seat.

Barrier Free Kitchen Sink:

Barrier free kitchen sink will be of rounded front porcelain over steel, two (2) basins and center set 3-hole faucet drilling. Sink to be mounted with the rim or counter surface no higher than 34" AFF and have a knee clearance of at least 27" high, 30" wide, and 19" in depth. There will be a polystyrene shroud installed to cover the piping under the sink.

Barrier Free Bath Lavatory:

Barrier free bath lavatory will be of rounded front, wall mount, porcelain on steel. Sink to be mounted no higher than 34" AFF with a knee clearance of a minimum of 29". The basin depth will allow for knee and toe clearance and there will be either a polystyrene shroud installed or all pipes (drain & supply) will be wrapped with insulation.

SECTION 18 – LEAD BASED PAINT GENERAL CONDITIONS & SPECIFICATIONS:

Performance of Work:

Stated in general terms and without limiting the requirements and intent of the Agreement, the work required to be done by the contractor under the Agreement comprises all preparation, lead hazard control work, disposal of all lead contaminated debris, and cleaning in order to achieve dust lead levels below the stated clearance levels for all work referred to in the lead-based paint hazard reduction SOW and includes all labor, materials, and equipment required for the complete and proper execution of the work.

The execution of Lead Based Paint work shall comply with all applicable Federal, State, and local laws, rules, regulations, and guidelines including, but not limited to, OSHA, EPA, HUD, TDH, Dallas County, and City of Dallas. The contractor shall incur the cost of all fines and work requirements resulting from regulatory non-compliance as issued by Federal, State, and local agencies. The contractor shall pay particular attention to Federal, State, and local regulations as they apply to workers safety and hygiene, protection of workers, protection of the general public and building occupants, protection of the building occupant's possessions, and protection of the building against potential lead-based paint exposure and/or contamination.

Certifications:

Contractors performing lead-based paint work must produce valid and current State of Texas issued certifications before loan closing. Contractors must have supervisors licensed by the Texas Department of Health on site when lead reduction work is being performed. Site supervisor shall be responsible for coordination, safety, security, and execution of all phases of the project. Additionally, Contractors performing lead-based paint work must have workers trained in accordance with the OSHA Hazard Communication requirements (refer to federal regulations at 29CFR 1926.59) that will be performing the lead hazard reduction activities.

Prohibited Practices:

The following practices are prohibited for lead-based paint work:

- Open flame burning or torching of lead-based paint
- Heat guns operating above 1100 degrees Fahrenheit or electric heat plates
- Machine sanding or grinding without a HEPA vacuum exhaust tool with shroud
- Uncontaminated hydro blasting or high-pressure wash
- Abrasive blasting or sand blasting
- Use of chemical paint removers containing methylene chloride
- Dry sweeping of lead contaminated areas or surfaces

Definitions:

- Accessible (chewable) surface- An interior or exterior surface painted with lead-based paint that a young child can mouth or chew.
- Bare soil- Soil or sand, including sand in sandboxes, not covered with grass, sod, or some other similar vegetation.
- Clearance examination- A lead risk assessment that determines if the specified lead hazard control work was completed and that levels of lead in settled dust and/or bare soil meets standards.
- Component- An architectural element of a dwelling unit, such as a window, door, baseboard, etc.
- Composite sampling- The collection of more than one sub-sample of the same medium for analysis as one sample.
- Containment- The physical measure taken to ensure that dust and debris created or released during maintenance activities, paint repair, or lead-based paint hazard reduction are not spread, blown, or tracked to the inside or outside of a work-site.
- Deteriorated paint- Any interior or exterior paint that is peeling, chipping, chalking, or cracking or any paint located on an interior or exterior surface that is otherwise damaged or separated from the substrate.
- Dry sanding-Sanding by machine or hand without moisture.
- Dwelling unit- A home or apartment occupied or intended for occupancy, including attached structures such as balconies, porches, or stoops.
- Enclosure- The resurfacing or covering of lead-based paint painted surfaces with durable materials to create a barrier over the lead-based paint. The material must be designed to last for at least twenty years and it must be attached to the surface by means of mechanical fasteners.
- Friction surface- An interior or exterior surface that is subject to abrasion or friction including, but not limited to, window components, door components, floor, and stair surfaces.
- Hazard reduction- Measures designed to reduce human exposure to lead-based paint hazards through interim controls.
- HEPA vacuum- A vacuum cleaner with an attached high efficiency particulate aerosol filter capable of trapping at least 99.97 percent of all particles 0.3 microns or larger from air.

- **Impact surface-** An interior or exterior surface that is subject to damage by repeated sudden force, such as certain parts of doorframes or staircases.
- **Interim controls-** A set of measures designed to reduce temporarily human exposures or likely exposure to lead-based paint hazards. Interim controls include repairs, maintenance, painting, temporary containment, specialized cleaning, and ongoing monitoring of lead-based paint hazards or potential hazards.
- **Lead hazard reduction Contractor-** An individual who engages or intends to engage in lead hazard interim control, lead hazard reduction, and employees or supervises one or more lead hazard reduction workers, including on-site supervision of lead hazard reduction projects.
- **Lead hazard reduction worker-** An individual who is responsible in a non-supervisory capacity for the performance of lead hazard reduction.
- **Lead-based paint hazard-** Any condition that causes exposure to lead from lead-contaminated dust, soil, or paint that is deteriorated or presents in accessible surfaces, friction surfaces, or impact surfaces, and that would result in adverse human health effects.
- **Lead risk assessment-** On-site investigation to determine and report the existence, nature, severity, and location of lead-based paint hazards in residential properties, including: (1) information gathered on the age and history of the housing and occupancy by children under age six, (2) visual assessments, (3) limited wipe sampling or other environmental sampling techniques, (4) identification of hazard reduction options, and (5) provision of a report explaining the results of the investigation.
- **Paint inspection-** A surface by surface investigation of all intact and non-intact interior and exterior painted surfaces for lead-based paint using an approved x-ray fluorescence analyzer, atomic absorption spectroscopy, or comparable approved sampling or testing technique, and includes the provision of a report explaining the results of the investigation.
- **Paint stabilization-** An interim control method that stabilizes painted surfaces and addressed the underlying cause of deterioration. Steps include repairing defective surfaces, removing loose paint and applying new paint.
- **Painted surface that is to be disturbed-** Paint that is scrapped, cut, penetrated, or otherwise affected by rehabilitation work in a manner that could potentially create a lead-based paint hazard generating dust, fumes, paint chips, or exposed surfaces.
- **Protective covering-** A durable material, such as polyethylene or its equivalent, which protects from lead contaminated dust, debris, or abrasion.

- Replacement- The removal of building components that have surfaces coated with lead-based paint such as windows, doors, and trim, and the installation of new components free of lead-based paint.
- Window sill/stool- 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.
- Window trough/well, the area that receives both the upper and lower window sashes when they are both lowered.
- Work-site- An interior or exterior area where paint repair or a lead-based paint hazard reduction activity takes place. There may be more than one work site in a dwelling unit or at a residential property.
- XRF reading- The measurement of lead loading on a painted surface with a portable x-ray fluorescence (XRF) instrument. The measurement is always in mg/cm² (milligrams per square centimeter).

Scope of Work:

The scope of work includes all labor, material, insurance, and equipment necessary to complete the reduction of lead-based paint hazards identified in the risk assessment. Work shall also include coordination of lead-hazard reduction work with other rehabilitation activities. In the event the contractor disturbs lead based-paint, it must be done so in a manner that generates the least exposure to the worker or the environment (i.e. use of Safe Work Practices). Additionally, the contractor should use methods such as wetting surfaces, local exhaust of tools, ventilation, and other dust reducing techniques. The work shall consist of, but be limited to, the setting up of the work-site, reduction of lead hazards as specified in the SOW following applicable rules, regulations, and guidelines. It will also include the application of new paint, removing containment, achieving clearance, and disposal of lead contaminated waste by approved methods.

PROCEDURES

The following standards for lead hazard reduction activities shall apply to all work performed, and shall guide the write-up of additional work and/or change orders submitted by the General Contractor:

A. Public Safety

- a. The contractor shall at all times enforce strict discipline and good order among the contractor's employees and shall not employ on the project any unfit person or anyone not skilled, qualified, or uncertified person for the work assigned.
- b. Once work commences, access to the work area shall be strictly limited to the contractor's authorized personnel, the property owner, or any person authorized

by the City of Dallas and the Texas Department of Health. Only those persons with specific permission shall enter the work area.

- c. Prior to the commencement of work, the homeowner and the contractor shall meet to discuss how the occupant should arrange furniture and other possessions, secure food and utensils, scope and schedule of work, and access to possessions during work.
- d. At each separate work area, the contractor shall display caution signs that conform to OSHA requirements whenever the treatment process is reasonably expected to impact any lead-based paint. The signs will remain posted until the unit or work area passes final clearance.
- e. All occupants and pets must be out of the work area while work is underway. Children and pregnant women are specifically prohibited from entering the dwelling at any time during interior work.
- f. Residents will be requested to remove belongings from the work area. Any temporary relocation of the occupants and removal of their person property will be accomplished prior to the initiation of work by the contractor.
- g. Residents will be asked to move large items into a storage area or room identified as not receiving treatment. In the event that such an area is not available, the residents will be asked to place the items in the center of the room. And, the specifications will reflect the condition the contractor will face in doing the lead work.

B. Cleaning

- a. HEPA Vacuum- HEPA vacuum all visible horizontal surfaces to eliminate all visible dust and chips.
- b. Wet Clean- Clean all horizontal surfaces with a solution of tri-sodium phosphate (TSP) or a lead-specific detergent followed by at least one rinse cycle.

C. Paint Stabilization

- a. Paint Selection- All paints used for stabilization of lead hazards must be of the highest quality. Primers and topcoats must be from the same manufacturer.
- b. Stabilization- Midst defective paint with water. Lightly scrape all loose paint. Feather edges with a sponge-sanding block. Rinse and HEPA vacuum all visible dust and paint chips. Allow surface to dry, prime and apply a premium topcoat of paint.
- c. Stabilize Windows- Wet scrape all interior and exterior window components. HEPA vacuum all visible dust and chips. Prime and top coat with high quality oil-based paint.
- d. Stabilize Doors- Wet scrape all interior and exterior door components. HEPA vacuum all visible dust and chips. Prime and top coat with high quality oil-based paint.

D. Window Treatment

- a. Replacement Windows- Remove, package in plastic, and dispose of entire window unit. Install replacement window including all necessary trim (casings, stool, sill, etc.). Installation will include any framing needed. Caulk to seal all gaps to ensure weather/tight, water/tight seal. Prime and paint all new exposed woodwork with quality oil-based paint. Install screen upon completion.
- b. Remove and Patch Window Opening- Remove, package, and dispose of all interior and exterior window components. Frame in opening 2" x 4" lumber and insulate to R-13 and install interior and exterior finish matching the adjacent surface as closely as possible. Prime and paint all new exposed material with quality paint.

E. Door Treatment

- a. Replace Door, Interior- Remove package, and dispose of interior door. Install new door to fit existing opening. Prime and paint new door with quality paint. Install new passage or privacy lockset.
- b. Replace Door and Jamb, Interior- Remove, package, and dispose of all interior components to include jamb and door. Install pre-hung door unit to include jamb, stops, and trim. Installation will include any framing required. Prime and paint all new material with quality paint. Install passage or privacy lockset.
- c. Replace Door, Exterior- Remove, package, and dispose of exterior door. Install new metal door that is square with existing opening. Provide complete edge weather stripping and new threshold. Install new entry lockset and deadbolt and door viewer. Prime and paint new door with quality paint.
- d. Replace Door and Jamb, Exterior- Remove, package, and dispose of all exterior door components to include jamb and door. Install pre-hung metal door unit in opening and ensure unit is square and plumb. Installation will include any framing required. Door must be properly shimmed and includes a keyed lock. Deadbolt and viewer. Prime and paint all new material with quality paint.

F. Exterior Treatment

- a. Exterior: Limited Paint Stabilization- Mist defective paint with water to the point of saturation without dripping. Lightly scrape all loose paint. Feather edges with a wet sponge-sanding block. Rinse and allow drying. Caulk potential air infiltration areas, spot prime and apply a coat of quality paint.
- b. Exterior: Stabilize and Paint Metal- Stabilize deteriorated paint by wet scrapping. Spot prime with iron oxide primer and topcoat with quality paint.
- c. Exterior: Enclosure, 3/8" rigid insulation sheets and all foam joints will be sealed with manufactures tape, to enclose the lead containing paint prior to the installation of vinyl siding.
- d. Exterior: Enclosure, installation of siding- After the proper installation of Tyvek vapor barrier, install vinyl, plywood, or wood siding and aluminum or vinyl wrapped trim installed in accordance with manufacturer's specifications. Vinyl siding and trim must be an American-made product and free of lead additives. Seal starter course bottom gap, and all noticeable gaps around doors and windows

with 20-year caulking. All aluminum trim seams must be back caulked with 20-year siliconized acrylic caulk to create an airtight installation.

- e. Replace Exterior Trim- Remove, package and dispose of fascia/soffit/shingle mold or any other specified mold, wood cornice, or tri. Replace with specified type of mold. Prime, caulk, and paint with quality materials.

G. Soil Treatment

- a. Removal of Soil- Remove and dispose of the top 3 inches of lead-contaminated soil 4 feet out from edge of foundation.
- b. Backfill with Soil and Mulch- Backfill with 4 inches of topsoil (sandy loam or equivalent) and 4 inches of pine bark or shredded hardwood mulch 4 feet out from edge of foundation.
- c. Backfill with Soil and Sod- Backfill with 4 inches of topsoil (sandy loam or equivalent) and specified type of sod 4 feet out from edge of foundation. Sod to be laid tightly together with no noticeable gaps. Upon completion of laying sod, water sod to saturation.

INTERIOR WORK

- A. Remove all carpeting from specified bedrooms and dispose. Install new floor covering as specified.
- B. Remove door units from specified rooms and dispose. Install door units in specified rooms.
- C. Remove window casing and stools from windows in specified rooms. Install window casings and stool in specified rooms.
- D. Paint stabilize walls and ceilings in specified rooms.
- E. Remove shelving and cleats from specified closets. Install shelving and cleats in specified closets.
- F. HEPA vacuum and wet clean all horizontal surfaces in affected areas to ensure the passing of clearance.

WINDOW WORK

- A. Remove specified number of windows in specified rooms and replace with aluminum single or double hung thermal pane insulated glass units. All work to include any re-framing, trim or moldings and painting required for a complete turnkey job.
- B. Remove and replace window trim and paint film stabilize remaining window woodwork on exterior of specified windows.

EXTERIOR WORK

- A. Stabilize paint at all specified areas.
- B. Remove and replace fascia, soffit, and trim at specified areas.
- C. Remove and install specified exterior doors.
- D. Backfill with 4 inches of topsoil and lay specified type of sod around perimeter of house 4 feet out from edge of foundation.

RENOVATION WORK AREA PREPARATION

- A. The contractor shall provide an estimated time for work area preparation at least one (1) day prior to work area completion to the property owner and/or inspector.
- B. The property owner and/or the inspector shall inspect the work area and shall be the sole judge of adequacy of work area preparation.
- C. Any deficiencies of work area preparation shall be remedied.
- D. Work shall not commence or continue until the work area preparation has been approved by the property owner and/or the inspector.

EXTERIOR WORK AREA PREPARATION

- A. All doors and windows on the side of the unit where work is being conducted, from the height they are working and lower, shall be covered with six (6) mil polyethylene sheeting, fastened securely on all edges of the jambs, sill, and header continuously with duct tape to effectively seal the fenestration against penetration of dust and paint chips.
- B. One (1) layer of polyethylene sheeting will be laid on the ground.
- C. Polyethylene sheeting shall be secured to foundation by means of mechanical fasteners and/or adhesives.
- D. At no time will polyethylene sheeting be allowed to be attached to siding, corner boards, etc., if these items are scheduled for work.
- E. Polyethylene sheeting shall extend from the building a minimum distance of ten (10) feet.
- F. Half-inch (1/2") plywood shall be placed on top of polyethylene sheeting at areas where removal/demolition will take place to prevent possible puncture of polyethylene sheeting.
- G. Polyethylene sheeting shall be secured at perimeters by means of stakes or weights.
- H. Precautions will be taken to ensure bushes, ground cover, shrubbery, etc. are not damaged by being covered (i.e. canvas tarps may be put over plants to prevent overheating and stakes used to prevent crushing).
- I. Barrier tape shall be erected at the perimeter of the work area and the area contained within the barrier tape shall be considered the active work area.
- J. No work shall be performed when wind conditions allows the dispersal of paint dust and chips beyond the active work area.

INTERIOR WORK AREA PREPARATION

- A. All occupants' possessions shall be moved away from the work area so that workers have clear access.
- B. All belongings will be moved to the center of the room or to an area where no work is to be done.
- C. Cover entire floor, including belongings, with two (2) layers of six (6) mil fire retardant polyethylene sheeting.
- D. Tape 6 mil plastic over all heating registers and returns.
- E. The contractor shall ensure that all heating, ventilating, and air conditioning equipment that is located in, runs through, or services the work area or adjacent areas that the homeowner occupies have been shut down and cannot accidentally startup during the construction period.

EXTERIOR CLEANUP

- A. All visible debris will be cleaned up at the end of each workday. Prior to final removal, all protective ground cover, including plywood and polyethylene sheeting will be cleaned with HEPA-equipped vacuums at the end of each job.
- B. Any visible chips remaining on the ground will be HEPA vacuumed up after all the work is completed.
- C. Soil contamination by Contractor- for concerns involving treatment of exterior surfaces, including porches, the contractor shall have the following responsibility. In the event of an increase in the level of the lead in the soil, the contractor shall remedy the hazard, at no cost to the City of Dallas, in a lead-safe, appropriate, and approved manner, until the soil-lead levels have been reduced to the lead level existing prior to the initiation of exterior work.

INTERIOR CLEANUP

- A. All horizontal surfaces shall be cleaned with HEPA-equipped vacuums.
- B. Wash all surfaces with a solution of tri-sodium phosphate or a lead-specific detergent. Change solution at least once per room area.
- C. Rinse horizontal surfaces with clean water, changing water frequently.
- D. Carefully fold the upper layer of polyethylene sheeting onto itself then bundle and bag in proper containers.
- E. The bottom layer of polyethylene may be left down until all fixtures are re-installed and rehab work (i.e. painting) is completed.
- F. Carpets are to be cleaned by HEPA vacuum.

WASTE DISPOSAL

All waste from activities involving the disturbance or removal of lead based painted surfaces shall be managed with the requirements and regulations of the Texas Department of Health. The contractor is responsible for ensuring that hazardous waste is removed and disposed of properly. Contractors must wrap all architectural components in plastic to prevent dust release during transport. Ensure that all waste both hazardous and non-hazardous is managed in accordance with Federal or State regulation.

- A. The contractor must comply fully with all current Federal EPA and state regulations concerning the handling, hauling, and disposal of waste generated during this project.
- B. Place all solid waste and debris in 6 mil thick polyethylene bags and seal the bags.
- C. Wrap large pieces of debris that will not fit in bags with two (2) layers of six (6) mil polyethylene sheeting, seal, and wipe exterior surfaces.

CLEARANCE

- A. Clearance Testing- Upon completion of the work and prior to final payment to the contractor, the following inspection and testing shall be performed; a final visual inspection (the work-site must be free of visible debris and dust), and dust clearance testing (dust wipe samples). Additionally, soil samples may be taken, if required.

- B. The contractor shall give the City of Dallas at least twenty-four (24) hours prior notice of readiness for final visual inspection and dust clearance testing.
- C. In the event that a unit fails a final visual inspection or dust wipe clearance thresholds, the contractor shall re-clean the unit or work area at the contractor's expense, be responsible for re-cleaning until the unit passes clearance testing, be liable for cost of any clearance testing after the initial test.

SUSPENSION OF WORK

- A. The property owner and the City of Dallas has the authority to stop Contractor's work at any time throughout the duration of the project under the following circumstances: Contractor's work does not comply with applicable Federal, State, or local regulation, Contractor's work does not comply with the contract documents, or Contractor's work presents an immediate or future health hazard to workers and current or future occupants.
- B. At the property owner's or the City of Dallas' request the homeowner shall immediately stop all activities and correct any deficiencies in the work. Work shall not resume with approval of the property owner or the City.

CITY OF DALLAS – HOUSING DEPARTMENT CONTRACTOR GUIDELINES & SPECIFICATIONS FOR THE HOME RECONSTRUCTION PROGRAM

TABLE OF CONTENTS **GENERAL CONDITIONS**

SECTION 1000 – SITE PREPARATION

SECTION 2000 – FOUNDATIONS

SECTION 3000 – FLATWORK

SECTION 4000 – FRAMING

SECTION 5000 – EXTERIOR ENVELOPE

SECTION 6000 – ROOF

SECTION 7000 – STAIRS AND LADDERS

SECTION 8000 – WINDOWS & DOORS

SECTION 9000 – INSULATION

SECTION 10000 – ELECTRICAL

SECTION 11000 – PLUMBING

SECTION 12000 – MECHANICAL

SECTION 13000 – INTERIOR DOORS

SECTION 14000 – INTERIOR SURFACES

SECTION 15000 – FLOORING

SECTION 16000 – CABINETS & TRIM

SECTION 17000 – MISCELLANEOUS FINISH WORK

MATERIALS & PERFORMANCE OF WORK

DRAW SCHEDULE

PROJECT COMPLETION

**HOUSING AND NEIGHBORHOOD REVITALIZATION
NEW CONSTRUCTION SPECIFICATIONS
DEVELOPMENT AND RECONSTRUCTION PROGRAM CONSTRUCTION
REQUIREMENTS:**

GENERAL CONDITIONS:

TOTAL RECONSTRUCTION BUDGET SHALL NOT TO EXCEED *HOME MAXIMUM PER UNIT SUBSIDY LIMIT*.

The intent of HIPP and these specifications is to enhance the quality of life for program-qualified citizens of Dallas by providing quality built healthy homes with an emphasis on energy efficiency, water, and the durability of materials and building practices. If a disagreement arises between the Contractor and the Housing Inspector regarding this section or the contractor guidelines, then the decision will rest on the Home Repair Program Manager or the designee. A General Contractor who desires to be listed on an approved list of new construction General Contractors that is provided to homeowners must be currently certified by and in good standing with the Housing Department and have adequate financial capacity.

PLANS & SURVEYS

The Contractor will provide Housing and Neighborhood Revitalization approved plans for homeowner selection. The General Contractor will provide a copy of a complete set of minimum 11" x 17" plans prior to closing to the City Housing Department Inspections Manager or designee for approval. Afterwards, the plans must be stamped by Building Inspection Department and submitted to the Housing Inspector for verification/review prior to setting forms and meet the criteria established by the Building Department and by the Housing Department. Failure to provide plans prior to closing and demolition will delay or stop construction. Plan sets will include the following:

- | | |
|------------------------------------|--|
| A. Floor Plan | F. Framing Plan |
| B. Roof Plan | G. Wall Section |
| C. Foundation Plan | H. Door and Window Schedule |
| D. Mechanical (Manual J & S) AHI=S | I. Flatwork |
| E. Electrical Plan | J. Location of Amenities if applicable |

After approval, no additional work or alterations to the plans will be accepted without approval by Housing Inspection Manager or his designee. Any/all additional work negotiated by the homeowner and General Contractor during construction must be done separate and apart from the City of Dallas contract and cannot occur until the reconstruction is complete. The homeowner must provide evidence of payment for material and labor for the additional work. The plans submitted by the contractor, one prior to closing for review and the other stamped by the Building Inspections Department with applicable amenities prior to the setting of forms shall meet the minimum requirements under this program and the most current IRC, IPC, IMC, NEC and City of Dallas adopted building codes at the time the building permit is issued, whichever is more restrictive. Plans will meet City Council program statement criteria and Housing Department Policy. The term "most current code(s)" will refer to the current

International Residential Code (IRC); International Plumbing Code (IPC); International Mechanical Code (IMC); National Electrical Code (NEC) Requirements, EPA, City of Dallas Building codes and any codes or regulations relating to single-family construction at the time that the master building permit is issued. The most stringent code and or regulation will apply.

The General Contractor is responsible for the lot, form, and drainage surveys, permits, tap, inspection fees, payment of temporary utilities used (water & electric), or any other related costs such as but not limited to; sidewalks, culverts and property waivers associated with rebuilding the new home. The Contractor is to provide an 11" x 17" reduced set of floor and elevation plans depicting all four elevations and will include any selected amenities such as the location of flatwork, storage sheds (are permissible behind the structure only), detached carports (are prohibited in front of the main structure), etc., as defined below at the Pre-construction/Closing Conference. The homeowner amenity changes shall be penned in red at the pre-construction conference and signed off by all parties. The homeowner and the contractor will sign the 11" x 17" plans as acceptance. The Contractor will fill out an electrical load calculation sheet and submit along with the site plan to ONCOR prior to the start of construction. The Contractor shall contact ONCOR to verify if there are additional requirements prior to setting the meter. A copy of ONCOR's additional requirement/design shall be submitted to the Housing Inspector prior to final draw.

MINIMUM REQUIREMENTS

The General Contractor will be expected to include the following items in the Replacement/SHARE Program home:

- Homes will be all electric.
- Homes will be a minimum of 1200 square feet, not including the garage, porches or landings, with one kitchen, one living area, one dining room or area, one utility room, three bedrooms, two baths and a one car garage. Plan modifications are accepted based on lot size and/or homeowner request for fewer bedrooms / bathrooms. A request to modify the standard requirements must be prepared and signed by the homeowner and the Contractor. The request must be approved by the Home Repair Program Manager and plans reviewed by Housing Inspection Manager and approved by the Building Department.

Handicap accessibility (RECONSTRUCTION ONLY)

- All exterior and interior passageways and doors will be 3'0" and all doors will have levered handles. Water heater reach in pantries and coat closets can be a minimum 2' 0".
- Bathrooms shall have a total of two (2) grab bars each in each bathtub or shower stall. Location of grab bars shall be 34 ½ inches above the floor horizontally or as required by the homeowner.
- Floor clearance to access toilet, vanity, and tub/shower shall be a minimum 3'0" from fixture to wall and or fixture to fixture.
- Floor space clearance around kitchen base cabinets, islands, walkways and access areas shall be 3'0"
- Handicap Accessible refers to any house plan that has made definite provisions for the ease of gaining access for people with mobility problems. Including but not limited to grab bars, showers, toilets, vanities, mirrors, cabinets, medicine cabinets, wider doors and

hallways, wheel chair maneuvering space, thresholds, light and electrical outlet accessibility, etc.

- The home will be supplied with a “Builder’s Package” of appliances for the new home, including a range, dishwasher, vent-a-hood and garbage disposal. The color of the range, dishwasher, and the range hood are as per builder’s grade minimum of 3 (e.g. black, white and bisque). Stainless steel may be offered at the option of the Builder.

Storage Unit/Accessory Structure (RECONSTRUCTION ONLY)

- The General Contractor will provide a minimum 8’ x 20’ storage unit during construction to allow the homeowner to store valuables. The unit can be left on site or removed during the construction process.
- All existing improvements, accessory and storage buildings, impediments, backfill, etc. will be demolished or removed regardless of whether they meet current City of Dallas property or building codes and will not be grand-fathered. (see section 1601)
- Homeowners may keep storage buildings (accessory structures) but must MOVE any such structures off property prior to demolition at their own expense. The GC shall demolish any remaining structures on the lot on the date of demolition.

Existing Flatwork

- Existing flat work that does not interfere with the reconstruction and meets the following performance standards may be left after the demolition at the homeowner’s request with prior approval from the Program Manager or the designee and be listed on the amenities form. Concrete flatwork/slabs shall not have protruding objects, such as a nail, rebar, anchor bolts or wire mesh. The corners or edges are free from excessive damage and separations or cracks shall not equal or exceed 1/8 of an inch in width, except at expansion joints, or 1/16 of an inch in vertical displacement.
- The General Contractor shall warranty the flatwork as new construction for the period of 12 months against any material and labor failure.

Energy Code

- Homes will meet current City of Dallas Energy Codes.

Warranty

The Contractor will make good at their expense any imperfections in materials and workmanship, which may develop under ordinary use within a 12-month period. The Contractor will provide a minimum 12-month written labor, material and equipment warranty on all work completed, and a 10-year third party foundation warranty. The warranty period will start when the housing inspector approves all the required paperwork submitted by the contractor in a timely manner.

The roofs, mechanical equipment, and major appliances shall be registered online with the manufacture to gain the extended warranty and alleviate burden upon the homeowner. A manufactures proof of registration shall be submitted to the housing inspector at the final punch inspection or there off.

- Roofing materials shall have a minimum 30-year manufactures warranty and installation registered online with the manufacture.
- Major appliances shall be registered online with the manufacture: Water heaters, ranges, dishwasher, and refrigerators if applicable.

- Mechanical system equipment and components shall be registered online with the manufacturer for a period of no less than ten (10) years. The Contractor will provide a minimum 12-month written labor and material warranty.

The General Contractor will be required to adhere to the following additional specifications for the home and all materials used shall be installed to manufacturer's specifications: Only licensed contractors will perform any work requiring a licensed trade.

The purpose of this specification is to establish the minimum Housing requirements to safeguard the public health and the general welfare of our citizens. Through structural strength, means of ingress and egress facilities, stability, sanitation, adequate light and ventilation, energy conservation, and the safety to life and property from fire and other hazards attributed to built environment and to provide safety to fire fighters and emergency responders during emergency operations.

SECTION 1000 - SITE PREPARATION

1100 INFRASTRUCTURE

- 1101** Land will be finely graded with no unsightly impediments.
- 1102** Storm drains will be sized per engineers' specifications.
- 1103** All utilities will be sized per engineers' specifications.
- 1104** All street preparation and concrete grade per engineers' specifications.

1200 PROJECT PREPARATIONS (RECONSTRUCTION ONLY)

- 1201** The Contractor will survey the work site to verify all existing grades, conditions and location of all utilities and soil conditions. Contractor will provide all necessary barricades, erosion, lights, signals, flagging and other devices as required for safety on the job site.
- 1202** The Homeowner will remove the following code violations prior to commencing of the work if existent on the jobsite including; all Junk Motor Vehicles, all vehicle parts, tires, unrestrained animals prior to and as a condition of Reconstruction assistance. No construction will begin on site as long as these conditions are not met.

1300 STRUCTURE DEMOLITION (RECONSTRUCTION ONLY)

1301 All structures are to be completely demolished (Detached Garages, Sheds, Animal Shelters, Gazebos, Etc.). Disposal of all debris in a code legal dump site is required. Structure is to be removed entirely to expose the dirt surface beneath, including all wood, masonry, and concrete floors and foundation elements. The area must be raked clean to ensure that all sharp objects, glass and debris are removed. Dump receipts shall be provided to the Housing Inspector for review during the pour. The contractor will be responsible for all violations, fees, red tags and the expense of removal and return of any accessory structure left after demolition.

1400 SITE CLEARING

1401 Remove all rubble, boulders, and large debris, sod, weeds, ground cover, shrubs, trees and or stumps and will be scraped clean of all grass and weeds as needed within the affected construction (before removing any protected trees, contact Buildings Inspections and speak to an arborist). Remove do not burn or bury any debris on site; all debris shall be removed and disposed of properly in a landfill and dump receipts must be provided to the Housing Inspector.

1500 TREE PRUNING & SHAPING

1501 Contractor will provide services to prune and trim all trees marked or discussed by the Housing Inspector. Trees or branches that overhang or may rub against the new the structure(s) shall be cut back during demolition to allow a minimum 8' clearance. This also includes all dead or rotten limbs that pose possible danger to people or damage to the structure. Remove all cut limbs and debris off site.

1600 TREE & STUMP REMOVAL

1601 In cases where entire tree needs to be removed, the contractor, during demolition, will safely cut down the tree limbs then the tree trunk so as not to cause any damage to the adjacent structure(s) or roof (before removing any protected trees, contract Buildings Inspections and speak to an arborist.)

- A) Stumps shall be removed to a depth of 6" below grade in areas where structures will not be placed or constructed.
- B) All stumps shall be removed completely to a depth of 2' in areas over which new structure(s) shall be built.
- C) All dead trees on the property that are not in the construction and staging areas shall be cut to a height of 6' that will not endanger any structure or human life, or the tree may be removed.

- D) All living tree trunks and exposed tree roots greater than 4 inches in diameter and shrubs in the property line that will be within 5 feet of new foundation must be removed.

1700 SITE AND PAD PREPARATION

- 1701** Cushion sand and fill dirt (fill only dirt if required,) shall delivered and present on the job site. Pad shall be designed according to engineer design according to plans selected and agreed upon by the homeowner and builder and ready for forms.

1800 GRADING

- 1801** The property is to be “fine” graded and raked upon completion, with no unsightly impediments and adequately drains away from the structure and will not have an adverse drainage impact (“Lot-to-Lot Drainage”) on abutting lots or surrounding areas, and there will be no off-site drainage being blocked off by the grading of the lot. Any homeowner improvements within the twelve- (12) month warranty period that effect the grade will void the Contractor’s warranty responsibility for the grading.
- 1802** The contractor will provide a site elevation/grading and drainage survey with drainage arrows prior to or at the final draw.
- 1803** There will be a minimum seven (7) inch clearance from the soil to the finished floor. Post and Footing foundations will specify clearance with each set of plans.
- 1804** All living tree trunks and exposed tree roots greater than 4 inches in diameter and shrubs in the property line that are within 5 feet of new foundation shall be removed. All trees must be trimmed a minimum of 8 linear feet away from the roof to prevent “rubbing” of shingles. All dead trees on the property and or dead branches 4” in diameter or larger shall be cut to a height that will not endanger any structure or human life, or the tree may be removed.

SECTION 2000 FOUNDATIONS

2100 FORMWORK DESIGN

- 2101** Forms can be built from plywood, dimension lumber or manufactured forms. All material shall be of good quality, strait with square ends. Contractor will remove all twisted or damaged lumber at their expense.
- 2102** Foundation walls over 24” shall be erected from plywood or a manufactured form.

- 2103** Forms shall be designed to produce concrete of sizes identical in shape, lines and dimensions, and obtain accurate alignment, location, grades, level of plumb work as shown on contract drawings.
- 2104** Brick ledges form boards will be 2" x 6" material where applicable and be part of the pour to prevent water intrusion from occurring at finished slab height.
- 2105** The formwork, shoring, and bracing shall be designed for the horizontal loads and lateral pressures in accordance with ACI 301 and ACI 347.
- 2106** Arrange and assemble formwork to permit dismantling and stripping without impact, shock or damage to 'green' concrete surfaces or adjacent materials during stripping.
- 2107** Loosen forms carefully as not to damage concrete surfaces scheduled for exposure.

Materials, fabrications and workmanship found defective shall be promptly removed and replaced with new acceptable work and material at the contractor's expense.

- 2108** All slab on grade entries shall be ramped or no-step to the bottom of the door thresholds at the time of pour. If property conditions do not allow all entries to be ramped, including but not limited to sloped lots or post and footing foundations, the homeowner may authorize one entry to be ramped with prior approval from the Housing Inspections Manager. Remedies for entries not poured with foundation must be discussed with Housing Inspector and Inspections Manager.
- 2109** Attached carports, porches/stoops shall be made as an integral part of the foundation.
- 2110** A pre-pour inspection will be required by the foundation engineer of record. Contractor must call the Building Inspections Department and the Housing Inspector for steel inspection approval and provide the Housing inspector with an engineer's release prior to pouring the slab.
- 2111** All foundation systems will require an engineer's survey for proper slope and drainage prior to final. It is the responsibility of the General Contractor to determine which codes are applicable and the feasibility of reconstruction on the lot

2200 SLAB FOUNDATIONS

- 2201** The foundation shall be a monolithic slab on grade and leveled and finished to ACI 309. Vapor barrier will be a minimum of 6 mil poly. Foundation will be

constructed using concrete with a rating of not less than 3,500 pounds per square inch (psi) and batch tickets provided to the Housing Inspector.

- 2202** All beams will be a minimum of 24" deep and 10" wide with a minimum of 12" into undisturbed soil. Contractor to use # 5 re-bar in all beam construction without exception. Beams will be placed at a maximum of 12' OC in both directions. Lower beam strands will be supported at 6" above the bottom of the beam every 6'. Exterior inside corner beams must be reinforced with 3 # 5 re-bar 6" apart at a 45-degree angle and extend a minimum for 4 feet from corner and tied to existing steel. An engineered foundation plan is required to integrate soil and lot conditions to meet or exceed 2102 B.
- 2203** Slab will be a minimum of 4" thick with #3 re-bar set at 16" OC and fully supported on chairs 3" chairs must be staggered a maximum of 4' apart with reinforcement positioned within the top one-third of the slab depth.
- 2204** Roll-in (handicap) showers will be formed into the slab prior to the pour.
- 2205** The upper beam strands will be tied into the slab steel from underneath the 3/8 material. Brick ledges shall be tapped and vibrated to insure proper fill of concrete.
- 2206** Anchor bolts with a minimum diameter of 1/2" with washers shall be installed 7 inches into the pour or MASA/MASAP mud sill type anchor according to manufactures recommendations or a previously approved sill plate anchor. Anchors shall be installed 6' apart. There will be a minimum of two anchors per plate section with one anchor located no more than 12 inches or less than 7 inches from each end of the plate section to secure the bottom plates to current codes.
- 2207** The Housing Department may request cylinder tests randomly or as needed with notice prior to the pour.
- 2208** Contractor must call the Building Inspections Department and the Housing Inspector for a form and steel inspection of approval prior to pouring slab.
- 2209** Slab floor finish must be machine floated and steel troweled to a smooth finished surface free from voids or scratches per ACI 301, Paragraph 11.7.3. Contractor is required to insure the slab is troweled and finished to slope to any floor drains as applicable. or,

2300 POST TENSION SLABS

- 2301** Post-Tension slabs will be a minimum of 4" thick and be built to foundation plans that are stamped and approved by a qualified Professional Engineer.
- 2302** The slab will be leveled and finished to ACI 309. Vapor barrier will be a minimum of 6 mil poly.
- 2303** Foundation will be constructed using concrete with a rating of not less than 3,500 pounds per square inch (psi) and batch tickets provided to the Housing Inspector for review.
- 2304** All beams will be a minimum of 24" deep and 10" wide with a minimum of 12" into undisturbed soil.
- 2305** Roll-in (handicap) showers will be formed into the slab prior to the pour. Brick ledges shall be tapped and vibrated to insure proper fill of concrete.
- 2306** Anchor bolts with a minimum diameter of ½" with washers shall be installed 7 inches into the pour or MASA/MASAP mud sill type anchor according to manufactures recommendations or a previously approved sill plate anchor. Anchors shall be installed 6' apart. There shall be a minimum of two anchors per plate section with one anchor located no more than 12 inches or less than 7 inches from each end of the plate section to secure the bottom plates to current codes.
- 2307** The Housing Department may request cylinder tests randomly or as needed with notice prior to the pour.
- 2308** A pre-pour inspection will be required by the foundation engineer of record. Contractor must call the Building Inspections Department and the Housing Inspector for inspection approval and provide the Housing inspector with an engineer's release prior to pouring the slab.
- 2309** Entry slab work shall be ramped or no-step to allow for wheel chair access. Slab floor finish must be machine floated and steel troweled to a smooth finished surface free from voids or scratches per ACI 301, Paragraph 11.7.3.
- 2310** Contractor is required to insure the slab is troweled and finished to slope to any floor drains as applicable. Where floors are to receive ceramic or tiled surfaces, a scratch finish per ACI 301, paragraph 11.7.1 will be applicable. or,

2400 DRILLED PIER POST AND FOOTING

- 2401** Where lot conditions do not accommodate slab on grade or is located in Historic or conservation districts where “Certificates of Appropriateness” may be required.
- 2402** Piers will be a minimum of 9” diameter and be drilled a minimum of 8’ below the footing with 3 vertical #3 re-bar and #3 ties at 12” on center. Re-bar will extend into the footing, tied to the grids and extend a minimum 6” past the footing.
- 2403** Post and footings shall be 24” x 24” x 12” with 6 #5 re-bar placed in a “grid” or “cross” pattern with post (cap) of 8” Dia. min. 3 #5 re-bar will be vertically tied into footing to provide reinforcement for piers. # 3 re-bar is to be used to create two rings or triangles. One above footing and one below topmost area secured to pier rebar to secure all pier re-bar members. All footing re-bar placed on 3” chairs.
- 2404** Housing Department may request cylinder tests randomly or as needed with notice prior to the pour.
- 2405** Foundation will be constructed using concrete with a rating of not less than 3,500 pounds per square inch (psi) and batch tickets provided to the Housing Inspector.
- 2406** Contractor must call the Building Inspections Department and the Housing Inspector for an inspection of approval prior to pouring footings and piers.
- 2407** Finished floor will be determined by the Building Inspections Department.

SECTION 3000 FLATWORK

3100 FLATWORK (CONCRETE)

- 3101** Project will include all flatwork required to gain access from the city street to the front door entry of the dwelling and the driveway to the parking space behind the building line. Flatwork will refer to any horizontal concrete surface that requires finishing for example but not limited to, concrete approaches aprons, landings, porches, sidewalks, walkways, parking spaces, patios, and driveways.

- 3102** All flatwork will have a minimum thickness of four (4") inches of concrete with a minimum rating of 3500 PSI, Portland cement with a maximum slump of 4" unless otherwise specified. (approaches will be 4500 PSI or as required by the City of Dallas) and are to be constructed using # 3 re-bar set at a maximum of 18" OC, and fully supported on chairs with a minimum 3" sand bed.
- 3103** All concrete will be placed on compacted virgin soil with compacted sand or gravel base, against straight solid forms, and poured only when the outside temperatures are between 40- and 100-degrees F.
- 3104** All concrete will be free of voids and air pockets and will be protected from the weather while curing for 48 hours.
- 3105** All forms will be stripped from concrete within 24 hours of pouring and backfilling against the new concrete will not occur prior to 3 days after the pour.
- 3106** All flat work adjoining to the foundation will be properly dowelled with appropriate epoxy adhesive into the foundation structure. Steel mesh is not acceptable in Replacement/SHARE projects.
- 3107** Contractor must follow "Called Inspection" checklist prior to pouring flatwork.
- 3108** The project may require culverts and/or front sidewalks to meet City codes and will be determined by the Housing Inspector or Building Inspector or both.
- 3109** Minimum 3" PVC pipe will be installed under the flatwork where required for proper drainage. Water that may accumulate must drain away from the structure a minimum of 5'.
- 3110** All exterior concrete flat work and finished grade shall slope away from the structure to meet current Building Code requirements.

3200 WALKS & DRIVES

- 3201** All walks Drives and Approaches will be laid out and installed in strict conformance to the City of Dallas Codes & Ordinances. Concrete driveways or sidewalks will be reinforced with 1/2" steel re-bar set 24" on centers in

perpendicular fashion (or 3/8" on 16" centers) and supported on plastic chairs sitting over a minimum 3" sand bed.

- 3202** Walkways will be 3' wide minimum walkway extending from the public walk and or driveway to the front stoop of the structure to the above specifications. Contractor will call Housing Inspector for forms and steel inspection prior to pour.
- 3203** The Contractor will install a driveway extending from the existing apron or driveway approach to 20' past the front building line or from the front of the structure by a 9' wide minimum to the above specifications. Contractor will call Housing Inspector for forms and steel inspection prior to pour. Driveways will not come to a peak
- 3204** Approaches will meet the requirements of the City of Dallas Public Works requirements
- 3205** Surfaces on the exterior of the structure such as porches, patios, sidewalks, driveways and approaches will receive either a swirled float finish or a broom finish with strokes going in the cross direction of the natural flow of traffic per ACI 301, paragraph 11.7.4 or to match existing finish of concrete.

SECTION 4000 FRAMING

- 4100** All lumber materials, hardware and components will be suitable for the intended use of that item as it relates to the project. All lumber used will bear a stamp with an approved grade marking; any lumber used without the grade stamp will be removed and replaced at the Contractor's expense. All structural wood joist or rafters will be Douglas fir or Southern Yellow Pine, with an S4S lumber rating.
- 4101** Exterior wall framing including studs, corner posts, headers, plates, and sheathing will be installed to support standard design loads and be braced in such a manner as to provide adequate resistance to racking under wind loads.
- 4102** When the strength of any structural member is compromised or impaired by improper cutting or by excessive defects, they will be replaced or reinforced in a manner acceptable to the Housing Inspector. All holes & penetrations through top plates will be sealed by an approved method as determined by the Housing Inspector. Any small holes less than 1/2" may be poly-sealed.

- 4103** All exterior corners shall have insulation extend to exterior wall sheathing using 3 stud corner framing or equivalent alternative framing technique that uses no more than three studs per corner and allows access to insulate the cavity.
- 4104** Headers shall meet or exceed current City of Dallas building code requirements.
- 4105** Framing at windows shall be ½ inch larger in width and height of the window and shall be limited to a maximum of one pair of king studs and one pair jack studs per window opening to support the header and window sill. Additional jack studs shall be used only as needed for structural support and cripple studs only as needed to maintain on-center spacing of studs. Window openings shall have a sill height of not more than 44 inches above the floor.
- 4106** Insulation shall run continuously behind interior/exterior wall intersections using ladder blocking, full length 2"x6" furring behind the first partition stud, drywall clips, or other equivalent alternative.
- 4107** Vertical framing members shall either be on-center or have an alternative structural purpose that is apparent to the rater or documented by the builder, architect or engineer. No more than 5% of studs may lack an apparent or documented structural purpose, which is equivalent to one vertical stud for every 30 linear feet of wall, assuming 16" stud spacing.
- 4108** All lumber closer than 18" to the ground will be pressure treated where drilled Pier post and footing foundations are required.
- 4109** Contractor shall spray-apply a registered borate barrier system to all structural wood in a 2-ft. minimum uninterrupted band from the sill upward and on all wood floor framing for termites and furnish a certificate of treatment to the Housing Inspector.
- 4110** All exterior walls, top and bottom plate, penetration, holes, corners, and seams will be sealed with insulating foam.
- 4111** Exterior columns (masonry, wood or metal) will be capable of sustaining the weight-bearing load. Wood columns or post with a minimum dimension of 6"x6" that are attached to concrete will require a Simpson Strong Tie or equal metal connector which produces an air gap between the wood column and the concrete surface. Columns or post larger than 6"x6" can rest on a prefabricated metal or plastic base designed to carry the loads or a pressure treated plate and secured to the concrete. Exposed wood columns will be cedar or kiln dried

pressure treated lumber. Wood post to be enclosed with brick must be wrapped with a moisture barrier and brick ties installed. All post or columns must rest entirely on the concrete slab. No part or portion shall overhang including the base trim.

- 4112** Rafters system will be raised-heel truss or alternate framing (such as “site cut” design) that provides adequate space above the top plate for a minimum of 5 1/2” of high-density insulation.
- 4113** Framing in bathroom around the tub, lavatory, and around the water closet shall be blocked with a minimum 2”x8” centered 34 1/2” above floor for the installation of grab bars. The tub-surround will be blocked horizontally or sloped on all sides to accommodate for the installation of grab bars.
- 4114** The bottom plate on all framing will be of pressure treated wood secured to the slab with 1/2” anchor bolts and washers, Simpson Strong-Tie MASA/MASAP or previously approved mudsill anchors.
- 4115** Sheathing (Strand board or Plywood) will be installed on all vertical exterior walls. Sheathing shall be a minimum of 7/16” and will be saw cut and installed with 1/8” spacing on all edges. No edges shall overlap each other and will be fastened flush with 8d nails. Fastener maximum spacing will be 3/8” at the ends, 6” at the support edges and 12” in the intermediate. Sheathing penetrations with non-saw cut holes will be replaced. All seams, joints and cuts will be taped to manufactures recommendations to prevent moisture barrier.
- 4116** Roof overhangs shall be a minimum of 12” in width from finished veneer to fascia.

SECTION 5000 EXTERIOR ENVELOPE

- 5100** The home exterior will be brick on all four sides of home unless the predominant style of homes in the neighborhood are siding. The homeowner may choose from a selection of “approved” plans.
- 5101** Brick will be hard-fired clay/shale, concrete brick or approved equivalent. (Entire brick must be of solid color throughout). Materials must meet or exceed ASTM C216 or ASTM C55) Brick ties must be installed and spaced as recommended by the Brick Industry Association (BIA). Staggered spacing of brick ties shall be a maximum of 18” vertical and 32” horizontal and 12” to 16” from the top. Additional ties will be required within 8” of openings and discontinuities, i.e., windows, shelf angels, vertical expansion joints, etc. Color as per homeowners’ selection as per contractors provided samples.

- 5102** Brick veneer will be installed on a designed 1 ½" brick ledge to prevent water intrusion from occurring at finished slab height.
- 5103** Brick / Stone Weep holes will be installed every 4' and expansion joints filled with an approved caulk to match brick shall be installed every 20' in all brick veneer.
- 5104**—Painted cement fiber material siding (e.g. plank/lap or shingle siding) will be installed according to manufacturer recommendations. Corner trim must be installed first and siding will butt into trim with appropriate space for caulking. A starter strip of the like or approved material will be used under the siding and a flashing at joints.
- 5105** Siding installed under and over windows combined with brick will be acceptable.
- 5106** Gables, Fascia, and soffits or any other exterior surfaces which are not masonry and brick shall be painted cement fiber material.
- 5107** Metal lintels shall be primed and painted with (2) coats of rustproof paint. Install lintels over windows or entranceways were applicable.
- 5108** All exterior paintable surfaces will have a primer coat and two coats of paint or one finish coat sprayed on. Exterior Paint will be a name brand such as Sherwin Williams, Behr, Glidden or of equal quality.

SECTION 6000 ROOF

- 6100** Deck shall be a minimum of 7/16" oriented strand board (OSB) sheathing. Decking material will be saw cut and installed with 1/8" spacing on all edges and be supported by a minimum of three rafters. No edges shall overlap each other and will be fastened flush with 8d nails. Fastener maximum spacing will be 3/8" at the edges, 6" at the support edges and 12" in the intermediate. Gable ends wall framing shall be spaced 6" on center in the intermediate. Seams of each course will be staggered and not on the same rafter as the course before or the following course for all rafters with spacing greater than 16" O.C. H clips shall be required between rafters at every joint. Contractor is required to call the Housing Inspector of record for a "decking inspection and verification of the quality of materials prior to installation of felt". Failure to comply with critical inspections may lead to the removal of material for proper inspection at the cost of the contractor.

- 6101** Roof underlayment's will be installed over dry, sound and stable sheathing secured with $\frac{3}{4}$ " button cap nails only. Drip edge will be installed over the underlayment at the gable ends and the underlayment over the metal drip edge at the bottom of all roof hips. Installation of the underlayment and the shingle application must be done together whenever possible.
- 6102** Synthetic roof underlayment may be installed and left uncovered for no more than 5 consecutive days and shall be fastened and installed and directed in 6102. Synthetic underlayment shall be completely dry before the composition singles are installed.
- 6103** Roofing shall be 30-year warranty shingle with 130 MPH wind resistant limited warranty, Owens Corning, CertainTeed, Tampco or equal, with a class "A" fire rating and a written 30-year manufacturer's warranty and a 12-month installer's warranty on workmanship. Roofing installation shall include properly installed starter strip, ice and water shield membrane in valleys and may be used in-lue of starter strip and meet Asphalt Roofing Manufactures Association (A.R.M.A) specifications or the Housing Department specifications whichever is more restrictive. Shingle fasteners will be of a non-corrosive nail type so as to penetrate into the decking a minimum of $\frac{3}{4}$ ". Staples will not be used. Color selection by homeowner per contractor grade.
- 6104** Roof-to-wall intersections will require a 25-mil polyethylene-backed aggressive rubberized adhesive waterproofing membrane. The membrane shall be installed to the OSB substrate and deck sheathing and will run 6" up, down the length of the wall. Step and kick-out flashing will be installed to divert water away from the wall.
- 6105** All nails used will be of a non-corrosive type so as to penetrate into the decking a minimum of $\frac{3}{4}$ ". Staples will not be used. All exposed nails on any flashing will be sealed. Exposed nails in shingle area will be remove, properly nailed, and nail hole sealed.
- 6106** Gutters and downspouts draining away from the structure are required around the entire perimeter of roof line that empty into lateral piping that deposits water on sloping final grade ≥ 5 ft. from foundation or to underground catchment system > 10 ft. from foundation.

SECTION 7000 STAIRS AND LADDERS

- 7100** All stairs either interior or exterior will have a rise for every step of no less than 6" nor greater than 7" with a run of no less than 11" nor greater than 12" typically

and be 36" in width or wider, unless access is via a folding stair ladder to attic space.

7200 INTERIOR STAIRS

7201 All construction of interior stairs will conform to the City of Dallas Building Codes. Prime and paint 2 coats of paint on all exposed wood. Also see handrail requirements in Section 7200

7300 EXTERIOR STAIRS

7301 All construction of exterior stairs will be pressure treated lumber and will conform to the requirements of the City of Dallas Building Codes. All new wood used for exterior stairs will be kiln-dried after treatment (KDAT) with a moisture content no greater than 20% or the air-drying method by stacking the lumber in layers separated by narrow strips of wood, or stickers, to allow air to move freely between layers. The stickers will be aligned vertically within the pile to help distribute the load evenly and to minimize warping during drying. Weights such as concrete blocks shall be placed on top of the pile to help minimize twisting of lumber during drying. The pile shall be protected from the weather—either by shedding or by plastic sheeting and allowed to dry for several weeks, the lumber should reach a moisture content of close to 20%. Prime and paint 2 coats of paint on all exposed wood or apply a water-repellent finish. Vertical clearance above any stair tread to an overhead obstruction shall be at least 7 feet measured from the leading edge of the tread. Also see handrail requirements in Section 7200.

7400 LANDINGS

7401 Every landing will have a dimension measured in the direction of traffic not less than the width of the stairs themselves. Such dimension will not exceed 44" when the stair has a straight run. There will not be more than a 12' vertical rise between landings.

7500 HANDRAILS

7501 All stairways will have handrails on both sides if two sides are open-sided or platform 2 feet or more above adjacent floor or ground level shall be guarded by a standard railing on all open sides, except where there is an entrance to a ramp, stairway, or fixed ladder. Stairways with one or no open sides will require a minimum of one handrail. Handrails will be installed not less than 34" or more than 38" above the nosing of the treads and landings. All handrails will be continuous the full length of the stair and will extend in the direction of the stair run not less than 12" beyond the top riser nor less than 12" beyond the bottom riser and both ends will be terminated back to the wall or to a newel post.

Placement of the bottom rail of the guardrail will be done so that a 6" sphere cannot pass through the triangle formed by the stair treads and the rail.

7600 GUARDRAILS

- 7601** All Guard rails will be installed securely and will conform to all applicable City of Dallas Building Codes and will not be less than 36" nor exceed 42" in height above the floor and the vertical balusters will be spaced in such a manner that a 4" solid sphere cannot pass through the openings between them. Placement of the bottom rail of the guardrail will be done so that a 6" sphere cannot pass through the triangle formed by the stair treads and the rail.

7700 PULLDOWN STAIRS

- 7701** Pull-down attic stairs rating 300 pounds to access the attic and or HVAC equipment will be installed in a hallway with access from the main part of the house or corridor. Stair will be placed conveniently to the HVAC equipment in the attic if applicable and where there will be sufficient clearance for stair to pull down as well as clearance to gain access above. Rough opening for stair unit will be framed on all sides with 2"x6" nominal thickness lumber and secured with lag screws and to manufactures specifications. Stair opening will be large enough to accommodate the equipment.

SECTION 8000 WINDOWS & DOORS

- 8100** Window sills shall be flashed with sill flashing tape or with a pan sill according to manufactures specifications.
- 8101** All windows will be single hung with bottom sash to swing in for cleaning and double pane, low-e, argon or krypton filled, insulated vinyl, fiberglass or equal as required by the 2009 International Energy Conservation Code (IECC). Color as per homeowner's selection as per builder's samples.
- 8102** Bathroom windows lower than 6' will be obscure type glass pane.
- 8103** All windows and exterior doors will be installed to the Water Management Guided and manufactures specifications and caulked with an expanding compound.
- 8104** Exposed wood window headers shall be covered with a cementitious material.

8200 EXTERIOR DOOR

- 8201** Installation of all new doors UNITS will be done in a workmanlike manner. New pre-hung exterior door units will be properly sized to the rough opening and will be properly fitted, so as not to allow air or light infiltration after the weather-stripping has been installed.
- 8202** All metal doors will bear a UL listing and meet NFPA requirements. All doors will have an ASTM A-336 cold rolled steel shell of no less than 24 gauge and have an R-14.50 insulation rating or greater. All doors will be spray painted with oil base paint. All glazing used with metal doors or frames will be tempered as needed. Factory painted doors?
- 8203** Exterior doors shall be 36", 6 panel or the like, steel or fiberglass and be or meet the Energy Star rating. Door unit will have a deadbolt with thumb latch, levered entry lock set, and viewer. Door thresholds shall not be greater than 3/4 inch above finished floor. If required to meet homeowner mobility needs, the General Contractor will provide handicap accessible thresholds. All metal door surfaces will be spray-painted with (2) coats of paint recommended for metal surfaces.

8300 STORM DOORS

- 8301** 36" Storm Doors with levered handles are required on exterior doors. Storm doors are not required where a minimum of a 4'x4' roof covering is provided over a concrete porch/stoop, unless requested by the homeowner under amenities package. Storm doors shall be a minimum EMCO 400 Series or the like and have a 10-year manufactures warranty or Anderson 3000 Series or the like in quality. Storm Doors shall be keyed alike and homeowner to select color and door type & style as per contractor provided colors & doors.
- 8302** Lock set and deadbolt will be Kwikset, Schlage or a previously approved equal by the Housing Department. All exterior doors shall be keyed alike.

8400 GARAGE DOORS

- 8401** Traditional raised panel steel garage door with exterior lock, 1-layer construction, tongue and grove section joint, Extension springs, carriage rollers and 10-year paint system warranty. Homeowner to select color as per contractor provided colors

SECTION 9000 INSULATION

- 9100** All insulation must meet the current City of Dallas Residential Energy Codes.

SECTION 10000 ELECTRICAL

10050 Grounding and Bonding. All Slab foundations with have a concrete-encased electrode, commonly called a “Ufer”. All current City of Dallas adopted NEC requirements for Grounding and Bonding will apply for slabs and all other foundation types.

10100 Phone outlets shall be placed in the kitchen, living area, and in one (1) bedroom of the homeowner’s choice.

10101 Living room and all bedrooms shall be cable ready with coax cable connector plates.

10102 The house shall be all electric to the current City of Dallas adopted NEC requirements and following shall be provided:

A. Electrical main panel shall be installed inside the structure. Contractor will identify and label all components of the electrical system. Include a clearly permanent pen written on the metal panel / circuit index at all power or lighting panels.

B. Range/Stove

C. Refrigerator

D. Heating/Air Conditioning

E. Water Heater

F. Garbage disposal

G. Dish Washer

H. Vent-a-hood

I. Ceiling fans – Structure shall have rated 52” ceiling fans, one for each bedroom and living room, with a minimum 3 LED bulb fixture kit and will be operated by two gang light switches. Allowance may be considered for modified floor plans.

10103 Light switches box will be installed to the current City of Dallas adopted NEC code.

- 10104** Receptacle will be installed to the current City of Dallas adopted NEC code.
- 10105** Ceiling light fixtures shall be 2-light flush mount with glass dome or approved equivalent.
- 10106** Kitchen light shall be 2-light flush mount fluorescent or LED with decorative lens cover or approved equivalent.
- 10107** Bathroom vanity light shall be 4-light wall mount or approved equivalent.
- 10108** All light fixtures shall have properly sized LED bulbs installed. Bulbs will not extend past the glass light shade where applicable.
- 10109** Exterior wall mount light shall be 1-light metal with lens or approved equivalent.
- 10110** Exterior ceiling mount porch light shall be 2-light metal with lens or approved equivalent.
- 10111** Exterior security lights shall on a switch operable from the living space; be Energy Star qualified 2-light equipped with a motion detector or approved equivalent.
- 10112** Burglar and smoke alarms shall be installed per Code, in compliance with the following:
- A.** Hard wired System
 - B.** Power failure battery back-up system
 - C.** 120-volt AC normal operation
 - D.** All openings protected against forced entry
 - E.** Entry/Exit system
 - F.** Integrated smoke detector
 - G.** Interior and exterior sounding devices
 - H.** Audio and visual (AV) type smoke alarms are required for the hearing impaired or at the request of the homeowner.
- 10113** Hardwire doorbell unit will be installed at the front exterior door of the dwelling.
- 10114** Condensing and the indoor unit over-current protection must be in accordance with the rating on the equipment data plate. There will be an electrical disconnect located within arm's reach of the condensing unit, a service switch located within

arm's reach of the indoor unit and a 110-volt receptacle within 25 feet of the installation of each unit.

- 10115** All interior lighting shall be activated with one or more devices to allow the occupants to transverse from one room or hallway to another under illumination. The Housing Inspector or designee may require additional devices deemed necessary to insure the safety and wellbeing of the homeowner.

SECTION 11000 PLUMBING

- 11101** Kitchen sink shall be a double bowl stainless steel with a hole provided for dishwasher anti-siphoned, minimum 6 ½" deep.
- 11102** Kitchen faucet will be water-sense, metal with levered handles and with a maximum flow rate of 2.02 gallons per minute (GPM), either single or double lever, Moen, Delta or approved equivalent with vegetable sprayer. Plastic handles will not be accepted.
- 11103** Lavatory sink in bathrooms shall be white oval 20" x 17" or molded Cultured Marble.
- 11104** Lavatory sink faucet in bathrooms shall be water-sense, metal with levered handles and with a maximum flow rate of 2.0 gallons per minute (GPM), single lever, Plastic handles will not be accepted.
- 11105** Tubs in bathrooms shall be steel with a ceramic tub surround, soap dish and a towel bar. The substitution of a high quality, fiberglass tub/shower unit with molded in soap dish and wash towel bar is acceptable and must accommodate 2 grab bars.
- 11106** Tub faucets shall be water-sense, metal, single levered handle, Anti-Scald Moen or approved equivalent with metal tub spout pop-up.
- 11107** Tub shower fixture will be hand-held spray arm type with slide bar and with a maximum flow rate of 2.0 gallons per minute (GPM).
- 11108** Water Closets shall be ADA single flush with 3" flush valve or dual-flush high efficiency, ultra-low water consumption complete with toilet seat. All toilets must meet the requirements of ASME A112.19.14; or be certified by the EPA Water-Sense program. Tray dispenser toilets will NOT be allowed.
- 11109** Water heater shall be a minimum 50-gallon .93 EF electric water heater
- 11110** All potable water supply lines from the city meter to the fixtures shall be copper or PEX. No other substitutions will be allowed. All cut-off valves will be ¼ turn.

- 11112** Yard trenches shall be backfilled and compacted in thin layers to 12" inches above the top of the piping with clean earth or sand which shall not contain stones, boulders, construction debris or materials that would break or damage piping or cause corrosive action.
- 11113** No piping (water, waste or electrical) shall be directly embedded in concrete without an Engineer's letter. All piping passing through interior beams shall be protected against direct contact with concrete. Piping shall be wrapped with Snap-On insulation such as IMCO-lock or Armaflex a minimum of .5" thick or properly sleeved with padding at the approval of the Housing Inspector. All insulation joints must be taped and sealed.
- 11114** Drain and waste traps are prohibited inside concrete foundation footings or beams without an engineer's letter allowing for such installation.
- 11115** Any pipe that passes under a footing or through a foundation wall shall be provided with a relieving arch; or there shall be built into the masonry wall a pipe sleeve two pipe sizes greater than the pipe passing through. The annular space between the piping and the sleeve shall be sealed.

SECTION 12000 MECHANICAL

- 12100** Heating and cooling loads shall be calculated, equipment capacity shall be selected, and duct systems shall be sized according to the latest editions of ACCA Manuals J, S, D & T, respectively, ASHRAE 2009 Handbook of Fundamentals, or a substantively equivalent procedure. Manuals J, S, D & T will be required prior to the start of construction.
- 12101** Heating and air conditioning unit will be equal to or greater to 9.5 HSPF / AHI 16.0 SEER / 12.5 EER air-source heat pump, with emergency heat strip backup and shall have controls that prevent supplemental heat operation when the heat pump compressor can meet the heating load. AHI documentation of system match will be required.
- 12102** Interior unit if installed in attic will have a ½ inch working platform and walkway to unit per code. Ductwork will be a minimum of R-8 fully stretched, hung on minimum 4" wide flex-duct saddles, with no sharp/tight bends or bends greater than 90 degrees, to prevent kinks and will meet or exceed the most current IECC and be installed to manufacturer's specifications.
- 12103** HVAC plenums, supply & return registers must be constructed of sheet metal (no duct board or fibrous material allowed in the air path), or an equivalent material must be approved before installation by the Housing Inspector. All supply and return registers will contain an external insulation. Fiberglass insulation shall not be used in the HVAC systems, including the supply and return air plenums.

- 12104** Thermostat (low voltage) wiring that is exposed to the elements will be encased in a water tight electrical whip with water tight adapters to the unit and structure or electrical box.
- 12105** Exterior refrigerant access ports shall be fitted with locking-type tamper resistant port caps.
- 12107** Return air filters shall meet current City of Dallas Residential Energy code and be changeable from the living space.
- 12108** Compressor shall have a painted metal theft-proof cage attached to the concrete pad or into the ground secured with concrete with a lock and key. The cage will have bars welded 4" apart or of heavy wire mesh. The cage will be lockable and be hinged to lift away from the compressor to allow total access for repairs and or replacement. Heavy duty keyed lock will be provided. Rain water from the roof will be diverted away from the compressor.
- 12109** Vent hood or microwave-range hood shall be mounted on a cabinet and vented to exterior with a damper kit and meet building code requirements. Cabinet above vent will not be considered part of the 8 linear feet requirement. Vent hood will be Vent –a – hood TM, Broan or Nutone 30" minimum or approved equivalent, with a 2-speed fan and light. Vent hood will match appliances.
- 12110** Bathroom and utility room exhaust fans must meet current City of Dallas Residential Energy code. Ventilation ducts will exhaust and terminate to the exterior or exterior soffit and be permanently attached to a screened or hooded vent.

SECTION 13000 INTERIOR DOORS

- 13100** Interior doors shall be 6 panel or the like, pre-primed hardboard. All doorways and openings or passage ways will be 36" per handicap requirements. Water heater closet and reach in pantry and closet doors can be a minimum of a 2/0.
- 13101** All interior doors are to have doorstops.
- 13102** Privacy, passage and dummy sets shall be levered handle type series or an equal product previously approved by the Housing Department.
- 13103** Each bedroom shall have a closet with a minimum door opening of 36" or two (2) swing doors individually hinged. Closets shall have shelving with support and clothes rod that will meet homeowner's mobility needs.
- 13104** Bathroom door locksets shall be of levered privacy type.
- 13105** Utility laundry closet doors shall be 6 panel high quality double door type or the like to properly fit the door opening and will include the appropriate hardware.

13106 All door hardware is to be of levered handle type or equal previously approved by the Housing Department.

SECTION 14000 INTERIOR SURFACES

14100 Wall and ceiling texture will be sprayed “Orange Peel” or “Spatter/Drag.”

14101 Ceilings can be blown acoustic in bedrooms hallways and closets.

14102 All drywall will have metal corners or radius corners or the like.

14103 Paint shall be Sherwin Williams-Pro-Mar 400; Pittsburgh Paints-Speed hide; Jones-Blair, Deco-Glaze VOC Free or equal Low VOC. Other paint brands must be approved prior to use. Homeowner will choose from a spectrum of hues from builder’s options packet.

14104 Woodworking nail holes and staple indentations, including doors and all trim, and all watered areas (such as but not limited to bathrooms, kitchens and utility rooms) will be wood puttied sanded and painted in enamel.

14105 Walls will be in latex flat unless semi-gloss or washable paint is requested by the homeowner and approved by the Housing Department. Bathroom, kitchen and utility rooms or closets will be latex semi-gloss or washable paint. All ceilings will be latex flat

SECTION 15000 FLOORING

15100 The bathroom floors will be ceramic tile.

15101 The Bedrooms will be carpet, sheet vinyl, vinyl floor planks, ceramic tile or an approved equal, as selected by the Homeowner, and will meet or exceed FHA minimum housing requirements. All carpet will be bar stretched. All material will be installed to manufactures specifications.

15102 Kitchen floor shall be vinyl floor planks, ceramic tile or an approved equal that meets or exceeds FHA minimum housing standards.

15103 All other floors shall be at the homeowner’s selection carpet, sheet vinyl, vinyl floor planks, ceramic tile, or an approved equal that meets or exceeds FHA minimum housing standards.

15104 Vinyl floor planks will be Overall Gauge: 0.12”/ 3 mm & Wear Layer: Virgin PVC w/ Micro Ceramic Beads & 2 Coats UV-Cured PUR w/ Nano-Silver at 12 mil / 0.3 mm and a 25-year residential warranty

*** Handicap modifications are available for homeowners with mobility problems

SECTION 16000 CABINETS & TRIM

16100 Kitchen cabinets shall be manufacture built and installed according to approved plans signed by the homeowner and contractor and shall be no less than 8 linear ft. minimum of base cabinets and 8 linear ft. minimum of wall cabinets. (American Wood mark, Kraft Maid, Republic, or approved manufactured equivalent.) Cabinet doors and drawers will be equipped with door pull handles. Color as per homeowner selection as per contractors provided samples. Ready to assemble cabinets will not be allowable.

16101 Countertops shall be pre-formed roll top type or built on site with a minimum 4" tall splash or an approved equal. Color as per homeowner selection as per contractors provided samples.

16102 Bathroom vanity shall be 24" x 18" minimum. Color as per homeowner selection as per contractors provided samples.

SECTION 17000 MISCELLANEOUS FINISH WORK

17100 Wall mirror in bathroom shall be equal to the width of the vanity x 30" in height. Towel bar & toilet paper holder shall be included. Framed mirror will be acceptable meeting the above requirements or approved by the Housing Inspector.

17101 Cabinet above the toilet will be installed in all bathrooms.

17102 Mail boxes must be installed according to neighborhood standards.

17103 Sod will be installed in the entire front and back yard. Two (2) trees will be installed in the front yard and one (1) tree in the back yard.

17104 Final Cleaning will include: window and mirror cleaning, surface dusting, floor mopping and vacuuming, bathroom sinks, toilets and tubs cleaned, all excess construction materials removed. The entire home will be move in ready.

MATERIALS & PERFORMANCE OF WORK

The General Contractor should refer back to Section 1 of the Contractor's Guide for all applicable information regarding this subject. As reiteration, the General Contractor must submit all required paperwork prior to issuance of the proceed order. All other paperwork MUST be submitted in a timely manner. Required paperwork includes but not limited to:

- Housing and Neighborhood Revitalization New Construction Specifications
- 11" x 17" Elevation and floor plan
- Consent to Transfer Permits
- Request to Modify Standards (if applicable)
- Called Inspections Checklist
- HUD Description of Materials Form
- Lot Acceptance Form (RECONSTRUCTION ONLY)

- Permitted set of house plans
- Product & Color Selection Form will require all signatures. (RECONSTRUCTION ONLY)
- List of current sub-Contractors with address and phone numbers and trade.

All construction is to be done in a workman-like manner by skilled, licensed, trained, and professional tradesman. Where required, work is to be done by licensed tradesmen (e.g. electrical, plumbing, mechanical, burglar alarm). All licensed trade vehicles will have the state license permanently adhered to the front side of the vehicle. All trade workers must possess a working license for the trade they are performing. Housing Inspector may require proof of license. The projects are to be adequately supervised at all times. The projects are to proceed in a timely manner. The construction site shall be maintained in a clean and safe condition free of debris. All material, equipment, and applications shall conform to the factory recommendation and/or instructions. It is the Contractor's responsibility to inform the Housing Inspector if an equal product will be used. Contractor must provide equal comparison material(s) when submitting for an alternate/equal product approval. The names and phone numbers of the supplier must be included.

SUGGESTED” DRAW SCHEDULE & REQUIRED DOCUMENTS For Replacement Projects

The General Contractor is responsible for obtaining all required signatures prior to submitting a draw or final payment request and all completed contractor required paperwork.

Draw #1	Plan Design: Meeting Housing and Neighborhood Revitalization New Construction Specifications Manual J & AHI Certificate Energy Raters Preliminary Hers Rating Demolition Permit Master Permit Building Inspection Stamped Plans Tap Fee Lot Survey Demolition, Hauling and Disposal of Debris, Complete Site Preparation & 20' Storage container Temporary Electrical Service Form Survey Plumbing Rough-in (yard & below grade) Foundation: Design, Labor, Materials, & Engineers letter of Approval Builders Risk (\$1,000,000.00)
Draw #2	Concrete Slab Pour Framing & Rough Carpentry (decking, soffit & fascia,) Labor & Materials Roof: Labor & Materials (Shingles, Ventilation) Termite Report Doors / Windows Electrical Rough-in Mechanical Rough-in Plumbing Top-out
Draw #3	Exterior Veneer (Brick, Stone and or Siding) Labor & Material Wall & Attic Drywall: Labor & Material Interior Trim Exterior Paint Interior Paint
Draw #4	Mechanical Finish-out Electrical Finish-out Plumbing Finish-out Cabinets Finish Flooring Alarm Finish-out Miscellaneous Materials (Hardware & Sec. 19 Required Appliances)
Final Draw	Flat Work: Labor & Materials (Driveways & Walkways) Final Grading & Site Elevation/Grading and Drainage Survey Final Cleaning

The General Contractor will submit these required items with each draw:

- Payment Request with all required signatures
- Invoice
- Continuation sheet
- Original general contractor Waiver of Lien

- Original sub-contractors Waivers of Lien
- Current copy of builders' risk report on draw #2
- All Required green tags
- Additional items on the required documents checklist

The General Contractor upon completion of Building Final by the Building Department will submit these required items at Final Payment Request and call the Housing Inspector for a "Final Inspection":

- Payment Request with all required signatures
- Invoice
- Continuation sheet
- Original General Contractor Waiver of Lien
- Original Sub-Contractors' Waiver of Lien
- Updated Sub-Contractors List if applicable
- Builders Risk Report
- All warranty/instruction guides

All warranties will be registered online, and the information filled out on all warranty documents wherever possible and submitted in a binder by the contractor. (RECONSTRUCTION ONLY)

- All required green and yellow tags

PROJECT COMPLETION (RECONSTRUCTION ONLY)

Upon completion the Homeowner and the Housing Inspector will sign the completed punch list and the General Contractor will provide all warranty information (filled out), instruction manuals and other documentation on the "Required Document Check list" to the Housing Inspector. The General Contractor will meet with the homeowner to provide an explanation of all systems, appliances, warranties, and maintenance schedules and obtain signatures on the Final Payment Request form. The homeowner must provide homeowner's insurance to the Housing Department Loan Service Representative PRIOR to final inspection and move-in. The punch list must be fully completed and approved by the Housing Inspector and the Homeowner before the Builder can turnover keys.

The General Contractor will warranty all labor and material for a period of 12 months, for workmanship and materials, and a ten-year third-party foundation warranty.

The project will not be considered completed and the final payment request paperwork will not be processed until all required documentation, utility meters, and permanent services are in place. This includes water; sewer & electric. The above requirements shall be a part of the contract and rider between the City, homeowner and General Contractor. The requirements are not exhaustive in scope and are subject to change upon management review.