



**Environmental
Protection**

CONSTRUCTION CONTRACT



NYC HOUSES REHABILITATION PROGRAM GENERAL REQUIREMENTS AND SPECIFICATIONS

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**NYC HOUSES REHABILITATION PROGRAM
GENERAL REQUIREMENTS AND SPECIFICATIONS**

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GENERAL REQUIREMENTS

DEFINITIONS

Capitalized words used in the General Requirements have the meanings in Article 2 of the Contract.

VERIFY QUANTITIES & MEASUREMENTS

All quantities stated in the attached Specifications for this Dwelling using units of measure other than Each (EA), Room (RM) or Dwelling Unit (DU) (e.g., SF of drywall) are for the Contractor's convenience and must be verified by the Contractor at the Joint Scope Meeting. All quantities stated in the Units of Measure as Each (EA), Room (RM) or Dwelling Unit (DU) are as stated. Discrepancies in quantities found by the Contractor must be communicated to the Engineer prior to the acceptance of a Job Order. Claims for additional funds due to discrepancies in Quantities shall be rejected if submitted after the Job Order has been signed by the Contractor.

CONFLICT

Should any conflict occur in or between the Unit Price Book and Specifications, the Contractor shall be deemed to have estimated the more expensive way of doing the Work, unless its shall have asked for and obtained a decision in writing from the Commissioner before the execution of the Job Order as to what shall govern.

POINTS NOT COVERED BY SPECIFICATIONS

Whenever any feature of the Work is not fully set forth in these Specifications, it shall be understood that the same will be governed by the rules of the best prevailing practice for that class of Work.

COMPLIANCE WITH LAW, PERMITS & CERTIFICATES, AND INSPECTIONS

1. Compliance with Law: The Contractor shall comply with all Laws applicable to this Contract and to the Work to be done hereunder, including laws pertaining to building construction, zoning, environmental protection, energy efficiency, and worker safety. The Contractor's attention is directed to federal requirements set forth in Appendix B and the Hurricane Sandy CDBG-DR Appendix. If a provision in the Contract conflicts with the Law, the Contractor shall comply with the Law. This, however, shall not be interpreted as permitting the use of material or equipment inferior to that specified, unless such materials or equipment is specifically mentioned as violating the rules and regulations.
2. Permits and Certificates: The Contractor shall obtain and pay for all permits, certifications and licenses as may be necessary and required to complete the Work during the Term and the Maintenance and Guaranty Period. Contractor shall not commence Work on a Dwelling unless and until required permits are obtained. Prior to submission of a Job Order Payment Request, the Contractor shall obtain a Certificate of Occupancy for the Dwelling if required by Law and it shall provide all required certificates of inspection to the Engineer.
3. Inspections: Contractor shall facilitate inspections by DEP, pursuant to Article 3D of the Contract.

ACCESS TO SITE – WORK TIMES

Contractors and their Subcontractors shall schedule normal working hours between 7:00 a.m. and 6:00 p.m. Monday through Friday or as specified by Law. A Contractor must obtain an After Hours Variance from the Department of Buildings to perform Work on weekends and before or after these hours. Information about obtaining an After Hours Variance is available at http://www.nyc.gov/html/dob/html/development/after_hours_variance.shtml.

TEMPORARY FACILITIES AND CONTROLS

1. Provide temporary toilet facility at each Dwelling from commencement of Work on the Job Order until approval of permanent facilities. The Contractor shall prohibit and prevent the committing of nuisances on the site of the work or on adjoining premises and shall discharge any employee who violates sanitary regulations
2. The Contractor shall provide temporary lighting, power and water facilities if required in addition to existing facilities.
3. Provide dumpster of appropriate yardage at each site. Dumpster to be emptied weekly.
4. Provide onsite storage unit such as “POD” sufficient to accommodate furniture in the Dwelling. Remove all furniture from rooms affected by the Work and store on Site. . Replace furniture upon completion of the Work prior to Final Inspection. The Homeowner and/or Occupants are required to remove and store small household items, unless the Job Order specifically requires the Contractor to remove and store small items. If the Contractor is required to remove and store small household items, the Contractor shall pack the items in boxes and shall store the items in a secure facility approved by the Engineer and, after Final Inspection, Contractor shall place the boxes of small household items in the rooms of origin for unpacking by the Homeowner and Occupants.

PRODUCT OPTIONS

The HRP will offer a selection of products that will be chosen by the Homeowner at the time of the Joint Scope Meeting with the Homeowner, Engineer, and Contractor. Product selections will include a limited choice of:

1. Kitchen Appliances
2. Cabinetry & Countertops
3. Bathroom Fixtures and Tile
4. Flooring
5. Siding & Roofing
6. Lighting Fixtures
7. Paint Colors
8. Doors

OWNER-FURNISHED PRODUCTS

Contractor shall not install items supplied by the Homeowner or Occupants.

MAINTAINING A CLEAN AND SAFE WORK SITE

As the Work progresses and also before the completion and Final Acceptance of the Job Order Work, the Contractor shall maintain a safe Site and remove all rubbish and unused materials relating to the Work. The Contractor shall leave the structure and grounds in a neat, broom-swept condition satisfactory to the Inspector. Prior to Final Acceptance, the Contractor shall also remove all temporary structures. .

In any emergency affecting the safety of persons or property, the Contractor shall act at its discretion to prevent threatened damage, injury, or loss. The City shall consider any additional compensation or extension of time

requested by the Contractor resulting from emergency Work in accordance with Articles 3B and 13 of the Contract, respectively.

SUBMITTAL PROCEDURES

No portion of the Work requiring a shop drawing (including working drawings and product data) or sample shall be started, nor shall any materials be fabricated or installed unless and until the Engineer approves such item. Procurement, fabrication, delivery or installation of products or materials that do not conform to approved shop drawings shall be at the Contractor's risk. Furthermore, the City shall not reimburse the Contractor for such products or materials delivered or installed without approved shop drawings, or in non-conformance with the approved shop drawings unless the Engineer approves the product or material or the Work is brought into compliance with approved shop drawings. Neither the Homeowner nor HRP shall be liable for any expense or delay due to corrections or remedies required to accomplish conformity.

A. All submittals shall be clearly identified as follows:

1. Date of submission
2. Basic Information
 - a. Contractor
 - b. Supplier
 - c. Manufacturer
 - d. Manufacturer or supplier representative
 - e. Named or "or equal" identifier
3. Reference to specification section number, page and paragraph(s)
4. Reference to applicable standards, such as ASTM or Federal Standards numbers
5. Complete product data where "or equal" submission is made
6. Indication of any deviation from the specification
7. Reference to previous submittal (for resubmittals)
8. Indication of Contractor's Certification.

"Certification Statement: by this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data and I have checked and coordinated each item with other applicable approved shop drawings and all Contract requirements."

B. Shop Drawings and Product Data

- a. Shop drawings include, but are not necessarily limited to, custom prepared data such as fabrication and erection/installation (working) drawings, scheduled information, setting diagrams, actual shop work manufacturing instructions, custom templates, wiring diagrams, coordination drawings, equipment inspection and test reports, including performance curves and certifications, as applicable to the work.
- b. Contactor shall verify all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and coordinate each item with other related shop drawings and the Contract requirements.
- c. All details on shop drawings shall show clearly the relation of the various parts to the main members and lines of the structure and where correct fabrication of the work depends upon

field measurements, such measurements shall be made and noted on the drawings before being submitted.

- d. All shop drawings submitted by Subcontractors and Materialmen shall be reviewed by the Contractor for field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, and that it has been coordinated with other related shop drawings and the Contract requirements. Submittals directly from Subcontractors or Materialmen will not be accepted by HRP.
 - e. The Contractor shall be responsible for the accuracy of the Subcontractor's or Materialman's submittal; and, for their submission in a timely manner to support the requirements of the Contractor's construction schedule. Contractor shall return shop drawings that are inaccurate or otherwise in error to the Subcontractor or Materialman to correct before submission to HRP. All shop drawings shall be approved by the Contractor.
 - f. Delays to construction due to the untimely submission of submittals will constitute inexcusable delays, for which Contractor shall not be eligible for additional cost nor an Extension of Time for a Performance of a Job Order. Inexcusable delays consist of any delay that is not listed in Article 13A.3 or accepted by the City pursuant to Article 13A.6 of the Contract.
 - g. Product data, as specified in individual Specification Sections, include, but are not limited to, the manufacturer's standard prepared data for manufactured products (catalog data), such as the product specifications, installation instructions, availability of colors and patterns, rough-in diagrams and templates, product photographs (or diagrams), wiring diagrams, performance curves, quality control inspection and reports, certifications of compliance (as specified or otherwise required), mill reports, product operating and maintenance instructions, recommended spare parts and product warranties, as applicable.
 - h. If specifically required in any of the technical Specification Sections, submit a Professional Engineer (P.E.) Certification for each item required, using the form appended to this Section, signed and sealed by the P.E. licensed or registered in the state wherein the work is located.
2. The review and approval of shop drawings, working drawings, product data, or samples by the Engineer shall not relieve the Contractor from the responsibility for the fulfillment of the terms of the Contract. All risks of error and omission are assumed by the Contractor, and HRP will have no responsibility therefore.

C. Contractor's responsibilities

1. All submittals and shop drawings for Unit Price Items shall be submitted within 15 days of Order to Commence.
2. All submittals and shop drawings shall be submitted electronically via the HRP Construction Management Information System. For Submittals that require certification, corporate seal, or professional embossment (i.e., P.E.s, Surveyors, etc) transmit at least two hard-copy originals to the Engineer. No other hard copy submittals are required.
3. Prepare and transmit each submittal sufficiently in advance of performing the related work or other applicable activities, or within the time specified in the individual work of other related Sections, so that the installation will not be delayed by processing times including disapproval and resubmittal (if required). The City shall not approve an Extension of Time for the Performance of a Job Order due to the Contractor's failure to transmit submittals sufficiently in advance of the Work.
4. Coordinate with other submittals, testing, purchasing, fabrication, delivery and similar sequenced activities.

5. If Contractor considers any correction indicated on the shop drawings to constitute a change to the Job Order, provide written notice thereof to the Engineer immediately; and do not release for manufacture before such notice has been received by HRP.
6. When the shop drawings have been completed to the satisfaction of the Engineer, carry out the Work in accordance therewith; and make no further changes therein except upon written instructions from HRP.

D. HRP'S Responsibilities

1. HRP will review each submittal within five working days.
2. If a submittal does not comply with the Contract requirements, HRP will respond accordingly to the Contractor within five working days. Thereafter, the Contractor shall perform the required corrective action until the submittal, in the opinion of the HRP, is in conformance with the Contract requirements.
3. Partial or noncompliant shop drawings (including working drawings and product data) will not be reviewed. If, in the opinion of the Engineer, a submittal is incomplete, that submittal will be returned to the Contractor for completion. Such submittals may be returned with comments from the Engineer indicating the deficiencies requiring correction.
4. The review of shop drawings, working drawings, data and samples will be for general conformance with the design concept and Contract. They shall not be construed:
 - 1) as permitting any departure from the Contract requirements
 - 2) as relieving the Contractor of responsibility for any errors, including details, dimensions, and materials
 - 3) as approving departures from details furnished by HRP, except as otherwise provided herein
5. The Contractor remains responsible for details and accuracy, for coordinating the Work with all other associated work and trades, for selecting fabrication processes, for techniques of assembly, and for performing work in a safe manner.
6. If the shop drawings (including working drawings and product data) or samples as submitted describe variations and indicate a deviation from the Contract requirements that, in the opinion of the Engineer are in the interest of the Homeowner and are so minor as not to involve a change in Contract Price or Job Order Completion Time, the Engineer may return the reviewed drawings without noting an exception.
7. The Engineer shall return the shop drawings to the Contractor with one of the following codes.

Code 1 – "APPROVED" – This code is assigned when there are no notations or comments on the submittal. When returned under this code the Contractor may release the equipment and/or material for manufacture.

Code 2 - "APPROVED AS NOTED" - This code is assigned when a confirmation of the notations and comments IS NOT required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product.

Code 3 - "APPROVED AS NOTED/CONFIRM" - This combination of codes is assigned when a confirmation of the notations and comments is required by the Contractor. The Contractor may release the equipment or material for manufacture; however, all notations and comments must be incorporated into the final product. This confirmation shall specifically address each omission and nonconforming

item that was noted. Confirmation is to be received by HRP within five working days of the date of the PROGRAM's transmittal requiring the confirmation.

Code 4 - "APPROVED AS NOTED/RESUBMIT" - This combination of codes is assigned when notations and comments are extensive enough to require a resubmittal of the entire package. This resubmittal is to address all comments, omissions and non-conforming items that were noted. Resubmittal is to be received by the PROGRAM within 10 working days of the date of HRP's transmittal requiring the resubmittal.

Code 5 – "NOT APPROVED" – This code is assigned when the submittal does not meet the intent of the Contract. The Contractor must resubmit the entire package revised to bring the submittal into conformance. It may be necessary to resubmit using a different Materialman to meet the requirements of the contract documents.

Code 6 – "COMMENTS ATTACHED" – This code is assigned where there are comments attached to the returned submittal, which provide additional data to aid the Contractor.

Code 7 – "RECEIPT ACKNOWLEDGED (Not subject to HRPs Review or Approval)" – This code is assigned to acknowledge receipt of a submittal that is not subject to the HRP's review and approval, and is being filed for informational purposes only. This code is generally used in acknowledging receipt of means and methods of construction work plans, field conformance test reports, and health and safety plans.

Codes 1 through 5 designate the status of the reviewed submittal with Code 6 showing there has been an attachment of additional data.

“OR EQUAL” MATERIALS

When it is impractical or uneconomical to make a clear and accurate description of the technical requirements of an item in the Specifications, the Specifications refer to a brand name or equal description as a means to define the performance or other salient requirements of an item. Where a brand name or catalogue number is specified, an “equal” product may be offered that meets the relevant requirements, including the construction standards in HUD Docket No. FR-5696-N-01 section IV(A)(1)(a)(5) (available at <http://www.gpo.gov/fdsys/pkg/FR-2013-03-05/pdf/2013-05080.pdf>), unless the specification expressly states that no “equal” products may be offered. If the Contractor wishes to use an item other than the brand name specified, it shall submit proof to the Engineer that such item meets the relevant requirements. The Engineer shall determine whether the item meets the relevant requirements. The Contractor shall be responsible for any additional costs or delays resulting from having furnished products other than those specified.

LEAD-BASED PAINT AND ASBESTOS CONTAINING MATERIALS ABATEMENT

As outlined in the Job Orders, the CONTRACTOR shall be required to complete Lead-Based Paint and Asbestos Containing Materials Abatement in accordance with all local, State and Federal Regulations and Codes.

LEAD-BASED PAINT

All housing units in a project assisted with CDBG funds must comply with the regulations found at 24 CFR Part 35. CONTRACTORS participating in this Program will be required to comply with Section 302 of the Lead-Based Paint Poisoning Prevention Act (42 U.S.C. Sec. 4831(b)) and the procedures established hereunder by HUD. HUD and the Environmental Protection Agency (EPA) also have regulations on lead-based paint abatement. All housing receiving federal assistance must comply with HUD Lead Safe Housing Rule (LSHR) and EPA Renovation, Repair and Painting (RRP) respectively.

For properties built before 1978, if the project will involve disturbing painted surfaces or cleaning up lead contaminated dust or soil, use certified renovation or lead abatement contractors and workers using lead-safe work

practices and clearance examinations consistent with the more stringent of EPA's Renovation, Repair, and Painting Rule and HUD's Lead Safe Housing Rule.

EPA RENOVATION, REPAIR AND PAINTING

CONTRACTORS participating in this Program will be required to comply with RRP requirements described in 40 CFR 745.80 Subpart E effective April 22, 2010 affecting work on houses constructed prior to 1978 and containing lead-based paint.

EPA LEAD CERTIFICATION

This Program will require CONTRACTORS conducting renovation, repairs and painting to be EPA certified and employees trained in the use of lead-safe work practices. These regulations will require resident notification, lead-safe working practices, cleanup procedures, documentation and record keeping.

ASBESTOS ABATEMENT

Asbestos surveys have been completed for each home. If asbestos is present, the survey is included in this document and the scope of abatement is included in the Job Order. The CONTRACTOR will procure three (3) prices for abatement and will follow standard OSHA safe work practices, and comply with all State, Local, and Federal Rules and Regulations regarding asbestos removal and disposal.

ADHESIVES AND SEALANTS

All adhesives must comply with Rule 1168 of the South Coast Air Quality Management District. All caulks and sealants must comply with regulation 8, rule 51, of the Bay Area Air Quality Management District. Seal all wall, floor, and joint penetrations with low-VOC caulking or other appropriate sealing methods to prevent pest entry. #

DIVISION 0
GENERAL UNIT PRICE ITEMS

TEMPORARY STORAGE

1. Contractor to provide an onsite storage unit, such as a "POD", sufficient to accommodate furniture and large household items of Homeowner and Occupants. Contractor shall provide a secure lock for the onsite storage unit and at least two keys to the Homeowner. .. Contractor shall pack and move furniture and large household items from the Dwelling to the onsite storage unit. Homeowner shall be responsible for removing and causing the Occupants to remove all valuables and small household items prior to the start of construction. Contractor shall place furniture and large items in approximately the same location after Final Acceptance.
2. If the Dwelling cannot accommodate an onsite storage unit for the duration of the Job Order Work, the Contractor shall remove the storage unit to a climate-controlled location provided by the unit provider for the duration of the Job Order. Furniture and belongings to be replaced in approximately the same location at the completion of job. Contractor shall place furniture and large items in approximately the same location after Final Acceptance.
3. The Work is reimbursed at cost with no mark-up.

TEMPORARY HOMEOWNER RELOCATION

1. If the Job Order requires temporary housing relocation for the Homeowner or Occupant (not including animals), Contractor shall arrange for housing at an approved hotel for the time stated on the Job Order. Contractor shall provide invoice from approved hotel for reimbursement with final invoice. No additional expenses beyond actual cost of hotel room will be reimbursed.
2. Work is reimbursed at cost with no mark-up.

TEMPORARY PET BOARDING

1. If the Job Order requires temporary boarding for a companion animal, Contractor shall arrange for pet boarding for the time stated on the Job Order.

Work is reimbursed at cost with no mark-up.

MISSED APPOINTMENT

1. The Contractor is required to attend all scheduled meetings required by the HRP. . Failure to arrive at the Joint Scope Meeting within 30 minutes of the time set forth in the Notice shall constitute a missed appointment and the Contractor shall be subject to liquidated damages pursuant to section 3B(3) of the Contract.

REINSPECTION

1. The Contractor is required to call for inspections consistent with Article 3D of the Contract. If the Contractor fails an inspection and an additional inspection is required, the Contractor shall reimburse the City for the reasonable cost of reinspection.

DIVISION 2 - SITE WORK

SECTION 02000 CLEAN-UP

PART 1 – GENERAL

1.1 CLEANUP AND DISPOSAL OF EXCESS MATERIAL

- A. During the course of the Work, keep the Dwelling as clean and neat as possible. Dispose of all residue resulting from the construction Work and, at the conclusion of the Work, remove and haul away any surplus excavation, broken pavement, lumber, equipment, temporary structures and any other refuse remaining from the construction Work and leave the entire Dwelling in a neat and orderly condition.
- B. In order to prevent environmental pollution arising from the construction Work, comply with all applicable Federal, State and local laws and regulations concerning waste material disposal, as well as the specific requirements stated in this Section and in other related sections.
- C. Disposal of excess excavated material in wetlands, stream corridors and plains is strictly prohibited even if the permission of the Homeowner is obtained. Any violation of this restriction by the Contractor, Subcontractor or any person employed by the Contractor or Subcontractor will be brought to the immediate attention of the responsible regulatory agencies, with a request that appropriate action be taken against the offending parties. The Contractor will be required to remove the fill and restore the area impacted at no increase in the Contract Price.

END OF SECTION 02000

SECTION 02220
MOLD ASSESSMENT & REMEDIATION

PART 1 GENERAL

1.01 SUMMARY

- A. Contractor will be provided with an Environmental Assessment Report outlining the extent of mold present. All contractors and team leaders must carefully review the work scope prepared by the environmental consultant. The work scope will include guidelines for properly securing work sites and will include site clean-up procedures for the safety of workers and the household.
- B. Three different sizes of mold treatment are described below. The size of the area impacted by mold growth as well as practical considerations were used to help define treatment procedures.
 - 1) Small Isolated Areas (less than 10 square feet) – e.g., ceiling tiles, small areas on walls
 - (a) Treatment can be conducted by trained building maintenance staff. Such persons should receive training on proper cleaning methods, personal protection, and potential health hazards associated with mold exposure. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
 - (b) Respiratory protection (e.g., N-95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should also be worn.
 - (c) The work area should be unoccupied.
 - (d) If work may impact difficult-to-clean surfaces or items (e.g. carpeting, electronic equipment), the floor of the work area, egress pathways, and other identified materials/belongings should be removed or covered with plastic sheeting and sealed with tape before mold treatment.
 - (e) Efforts should be made to reduce dust generation. Dust suppression methods particularly during any cutting or resurfacing of materials are highly recommended. Methods to consider include: cleaning or gently misting surfaces with a dilute soap or detergent solution prior to removal; the use of High-Efficiency Particulate Air (HEPA) vacuum-shrouded tools; or using a vacuum equipped with a HEPA filter at the point of dust generation. Work practices that create excessive dust should be avoided.
 - (f) Moldy materials that can be cleaned should be cleaned using a soap or detergent solution. Materials that cannot be cleaned should be removed from the Dwelling in a sealed plastic bag(s). Plastic sheeting should be discarded after use. There are no special requirements for the disposal of moldy materials.
 - (g) The work area and areas used by workers for egress should be HEPA-vacuumed (a vacuum equipped with a High-Efficiency Particulate Air filter) or cleaned with a damp cloth and/or mop and a soap or detergent solution.
 - (h) All areas should be left dry and visibly free from mold, dust, and debris. Check that other quality assurance indicators (see quality insurance indicators below) have also been met.

2) Medium-Sized Isolated Areas (10 – 100 square feet)

- (a) Mold Treatment can be conducted by trained building maintenance staff. Such persons should receive training on proper cleaning methods, personal protection, and potential health hazards associated with mold exposure. This training can be performed as part of a program to comply with the requirements of the OSHA Hazard Communication Standard (29 CFR 1910.1200).
- (b) Respiratory protection (e.g., N-95 disposable respirator), in accordance with the OSHA respiratory protection standard (29 CFR 1910.134), is recommended. Gloves and eye protection should also be worn.
- (c) The work area should be unoccupied.
- (d) Cover the floor, egress pathways, and items left in the work area with plastic sheeting and seal with tape before mold treatment.
- (e) Seal ventilation ducts/grills and other openings in the work area with plastic sheeting. The HVAC system servicing this area may need to be shut down to properly seal vents.
- (f) Efforts should be made to reduce dust generation. Dust suppression methods particularly during any cutting or resurfacing of materials are highly recommended. Methods to consider include: cleaning or gently misting surfaces with a dilute soap or detergent solution prior to removal; the use of High-Efficiency Particulate Air (HEPA) vacuum-shrouded tools; or using a vacuum equipped with a HEPA filter at the point of dust generation. Work practices that create excessive dust should be avoided.
- (g) Moldy materials that can be cleaned should be cleaned using a soap or detergent solution. Materials that cannot be cleaned should be removed from the building in sealed plastic bags. Plastic sheeting should be discarded after use. There are no special requirements for disposal of moldy materials.
- (h) The work area and areas used by workers for egress should be HEPA-vacuumed and cleaned with a damp cloth and/or mop and a soap or detergent solution.
- (i) All areas should be left dry and visibly free from mold, dust, and debris. Check that other quality assurance indicators (see quality insurance indicators below) have also been met.

3) Large Areas (greater than 100 square feet in a contiguous area) – e.g., on separate walls in a single room

- (a) Personnel trained in the handling of mold-damaged materials equipped with:
 - i. A minimum of half-face elastomeric respirators with P-100 filters used in accordance with the OSHA respiratory protection standard (29 CFR 1910.134)
 - ii. Full body coveralls with head and foot coverings
 - iii. Gloves and eye protection
- (b) Containment of the affected area: i. The HVAC system servicing this area shall be shut down during treatment. ii. Isolation of the work area using plastic sheeting sealed with duct tape. Furnishings shall be removed from the area. Ventilation ducts/grills, any other openings, and remaining fixtures/furnishings should be covered with plastic sheeting sealed with duct tape. iii. Consider using an exhaust fan equipped with a HEPA filter to generate negative pressurization. iv. Consider using airlocks and a clean changing room. v. Egress pathways should also be covered if a clean changing room is not used.

(c) The work area should be unoccupied.

(d) Efforts should be made to reduce dust generation. Dust suppression methods particularly during any cutting or resurfacing of materials are highly recommended. Methods to consider include: cleaning or gently misting surfaces with a dilute soap or detergent solution prior to removal; the use of High-Efficiency Particulate Air (HEPA) vacuum-shrouded tools; or using a vacuum equipped with a HEPA filter at the point of dust generation. Work practices that create excessive dust should be avoided.

(e) Moldy materials, that can be cleaned, should be cleaned using a soap or detergent solution. Materials that cannot be cleaned should be removed from the Dwelling in sealed plastic bags. The outside of the bags should be cleaned with a damp cloth and a soap or detergent solution or HEPA-vacuumed in the work area (or clean changing room) prior to their transport to unaffected areas of the Dwelling. There are no special requirements for the disposal of moldy materials.

(f) Before leaving isolated areas, workers should remove disposable clothing to prevent the tracking of mold-containing dusts outside of the work area.

(g) The work area and egress pathways (and clean changing room if present) should be HEPA-vacuumed and cleaned with a damp cloth and/or mop with a soap or detergent solution and be visibly clean prior to the removal of isolation barriers. Plastic sheeting should be discarded after use.

(h) All areas should be left dry and visibly free from mold, dust, and debris. Check that other quality assurance indicators (see quality assurance indicators below) have also been met.

PART 2 – PRODUCTS – NOT USED

PART 3 - EXECUTION

1. **Non-structural wood studs and floor sills in basements:** If minor/isolated mold growth is present, HEPA vacuum non-structural wood and then scrub with a detergent solution. *Note: Chlorine bleach, chemical biocides, and encapsulants are not permitted to be used on wood in this program.*

If significant/widespread mold growth is present, remove and dispose of non-structural wood, or alternatively remove visible mold using dry ice blasting or baking soda blasting method. *Note: These methods should be used only by trained and experienced contractors using appropriate ventilation and wearing appropriate respiratory and other personal protective equipment.*

2. **Structural wood studs, floor sills, and sheathing on first floors:** HEPA vacuum structural wood displaying mold growth and then scrub with a detergent solution. *Note: Chlorine bleach, chemical biocides, and encapsulants are not permitted to be used on wood in this program.*

Alternatively, remove visible mold on structural wood using dry ice blasting or baking soda blasting method. *Note: These methods should be used only by trained and experienced contractors using appropriate ventilation and wearing appropriate respiratory and other personal protective equipment.*

3. **Sheetrock on exterior-side of galvanized metal studs (EIFS constructions):** HEPA vacuum visible mold on sheetrock and then encapsulate using a low-toxicity fungicidal/fungistatic encapsulant coating with a high moisture permeability rating (eg. Foster 40-50). *Note: this is an exception of the general prohibition on the use of chemical biocides and encapsulants.*

4. **Kitchen Cabinetry and Bathroom Vanities:** If minor/isolated mold growth is present, HEPA vacuum and then scrub cabinetry with a detergent solution. If significant/widespread mold growth is present, remove of cabinetry, which in most cases removal will require destruction of the counter tops. *Note: Chlorine bleach, chemical biocides, and encapsulants are not permitted to be used on*

wood in this program.

5. **Bathroom Tile:** If visible mold is observed on tile backer through an opening in the opposing wall, remove and dispose of bathroom tile wall.
6. **Finished Wood Floors:** If finished wood floors show significant buckling, remove and dispose of finished wood flooring. Remove and dispose of underlying sub-flooring if plywood or HEPA vacuum and then scrub the top sides with a detergent solution if wood boards. *Note: Chlorine bleach, chemical biocides, and encapsulants are not permitted to be used on wood in this program.*

Alternatively, remove visible mold on top sides of wood boards using dry ice blasting or baking soda blasting method. *Note: These methods should be used only by trained and experienced contractors using appropriate ventilation and wearing appropriate respiratory and other personal protective equipment.*

7. **Sub-Floorboards:** HEPA vacuum and then scrub the bottom side of wood sub-floorboards and underlying structural wood joists with a detergent solution from either the basement or crawlspace. *Note: Chlorine bleach, chemical biocides, and encapsulants are not permitted to be used on wood in this program.*

Alternatively, remove visible mold on bottom sides of wood sub-floorboards and underlying structural wood joists using dry ice blasting or baking soda blasting method. *Note: These methods should be used only by trained and experienced contractors using appropriate ventilation and wearing appropriate respiratory and other personal protective equipment.*

8. **Plaster:** Visible mold on plaster walls will be remediated by scraping to remove the paint.
9. **Wood Staircases:** HEPA vacuum wood staircases displaying mold growth and then scrub with a detergent solution. *Note: Chlorine bleach, chemical biocides, and encapsulants are not permitted to be used on wood in this program.*

Alternatively, remove visible mold on wood staircases using dry ice blasting or baking soda blasting method. *Note: These methods should be used only by trained and experienced contractors using appropriate ventilation and wearing appropriate respiratory and other personal protective equipment.*

END OF SECTION 02220

SECTION 02221
DEMOLITION, REMOVAL & ABATEMENT

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes demolition and removal or abatement of the following:

1. Buildings and structures.
2. Site improvements including Site utilities.
3. Hazardous materials.
4. Provide erosion protection for all disturbed areas as described in this Section.

B. Scope:

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

9. Contractor shall provide erosion control as directed by Engineer for all other disturbed areas damaged by Contractor's performance of the Work. Engineer may direct Contractor to apply sod as a corrective measure to repair property damage as an erosion control repair method.

1.2 PROJECT CONDITIONS

- A. Hazardous Materials: Hazardous materials may be present in Dwellings to be demolished or rehabilitated. Reports on the known presence of hazardous materials are included in the Job Order. Examine reports to become aware of locations where hazardous materials are present.
 1. Lead Based Paint ("LBP")

For all Dwellings constructed prior to 1978 – samples from four (4) floors, two (2) window sills and two (2) window troughs (all randomly selected) plus a blank sample must be submitted to an EPA-accredited lead analytical laboratory and the dust samples must pass a dust wipe test for lead content as per the protocol in the HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition) . Lead-safe work practices must be followed, and only certified abatement contractors used to perform the Work. The HUD Guidelines for the Evaluation and Control of Lead-Based Paint Hazards in Housing (2012 Edition) are available at <http://www.hud.gov/offices/lead/lbp/hudguidelines>.

When stabilization of surfaces containing LBP is impractical, the most affordable solution for abatement of the component will be chosen. Walls containing LBP may be covered with drywall or gutted and replaced with drywall. Trim and other wood or metal components containing LBP may be removed and replaced with similar materials. Lead-safe work practices must be followed, and only certified abatement contractors used to perform the work.
 2. Asbestos
Non-friable intact Asbestos materials that are not creating a hazard such as cementitious exterior wall shingles may be left intact and painted if appropriate. Asbestos-resilient floor tiles may be labeled as such and covered with underlayment and new resilient flooring. Contractor shall remove friable asbestos components such as boiler or pipe insulation, badly deteriorated cementitious shingles or deteriorated flooring will be removed and, if necessary, replaced with non-hazardous materials.

PART 2 - PRODUCTS

2.1 SOIL MATERIALS

- A. Satisfactory Soils: Shall be free of debris and other detrimental material. Fill shall be compacted to a density that will avoid damaging settlement. Fill shall be placed when ground is frost free and weather is favorable.
- B. Back Fill: Fill material shall consist of well graded sand, gravel, crushed rock, recycled concrete aggregate, or a mixture of these, or equivalent materials with a maximum of 10 percent passing the #200 sieve, as determined from the percent passing the #4 sieve. Fill shall be placed and compacted in lifts, not exceeding 12 inches (305 millimeters), at its optimum moisture content, plus or minus two percent, and to not less than a density of ninety-five percent of the optimum density as determined by ASTM D 1557. Fill density shall be verified by in-place tests made on each lift.
- C. Topsoil: Shall be free of debris, rock or gravel. Shall consist of a sandy loam containing 2 to 2.5% organic matter. Furnish and place topsoil 4-inches thick over area to be sodded or seeded if called for in the Job Order. Spread evenly to true contours and hand rake to an even, smooth surface, ready for sodding.

2.2 SOD

- A. Contractors must utilize sod in native species to this area. Sod shall be bluegrass or a bluegrass/red fescue mixture or a perennial ryegrass for average sites. (CAUTION: Perennial ryegrass has limited cold tolerance and may winter kill.) Use turf type cultivars of tall fescue for shady, droughty, or otherwise more critical areas. For variety selection, contact Cornell Cooperative Extension Turf Specialist. Because of the chemical content in the soil, seed will not be a suitable mitigation alternative as it cannot thrive under those conditions.
- B. Approved sod shall be either field grown grass or nursery grown grass delivered in rolls or slabs. Sod shall be free from noxious weeds or other vegetation.

PART 3 - EXECUTION-

3.1 EXAMINATION

- A. Survey existing conditions and correlate with requirements indicated to determine extent of building demolition required.
- B. When unanticipated mechanical, electrical, or structural elements are encountered, investigate and measure the nature and extent of the element. Promptly submit a written report to Architect.
- C. Verify that hazardous materials have been remediated before proceeding with building demolition operations.

3.2 PREPARATION

- A. Refrigerant: Remove and store refrigerant according to 40 CFR 82 and regulations of authorities having jurisdiction.
- B. Existing Utilities: Locate, identify, disconnect, and seal or cap off indicated utilities serving buildings or sections of buildings to be demolished.
 - 1. Arrange to shut off indicated utilities with utility companies.
 - 2. If utility services are required to be removed, relocated, or abandoned, before proceeding with building demolition provide temporary utilities that bypass buildings and structures to be demolished and that maintain continuity of service to other buildings and structures.
 - 3. Cut off pipe or conduit a minimum of 24-inches (610-mm) below grade. Cap, valve, or plug and seal remaining portion of pipe or conduit after bypassing.
- C. Temporary Shoring: Provide and maintain interior and exterior shoring, bracing, or structural support to preserve stability and prevent unexpected movement or collapse of construction being demolished.

3.3 PROTECTION

- A. Existing Facilities and Items To Remain: Protect adjacent walkways, and remaining building elements, if any. Items may be removed to a suitable, protected storage location during demolition, and cleaned and reinstalled in their original locations after demolition operations are complete
- B. Existing Utilities: Locate existing underground utilities in areas of work. If utilities are to remain in place, provide adequate means of protection during earthwork operations. Maintain utility services indicated to remain and protect them against damage during demolition operations.

1. Do not interrupt existing utilities serving adjacent occupied property unless authorized in writing by owner of such adjacent property and authorities having jurisdiction.
2. Provide temporary services during interruptions to existing utilities, as acceptable to Homeowner and to authorities having jurisdiction.

3.4 DEMOLITION, GENERAL

- A. Extent of demolition identified in work order. Demolition and partial demolition of items to be removed or replaced shall be done in a safe and orderly manner without damage to other portions of the property or adjacent properties. Any resulting damage or loss shall be corrected at the expense of the Contractor. Complete demolition shall include building, foundation, and paving in its entirety unless otherwise in Job Order.
- B. Use methods required to complete the Work within limitations of governing regulations.
- C. Site Access and Temporary Controls: Conduct building demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent occupied and used facilities.
 1. Do not close or obstruct streets, walks, walkways, or other adjacent occupied or used facilities without permission from authorities having jurisdiction
 2. Use water mist and other suitable methods to limit spread of dust and dirt. Comply with governing environmental-protection regulations.

3.5 MECHANICAL DEMOLITION

- A. Contractor shall remove and haul away the structure indicated. Contractor shall be responsible for the safe removal of all utilities (gas, water, sewer and electric). If structure is attached to an existing structure that is not to be removed, utilities shall be discontinued for the demolished section only. All parts and debris from the demolition shall be removed from the site within 72 hours from commencement of Work unless otherwise provided in the Job Order.
- B. Concrete: Cut concrete full depth at junctures with construction indicated to remain, using power-driven saw, then remove concrete between saw cuts.
 1. Patching Concrete:
 - a. Mix and apply bonding agent to prepared concrete areas in accordance with manufacturer's printed instructions.
 - b. Mix concrete mortar for patches, using Portland cement, sand and water in proper proportions for a workable mix.
 - c. The amount of mixing water shall be as little as is consistent with the requirements for handling and placing. Retemper mortar without the addition of water.
 - d. Thoroughly compact mortar into place and screed off to leave patches slightly higher than surrounding surfaces.
 - e. Leave patch undisturbed for a period of 1 to 2 hours to permit initial shrinkage before finally finishing. Finish patches in such a manner to match adjoining surfaces.

- f. When repairing concrete all patches shall be mechanically cut, doweled and re-poured. Depth, width and height for new reinforced concrete retaining wall; install a 2-inch sand cushion and No. 3 and No. 4 steel rebar tied in an "H" pattern the full length of the beam; pour a premixed concrete into forms; temperature must be a minimum of 40 degrees F and rising; rough finish all surfaces. Remove all debris and excess materials.
- C. Masonry: Cut masonry at junctures with construction indicated to remain, using power-driven saw, then remove masonry between saw cuts.
- D. Concrete Slabs-on-Grade: Saw-cut perimeter of area to be demolished at junctures with construction indicated to remain, then break up and remove.
- E. Carpet and Pad: Wet carpet face with mister. Remove in large pieces and roll tightly after removing demolition debris, trash, adhesive, and tack strips. Wrap in 4 mil. Plastic.
- F. Equipment: Disconnect equipment at nearest fitting connection to services, complete with service valves. Remove as whole units, complete with controls.
- G. Existing Utilities: Abandon existing utilities and below-grade utility structures. Cut utilities flush with grade.

3.6 EARTHWORK

- A. Excavation:
 1. Clearing, grubbing, clean up of vegetation, and tree trimming and/or removal is to be done where excavation and grading are required
 2. Excavate to elevations and dimensions indicated, plus sufficient space to permit erection of forms, shoring, drain tile, waterproofing, masonry and the inspection of foundations. Control the grading around buildings so that ground is pitched to prevent water from running into the excavated areas of buildings or damaging other structures. Furnish all pumping required to keep excavated spaces clear of water during construction. Water shall not be conducted onto an adjacent property. All property shall be protected with straw bails or earth berms, per applicable soil erosion standards, to prevent dirt runoff.
 3. Excavations shall be properly shored and braced to assure against any danger to life and/or property. Drainage to be provided by Contractor as necessary.
 4. Except where rock is encountered, care shall be taken not to excavate below the depths indicated. Where rock excavation is required, the rock shall be removed and the over depth filled with certified compacted backfill. Unauthorized over depths in excavation shall be backfilled with concrete or certified compacted fill to correct elevation or bear cost of a deeper wall. Whenever wet or otherwise unstable soil is encountered, such soil shall be removed to the depth and extent directed, and the trench backfilled to the proper grade with concrete or certified compacted fill at the Contractor's expense.
 5. Excavations for footings shall be in neat and accurately cut trenches. Contractor is to backfill upon completion of foundation work. Footing excavations for single-story dwellings, are to be a minimum of 12-inch into undisturbed soil and 12-inch wide; for two story dwellings a minimum of 15-inch wide and 12-inch into undisturbed soil, footings are to be 20-inch in depth.

- a. In no case shall the load per square foot, under any portion of any footing, due to the combined dead load, live load, wind, and/or any other loads exceed the safe bearing capacity of the soil upon which the footing rests.
6. Water shall not be permitted to accumulate in excavated or crawl space areas. Drain by standard accepted method to a storm sewer or natural drainage area.

B. Backfill:

1. Area to be filled shall be stripped of all organic materials, rubbish and debris.
2. Fill shall not be placed when frozen or on frozen or saturated subgrade.
3. The engineer, or the engineer's representative, shall approve the subgrade prior to fill placement.
4. Fill material shall consist of well graded sand, gravel, crushed rock, recycled concrete aggregate, or a mixture of these, or equivalent materials with a maximum of 10 percent passing the #200 sieve, as determined from the percent passing the #4 sieve.
5. Fill shall be placed and compacted in lifts, not exceeding 12 inches (305 millimeters), at its optimum moisture content, plus or minus two percent, and to not less than a density of ninety-five percent of the optimum density as determined by ASTM D 1557.
6. Fill density shall be verified by in-place tests made on each lift.
7. The allowable bearing value of controlled fill shall be limited to 3 tons per square foot (383 kPa) providing the underlying soil is not weaker than the controlled fill.
8. Care is to be taken not to fracture the wall by having heavy equipment located too near to the structure.
9. No backfill shall be placed until the construction adjacent thereto, or the utility to be backfilled, has been inspected, tested and approved.

3.7 EROSION CONTROL

- A. The Contractor shall manage surface water runoff for compliance with the state and any and all applicable federal, state, and local requirements.
- B. The Contractor shall limit the area disturbed by the contract activities to maximum extent practicable. Contractors will be required to replace grassy areas disturbed by their work to match the existing turf condition using sod and not seed. The Contractor is required to install erosion control measures at sites to ensure no erodible waste enter the roadways or drainage systems when necessary.
- C. The Contractor shall be required to:
 1. Install sediment controls prior to beginning construction activities.
 2. Install sedimentation controls prior to beginning construction activities.
 3. Schedule land stabilization activities, such as landscaping, immediately after land has had final contouring.
- D. Areas to receive sod shall be uniformly graded and cleared of weeds, grass, stones, and other debris. Sod shall be transferred onto the surface soil. Sod shall be placed with no space between edges. Slab and roll edges shall be staggered to avoid a continuous seam along the line of flow. Slab edges which

do not fit closely shall be pulled together by hand without stretching or tearing and pegged when necessary.

3.8 SITE RESTORATION

- A. Below-Grade Areas: Rough grade below-grade areas ready for further excavation or new construction.
- B. Site Grading: Uniformly rough grade area of demolished construction to a smooth surface, free from irregular surface changes. Provide a smooth transition between adjacent existing grades and new grades.
- C. Grading for Drainage: Slope all ground away from structure a minimum grade of 6-inches in 10-feet for the first 20-feet. Water must always be directed away from the structure. Use swails or earth berms to direct water flow from grades and to aid in positive drainage.
- D. Landscaping:
 - 1. Seeding: Prepare the area to be seeded by removing all debris, grading, spreading topsoil if required and hand raking. Sow lawn grass seed, working seed into soil by raking and watering. Cover seeded area with straw. All areas disturbed during the course of construction or as indicated in the work write-up or drawings shall be seeded. Contractor shall guarantee a 3" stand of grass.
 - 2. Sodding: Sod areas indicated:
 - a. Sod: Sod shall be as specified above and shall be a minimum 1" thick, reasonably free of weeds and crab grass; approved by the State before laying; laid with tight joints. After laying thoroughly, water and tamp or roll until bonded to topsoil.
 - b. Slopes one (1) foot rise in two (2) feet or steeper: carefully pegged to hold sod until roots spread and firmly grip soil beneath.
 - c. Guarantee: Sodded areas which do not show a prompt catch shall be re-sodded at the Contractor's expense.

3.9 REPAIRS

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

3.10 PEST CONTROL

- A. General: Pest Control shall be performed by a licensed professional pest control operator using termiticides which bear a federal registration number of the U.S. Environmental Protection Agency. Termiticides used may be Chloropyrifos ("Dursban TC") or Permethrin ("Dragnet", "Torpedo") or approved equal. Contractor shall furnish to the Homeowner at Final Inspection a Certificate of Warranty for each Dwelling, certifying that the applied soil termiticide treatment will prevent infestation of subterranean termites for a period of (5) five years.

3.11 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Homeowner's property, remove demolished materials from Dwelling and legally dispose of them in an EPA-approved landfill.
 - 1. Do not allow demolished materials to accumulate on-site.
 - 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas
- B. Disposal: Transport demolished materials off Dwelling and legally dispose of them.

3.12 CLEANING

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

END OF SECTION 02221

DIVISION 3 – CONCRETE

SECTION 03025 CONCRETE

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes exterior Portland cement concrete for the following:

1. Walkways as required for access to ADA Ramps or Lifts.
2. Pad for Lift.
3. Exterior precast Steps.
4. Porch-decks.
5. Foundations/Elevations.
6. Repair, replacement, and installation of driveways and sidewalks.

B. Scope

1. All work associated with foundations, including but not limited to footings and piers, is to be designed by a registered New York State Engineer. Any references to portions of work related to foundations are provided for the purposes of identifying scope.
2. For repair and replacement, materials shall be such to produce finish textures and colors to closely match existing surfaces.
3. Bonding of repair work to existing concrete members is critical, and repair work shall become an integral part of existing members.

C. Related Sections: The following Sections contain requirements that relate to this Section:

1. Section 14410 "Lifts" for ADA Ramps or Lifts.

1.2 QUALITY ASSURANCE

A. Concrete Standards: Comply with provisions of the following standards, except where more stringent requirements are indicated.

1. American Concrete Institute (ACI) 301, "Specifications for Structural Concrete for Buildings."
2. ACI 318, "Building Code Requirements for Reinforced Concrete."
3. Concrete Reinforcing Steel Institute (CRSI) "Manual of Standard Practice."

B. Concrete Manufacturer Qualifications: Manufacturer of ready-mixed concrete products complying with ASTM C94 requirements for production facilities and equipment.

PART 2 - PRODUCTS

2.1 FORMS

- A. Form Materials: Plywood, metal, metal-framed plywood, or other acceptable panel-type materials to provide full-depth, continuous, straight, smooth exposed surfaces.
 - 1. Use flexible or curved forms for curves of a 100-foot or less radius.
- B. Form Release Agent: Provide commercial formulation form-release agent with a maximum of 350 g/L volatile organic compounds (VOCs) that will not bond with, stain, or adversely affect concrete surfaces and will not impair subsequent treatments of concrete surfaces.

2.2 REINFORCING MATERIALS

- A. Welded Steel Wire Fabric: ASTM A185.
- B. Hook Bolts: ASTM A307, Grade A bolts, internally and externally threaded. Design hook bolt joint assembly to hold coupling against pavement form and in position during concreting operations, and to permit removal without damage to concrete or hook bolt.
- C. Supports for Reinforcement: Chairs, spacers, dowel bar supports and other devices for spacing, supporting, and fastening reinforcing bars, welded wire fabric, and dowels in place. Use wire bar-type supports complying with CRSI specifications.
- D. At no time will more than 2% calcium chloride be used in freezing weather to accelerate concrete setting. No concrete shall be placed on frozen ground or when the temperature is less than 32 degrees. Concrete may be placed when temperature is 32 degrees or more, provided, however, that weather reports indicate a daily high of at least 40 degrees. After concrete has been finished, when temperatures are expected to be below 32 degrees, a 12" cover of straw shall be spread evenly to preclude freezing. All frozen or spalled concrete will be removed and replaced at Contractor's expense. A controlled environment with an interior temperature of 32 degrees or greater is acceptable if the temperature will remain 32 degrees or greater for five days thereafter.

2.3 CONCRETE MATERIALS

- A. Portland Cement: ASTM C150, Type I.
 - 1. Use one brand of cement throughout Project unless otherwise acceptable to Architect.
- B. Normal-Weight Aggregates: ASTM C33, Class 4, and as follows. Provide aggregates from a single source.
 - 1. Maximum Aggregate Size: Comply with Structural Package, Section "Cast-In-Place Concrete" for concrete materials as required.
 - 2. Do not use fine or coarse aggregates that contain substances that cause spalling.
 - 3. Local aggregates not complying with ASTM C33 that have been shown to produce concrete of adequate strength and durability by special tests or actual service may be used when acceptable to Architect.
- C. Water: Potable.

2.4 ADMIXTURES

- A. Air-Entraining Admixture: ASTM C260, certified by manufacturer to be compatible with other required admixtures.

2.5 CURING MATERIALS

- A. Absorptive Cover: Burlap cloth made from jute or kenaf, weighing approximately 9 oz. per sq. yd., complying with AASHTO M182, Class 2.

2.6 EXPOSED AGGREGATE

- A. Aggregate: Clean, washed, uniformly round gravel graded as follows to match existing installations:
 1. 25 percent by volume shall pass through a 1/2-inch screen and be retained on a 3/8-inch screen.
 2. 25 percent by volume shall pass through a 3/8-inch screen and be retained on a 1/4-inch screen.
 3. 50 percent by volume shall pass through a 3/8-inch screen and be retained on a 1/2-inch screen.

2.7 CONCRETE MIX

- A. Prepare design mixes for each type and strength of normal-weight concrete by either laboratory trial batch or field experience methods as specified in ACI 301. For the trial batch method, use a qualified independent testing agency for preparing and reporting proposed mix designs.
- B. Proportion mixes according to ACI 211.1 and ACI 301 to provide normal-weight concrete with the following properties:
 1. Compressive Strength (28-Day): Minimum 3000 psi.
 2. Slump Limit at Point of Placement: 2 to 4 inches.
- C. Add air-entraining admixture at manufacturer's prescribed rate to result in concrete at point of placement having an air content as follows with a tolerance of plus or minus 1-1/2 percent:
 1. Air Content: 5.5 percent for 1-1/2-inch maximum aggregate.
 2. Air Content: 6.0 percent for 1-inch maximum aggregate.
 3. Air Content: 6.0 percent for 3/4-inch maximum aggregate.
 4. Air Content: 7.0 percent for 1/2-inch maximum aggregate.
- D. Adjustment to Concrete Mixes: Mix design adjustments may be requested by Contractor when characteristics of materials, project conditions, weather, test results, or other circumstances warrant.

2.8 CONCRETE MIXING

- A. All concrete shall be Ready-Mixed Concrete, from any local producer: Comply with requirements and with ASTM C94.
 1. When air temperature is between 85 deg F (30 deg C) and 90 deg F (32 deg C), reduce mixing and delivery time from 1-1/2 hours to 75 minutes; when air temperature is above 90 deg F (32 deg C), reduce mixing and delivery time to 60 minutes.

PART 3 - EXECUTION

3.1 EDGE FORMS AND SCREED CONSTRUCTION

- A. Set, brace, and secure edge forms, bulkheads, and intermediate screed guides for paving to required lines, grades, and elevations, to match existing installation. Install forms to allow continuous progress of work and so that forms can remain in place at least 24 hours after concrete placement.
- B. Check completed formwork and screeds for grade and alignment to following tolerances:
 - 1. Top of Forms: Not more than 1/8-inch in 10-feet.
 - 2. Vertical Face on Longitudinal Axis: Not more than 1/4-inch in 10-feet.
- C. Clean forms after each use and coat with form release agent as required to ensure separation from concrete without damage.

3.2 PLACING REINFORCEMENT

- A. General: Comply with Concrete Reinforcing Steel Institute's recommended practice for "Placing Reinforcing Bars" for placing and supporting reinforcement.
- B. Clean reinforcement of loose rust and mill scale, earth, ice, or other bond-reducing materials.
- C. Install welded wire fabric in lengths as long as practicable. Lap adjoining pieces at least one full mesh and lace splices with wire. Offset laps of adjoining widths to prevent continuous laps in either direction.

3.3 JOINTS

- A. General: Construct contraction, construction, and isolation joints true to line with faces perpendicular to surface plane of concrete. Construct transverse joints at right angles to the centerline, unless indicated otherwise.
 - 1. When joining existing paving, place transverse joints to align with previously placed joints, unless indicated otherwise.
 - 2. For repairing existing joint sealer, new joint sealer shall match existing new joint sealer.
- B. Contraction Joints: Provide weakened-plane contraction joints, sectioning concrete into areas as specified. Construct contraction joints for a depth equal to at least 1/4 of the concrete thickness, as follows:
 - 1. Tooled Joints: Form contraction joints in fresh concrete by grooving and finishing each edge of joint with a radiused jointer tool.
 - 2. Sawed Joints: Form contraction joints with power saws equipped with shatterproof abrasive or diamond-rimmed blades. Cut 1/8-inch wide joints into hardened concrete when cutting action will not tear, abrade, or otherwise damage surface and before development of random contraction cracks.
- C. Installation of joint fillers and sealants as specified.

- D. Install dowel bars and support assemblies at joints where indicated. Lubricate or asphalt-coat one half of dowel length to prevent concrete bonding to one side of joint.

3.4 CONCRETE PLACEMENT

- A. Place concrete in forms in one layer of the required thickness. After concrete has been placed in forms, use a strike-off device to bring the surface to the proper section to be compacted. Tamp and consolidate the concrete with a suitable wood or metal tamping bar. Where repair and replacement of new concrete is adjacent to or is a part of existing concrete, finish on new concrete shall match finish of existing concrete.
- B. Deposit and spread concrete in a continuous operation between transverse joints. Do not push or drag concrete into place or use vibrators to move concrete into place.
- C. Use a bonding agent at locations where fresh concrete is placed against hardened or partially hardened concrete surfaces.
- D. Consolidate concrete by mechanical vibrating equipment supplemented by hand-spading, rodding, or tamping. Use equipment and procedures to consolidate concrete complying with ACI 309R:
 - 1. Consolidate concrete along face of forms and adjacent to transverse joints with an internal vibrator. Keep vibrator away from joint assemblies, reinforcement, or side forms. Use only square-faced shovels for hand-spreading and consolidation. Consolidate with care to prevent dislocating reinforcing, dowels, and joint devices.
- E. Screed paved surfaces with a straightedge and strike off. Use bull floats or darbies to form a smooth surface plane before excess moisture or bleed water appears on the surface. Do not further disturb concrete surfaces prior to beginning finishing operations.
- F. Cold-Weather Placement: Comply with provisions of ACI 306R and as follows. Protect concrete work from physical damage or reduced strength that could be caused by frost, freezing actions, or low temperatures.
 - 1. When air temperature has fallen to or is expected to fall below 40 deg F (4 deg C), uniformly heat water and aggregates before mixing to obtain a concrete mixture temperature of not less than 50 deg F (10 deg C) and not more than 80 deg F (27 deg C) at point of placement.
 - 2. Do not use frozen materials or materials containing ice or snow.
 - 3. Do not use calcium chloride, salt, or other materials containing antifreeze agents or chemical accelerators unless otherwise accepted in mix designs.
- G. Hot-Weather Placement: Place concrete complying with ACI 305R and as specified when hot weather conditions exist.
 - 1. Cool ingredients before mixing to maintain concrete temperature at time of placement to below 90 deg F (32 deg C). Mixing water may be chilled or chopped ice may be used to control temperature, provided water equivalent of ice is calculated to total amount of mixing water. Using liquid nitrogen to cool concrete is Contractor's option.
 - 2. Cover reinforcing steel with water-soaked burlap if it becomes too hot, so that steel temperature will not exceed the ambient air temperature immediately before embedding in concrete.
 - 3. Fog spray forms, reinforcing steel, and subgrade just before placing concrete. Keep subgrade moisture uniform without standing water, soft spots, or dry areas.

3.5 CONCRETE FINISHING

- A. Broom Finish: Apply a non-slip broom finish to all exterior concrete slabs, stairs, walks, and ramps, and elsewhere as indicated. Immediately after float finishing, slightly roughen concrete surface by brooming with fiber bristle broom perpendicular to main traffic route.
- B. Where repair and replacement of new concrete is adjacent to or is a part of existing concrete, finish on new concrete shall match finish of existing concrete.

3.6 CONCRETE PROTECTION AND CURING

- A. General: Protect freshly placed concrete from premature drying and excessive cold or hot temperatures. Comply with the recommendations of ACI 306R for cold weather protection and ACI 305R for hot weather protection during curing.

3.7 EXTERIOR CONCRETE STEPS

- A. Exterior Concrete Steps, Precast
 1. Concrete steps shall be precast. The Contractor shall install precast steps and rough finish all treads. Minimum width shall be 44", maximum riser height shall be 7 ³/₄", minimum run 10-inch and shall extend downward from 1-inch below exit door sill. Concrete shall be 3000 psi mix with minimum of shrinkage reinforcing provided.

3.8 CONCRETE PORCH-DECKS/INSTALL

- A. Concrete Porches, General:
 1. Concrete porches shall be formed square and true using lumber of sufficient size to insure straight forms.
 2. Adequately brace all forms to eliminate bellying or bows in concrete work.
 3. All reinforcing steel, concrete thickness and porch size shall be as per drawings.
 4. All concrete porch slab forms shall be inspected by local building inspectors before placing concrete.
 5. Submit proof of inspection certificate.
 6. All concrete shall contain 6 1/2 bags of cement per cubic yard of concrete and attain a stress of not less than 3,000 psi at 28 days.
 7. All porch slabs shall pitch 1/8-inch per foot away from structure for drainage.
 8. Concrete shall be screened true floated and vibrated with a mechanical vibrator to insure that no voiding will occur and proper covering of reinforcing steel.
 9. Steel trowel twice and lightly broom for a non-slip surface. Remove edge forms and finish all exposed ends.
 10. Finish all edges with a concrete edger, including bottom edge of slab.

11. All porch slabs improperly finished and/or pitched will be removed and replaced at Contractor's expense.

B. Concrete Porch-Decks/Install

1. The Contractor shall *install* a new concrete porch as follows:
 - a. Prepare site for new built concrete porch; install forms of necessary depth, width and height;
 - b. Install a 2-inch sand cushion and 6-inch x 6-inch 10 ga. steel wire;
 - c. Pour a minimum of 3-1/2-inch of concrete into forms;
 - d. Temperature must be a minimum of 40 degrees F and rising;
 - e. Rough finish all walking surfaces;
 - f. Remove all debris and excess materials from site;
 - g. Use premix concrete or equal.

3.9 CONCRETE LIFT PAD

- A. See Section 14410 "Lifts" for ADA Ramps or Lifts.
- B. The Contractor shall install a new concrete lift pad by installing forms of required depth, width and height. Install a 2-inch sand cushion and 6-inch x 6-inch 10 ga. steel wire with a minimum of 3 ½ inches of concrete into forms. Rough finish all walking surfaces.

3.10 CONCRETE FLOOR (SLAB) INSTALL/WOOD

- A. Installation work consist of the following:
 1. All work associated with foundations, including but not limited to footings and piers, is to be designed by a registered New York State Engineer and built to conform with construction documents and all applicable codes and standard building practices. Any references to portions of work related to foundations are provided for the purposes of identifying scope.
 2. Remove wood floor;
 3. All load bearing beams and wall members shall be repaired and lifted to a stable structural position prior to concrete pour;
 4. Install forms of the necessary depth, height and width;
 5. Install a 2-inch sand cushion and 6-inch x 6-inch 6 ga. steel wire;
 6. Pour a minimum of 3-1/2-inch of concrete into forms;
 7. Temperature must be a minimum of 40 degrees F and rising;
 8. Trowel finish all surfaces;
 9. Remove all debris and excess materials;

10. Concrete shall be allowed to spread under the designated area's wood beams and wall members;
11. All wood shall be shielded from concrete with metal or felt paper to the pour;
12. For concrete type see concrete section.
13. The Contractor shall be responsible for complying with the elevation work designed by a registered New York State Engineer.

3.11 CONCRETE WALKWAY/INSTALL

A. Concrete Sidewalks, General

1. Sidewalks shall be full 4-inch thick and of widths to match existing, or as hereinafter called for with 3,000psi at 28 days. Control joints shall be placed every 5 feet. Finished surface shall be flush with existing grade.

B. The Contractor shall install a new concrete walkway as follows:

1. New walk shall provide barrier-free access on a 2 inch sand cushion with 6in x 6in 10 ga steel wire in formed area. Use premix concrete or equal.

3.12 REPAIRS AND PROTECTION

- A. Remove and replace concrete paving that is broken, damaged, or defective, or does not meet the requirements of this Section.

END OF SECTION 03025

SECTION 03119
INSULATING CONCRETE FORMS

PART 1 - GENERAL

1.1 SUMMARY

- A. The ICF (Insulating Concrete Forms) shall be used for new construction of foundation walls.
- B. Supply and installation of the ICF (Insulating Concrete Forms) for structural cast in place concrete wall, installation of re-enforcing steel bars and placement of concrete within the insulation concrete forms.
- C. Adequate bracing and scaffolding shall be provided by the installation contractor and shall comply with Law.

1.2 SCOPE

- A. Furnish all labor, materials and tools and equipment to perform the installation on the ICF as specified by the manufacturer.
 - 1. All work associated with foundation wall for new construction, is to be designed by a registered New York State Engineer. Any references to portions of work related to foundations are provided for the purposes of identifying scope.
 - 2. For repair and replacement, materials shall be similar in thickness, insulating R-value, finish textures and colors to closely match existing surfaces.
 - 3. Bonding of repair work to existing ICF members is critical, and repair work shall become an integral part of existing members.

1.3 QUALITY ASSURANCE

- A. Qualification – Installers/ Applicators/ Erectors
 - 1. Contractor shall engage the services of a trained installer or technical associate for the duration of the Work under this Section who has been trained in procedures pertaining to the correct installation of the specified form system (Trained installer may already be the designated ICF Installing Contractor if providing credentials as such)
 - 2. A trained installer shall furnish proof of training documentation to Contractor prior to commencement of work under this Section

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Expanded Polystyrene (for Regular Panels Type IX in US; for Plus Panels Type II in US) Requirements as per ASTM C578-95 Standard Specification for Rigid Cellular Polystyrene Thermal Insulation, DIN 54836 and MIL-P-19644.

- B. Fastener Withdrawal and Lateral Shear Resistance in accordance with ICC-ES AC 353-07, Acceptance criteria for Stay-in-Place, Foam Plastic Insulating Concrete Form (ICF) Systems for Solid Concrete Walls and ASTM D 1761-06, Standard Test Methods/or Mechanical Fasteners in Wood.

END OF SECTION 03119

DIVISION 4 – MASONRY

SECTION 04501 MASONRY RESTORATION AND CLEANING

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes performance of masonry restoration work as indicated on work order.
- B. Scope: Masonry restoration work includes the following:
 - 1. Removal of plant growth.
 - 2. Repair/replacement of damaged masonry.
 - 3. Cleaning exposed masonry surfaces.
 - 4. Re-pointing existing masonry.

1.2 QUALITY ASSURANCE

- A. Source of Materials
 - 1. Obtain materials for masonry restoration from a single source for each type material required (face brick, stone, cement, sand, etc.) to ensure match of quality, color, pattern, and texture.

1.3 PROJECT CONDITIONS

- A. Ambient Conditions
 - 1. Clean masonry surfaces only when air temperatures are 40 deg F (4 deg C) and above and will remain so until masonry has dried out, but for not less than 7 days after completion of cleaning.
 - 2. Do not repoint mortar joints or repair masonry unless air temperatures are between 40 deg F (4 deg C) and 80 deg F (27 deg C) and will remain so for at least for 48 hours after completion of work.
- B. Cold-Weather Requirements: Do not use frozen materials or materials mixed or coated with ice or frost. Do not build on frozen substrates. Remove and replace unit masonry damaged by frost or by freezing conditions. Comply with cold-weather construction requirements contained in ACI 530.1/ASCE 6/TMS 602:
 - 1. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40 deg F and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.
- C. Sequencing/Scheduling
 - 1. Perform masonry restoration work in the following sequence:

- a. Repair existing masonry including replacing existing masonry with new masonry materials.
- b. Rake-out existing mortar from joints indicated to be re-pointed.
- c. Repoint existing mortar joints of masonry indicated to be restored.
- d. Clean existing masonry surfaces.

PART 2 - PRODUCTS

2.1 MASONRY MATERIALS

A. Face Brick

1. Provide face brick to match existing

B. Building Brick

1. Provide building brick complying with ASTM C62 for masonry work concealed from view, of same vertical dimension as face brick.
 - a. Grade SW, MW, or NW for concealed back-up.

2.2 MORTAR MATERIALS

A. Portland Cement

1. ASTM C150, Type I

B. Hydrated Lime

1. ASTM C207, Type S.

C. Aggregate for Mortar: ASTM C144, unless otherwise indicated.

1. For pointing mortar provide sand with rounded edges.
2. Match size, texture and gradation of existing mortar as closely as possible.

D. Water

1. Clean, free of oils, acids, alkalis, and organic matter.

E. MORTAR MIXES

1. General:
 - a. Measure cementitious and aggregate material in a dry condition by volume or equivalent weight. Do not measure by shovel; use known measure. Mix materials in a clean mechanical batch mixer.

- b. Do not use admixtures of any kind in mortar, unless otherwise indicated.
2. Mortar Proportions
- a. Mortar for Brick: One part Portland cement, 3 parts lime, 9 parts mortar aggregate.
 - b. Mortar for Stone: One part white Portland cement, 1 part lime, 6 parts mortar aggregate.

F. CHEMICAL CLEANING SOLUTIONS

- 1. General:
 - a. Unless otherwise indicated, dilute chemical cleaning materials with water to produce solutions of maximum 3% hydrofluoric acid concentration, but no greater than that recommended by chemical cleaner manufacturer.
- 2. Chemical Paint Remover: In concentration recommended by chemical cleaner manufacturer.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Comply with recommendations of manufacturers of chemical cleaners for protecting building surfaces against damage from exposure to their products.

3.2 CLEANING EXISTING MASONRY

A. Procedures:

- 1. Proceed with cleaning in an orderly manner, resulting in uniform coverage of all surfaces; work from top to bottom of each scaffold width and from one end of each elevation to the other, using only cleaning methods indicated for each masonry material and location. Rinse off chemical residue and soil by working upwards from bottom to top of each treated area at each stage or scaffold setting.

B. Removal of Plant Growth:

- 1. Remove plant and moss growth completely from masonry surfaces. Carefully remove plants, creepers and vegetation by cutting at roots and allowing to dry as long as possible prior to removal. Remove loose soil or debris from open masonry joints to whatever depth it occurs.
- 2. Apply ammonium sulfamate or other acceptable root killing material to plant roots, in accordance with manufacturer's instructions. Do not apply materials to plants or vegetation to remain.

C. Water Applications:

- 1. Spray-apply water to masonry surfaces to comply with requirements indicated for location, purpose, water temperature, pressure, volume and equipment. Unless otherwise indicated, hold spray nozzle no less than 6" from surface of masonry and apply water from side to side in overlapping bands to produce uniform coverage and an even effect.

D. Chemical Cleaner Application Methods:

- 1. Apply chemical cleaners to masonry surfaces to comply with chemical manufacturer's recommendation using brush or spray application methods, at Contractor's option, unless

otherwise indicated. Do not allow chemicals to remain on surface for periods longer than that indicated or recommended by manufacturer.

2. Do not apply chemical cleaners to same masonry surfaces more than twice.

E. Brickwork Cleaning: Clean brick masonry surfaces with acidic cleaner applied as follows:

1. Pre-wet masonry with cold water applied by low pressure spray. Apply acidic cleaner to masonry. Let cleaner remain on surface for period recommended by chemical cleaner manufacturer before rinsing away. Rinse masonry with cold water to remove chemicals and soil, applied at 400-800 psi, 3-6 gallons per minute. Repeat chemical cleaning procedure above where required to produce an effect established by mock-up. Do not apply more than twice.

F. Paint Removal

1. Apply chemical paint remover to remain on surface for period recommended by paint remover manufacturer.
2. Remove chemical and paint residue by rinsing with water applied by high pressure spray, 800-1200 psi, 3-6 gallons per minute.
3. Apply acidic cleaner as an after wash to masonry while it is still wet using low pressure spray equipment or soft fibered brush. Let cleaner remain on surface for period recommended by manufacturer, unless otherwise indicated.
4. Rinse masonry with cold water to remove chemicals and soil, applied by medium pressure spray, 400-800 psi, 3-6 gallons per minute.

3.3 BRICK REMOVAL AND REBUILDING

A. Brick Removal:

1. Carefully remove by hand at locations indicated any bricks which are buckled, damaged, spalled or deteriorated. Cut out full units from joint to joint and in manner to permit replacement with full size units.
2. Support and protect masonry indicated to remain which surrounds removal area.
3. Salvage as many whole, undamaged bricks as possible. Remove mortar, loose particles and soil from salvaged brick by cleaning with brushed and water. Store brick for reuse.
4. Clean remaining brick at edges of removal areas by removing mortar, dust, and loose debris in preparation for rebuilding.

B. Brick Rebuilding:

1. Install new or salvaged brick to replace removed brick. Fit replacement units into bonding and coursing pattern of existing bricks. If cutting is required use mortar driven saw designed to cut masonry with clean, sharp unchipped edges.
2. Lay replacement brick with completely filed, bed, head and collar joints. Butter ends with sufficient mortar to fill head joints and shove into place. Wet clay bricks which have ASTM C67 initial rates of absorption (suction) of more than 30 grams per 30 sq. in. per minute. Use wetting methods ensure that units are nearly saturated but surface dry when laid. Maintain joint width for replacement units to match existing.

3. Tool exposed mortar joints in repaired areas to match joints of surrounding existing brickwork.

C. REPOINTING EXISTING MASONRY

1. Joint Raking

- a. Rake out mortar from joints to depths equal to 2-1/2 times their widths but no less than 1-inch, nor less than required to expose sound, un-weathered mortar.
- b. Remove mortar from masonry surfaces within raked-out joints to provide reveals with square backs and to expose masonry for contact with pointing mortar. Brush, vacuum or flush joints to remove dirt and loose debris.
- c. Do not spall edges masonry units or widen joints. Replace any masonry units which become damaged.

2. Joint Pointing

- a. Rinse masonry joint surfaces with water to remove any dust and mortar particles. Time application of rinsing so that, at time of pointing, excess water has evaporated or run off, and joint surfaces are damp but free of standing water.
- b. Apply first layer of pointing mortar to areas where existing mortar was removed to depths greater than surrounding areas. Apply in layers not greater than 3/8-inch until a uniform depth is formed. Compact each layer thoroughly and allow to become thumbprint-hard before applying next layer.
- c. After joints have been filled to a uniform depth, place remaining pointing mortar in 3 layers with each of first and second layers filling approximately 2/5 of joint depth and third layer the remaining 1/5. Fully compact each layer and allow to become thumbprint hard before applying next layer. Where existing bricks have rounded edges recess final layer slightly from face. Take care not to spread mortar over edges onto exposed masonry surfaces, or to featheredge mortar.
- d. When mortar is thumbprint hard, tool joints to match original appearance of joints, unless otherwise indicated. Remove excess mortar from edge of joint by brushing.
- e. Cure mortar by maintaining in a damp condition for not less than 72 hours.
- f. Where repointing work precedes cleaning of existing masonry allow mortar to harden not less than 30 days before beginning cleaning work.

3. Cleaning

- a. After mortar has fully hardened thoroughly clean exposed masonry surfaces of excess mortar and foreign mater using stiff nylon or bristle brushes and clean water, spray applied at low pressure.
- b. Use of metal scrapers or brushes will not be permitted.

END OF SECTION 04501

DIVISION 6 – WOODS AND PLASTICS

SECTION 06100 ROUGH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

Rough carpentry: All framing, furring and sheathing shall be completed with rough hardware and installed in conformance with the New York City Building Code.

- A. Framing is to resist wind load of 120 MPH.
- B. Repair: Patches and scabs shall be installed in conformance with the New York City Building Code.
- C. Replacement: Complete removal of damaged material and all associated construction as required and the installation of all new construction shall be in conformance with the New York City Building Code.
- D. All work related to repairs and replacement of historically eligible properties as deemed by the Program shall involve the repair and replacement of wood elements to match the existing at locations on the exterior and are visible.
- E. It is the responsibility of the Contractor to include historic material replacement and repairs and assembly requirements and it is the responsibility to field measure and verify existing conditions and materials.
- F. Refer to Finish Carpentry Section 06200 for related construction.
- G. This Section includes the following:
 - 1. Wood framing.
 - 2. Wood supports.
 - 3. Wood blocking.
 - 4. Wood cants.
 - 5. Wood nailers.
 - 6. Wood furring.
 - 7. Wood grounds.
 - 8. Wood sheathing.
 - 9. Wood subflooring.
 - 10. Wood underlayment.
 - 11. Plywood backing panels.
 - 12. Building wrap.

13. Structural Steel.
14. Wood sleeper.

PART 2 - PRODUCTS

2.1 WOOD PRODUCTS, GENERAL

- A. Lumber: DOC PS20 and applicable rules of lumber grading agencies certified by the American Lumber Standards Committee Board of Review or equal.

2.2 WOOD-PRESERVATIVE-TREATED MATERIALS

- A. Preservative Treatment by Pressure Process: AWP A C2 (lumber) and AWP A C9 (plywood), except that lumber that is not in contact with the ground and is continuously protected from liquid water may be treated according to AWP A C31 with inorganic boron (SBX).
- B. Application: Treat items indicated as follows:
 1. Wood cants, nailers, curbs, equipment support bases, blocking, stripping, and similar members in connection with roofing, flashing, vapor barriers, and waterproofing.
 2. Wood sills, sleepers, blocking, furring, stripping, and similar concealed members in contact with masonry or concrete.
 3. Wood framing members less than 15-inch above grade.
 4. Wood floor plates that are installed over concrete slabs directly in contact with earth.
 5. Wood members in contact with masonry or concrete, soil or water.

2.3 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, provide materials that comply with performance requirements in AWP A C20 (lumber) and AWP A C27 (plywood). Identify fire-retardant-treated wood with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

2.4 DIMENSION LUMBER

- A. General: Of grades indicated according to the American Lumber Standards Committee National Grading Rule provisions of the grading agency indicated.

2.5 TIMBER AND MISCELLANEOUS LUMBER

- A. Provide miscellaneous lumber for support or attachment of other construction:
- B. For items of dimension lumber size, provide Standard, Stud grade lumber with 15 percent maximum moisture content of any species.

2.6 SHEATHING

- A. Plywood Wall & Roof Sheathing: Exterior sheathing.

1. 5/8-inch Thick

B. Insulated Sheathing

1. Glass reinforced polyiso-cyanurate foam insulation board with aluminum foil facing on both sides.
2. Size and Edges: 4-foot wide, not less than 8-foot long, with square edges on sides.

2.7 SUBFLOORING AND UNDERLAYMENT

- A. Plywood Subflooring: Exterior, Structural I single-floor panels or sheathing, 3/4-inch thick.
- B. Plywood Underlayment for Resilient Flooring: DOC PS1, Exterior A-C with fully sanded face, 3/4-inch thick.
- C. Plywood Underlayment for Carpet: DOC PS1, Exterior, C-D Plugged, 3/4-inch
- D. Plywood Sheathing for Exterior: DOCPS1, Exterior C-D Plugged, 5/8-inch thick.
- E. Hardboard Underlayment: AHA A135.4, Class 4 (Service), Surface S1S; with back side sanded, 3/4-inch thick.
- F. Underlayment for Wood Flooring (Solid and Engineered Wood): Underlayment for wood flooring shall include Plywood and a Vapor Retardant.
 1. Plywood: DOC PS1, Exterior A-C with fully sanded face, 3/4 in. thick.
 2. Vapor Retardant: ASTM D4397, polyethylene sheet not less than 6.0 mils (0.15 mm) thick.

2.9 STRUCTURAL STEEL

- A. Minimum thickness, not including rolled beams and channels, shall be as follows:
 3. Steel not exposed to weather: 3/16-inch.
 4. Steel exposed to weather but accessible for painting: 1/4-inch.
 5. Steel partly exposed to weather and not accessible for painting: 5/16-inch.
- B. All steel shall be furnished with one shop applied coat of red oxide primer. Field welds and connections shall be painted after erection. The shop paint shall be Non-Lead or another rust inhibitive steel primer.

PART 3 - EXECUTION

3.1 GENERAL WOOD INSTALLATION

- A. Set rough carpentry to required levels and lines, with members plumb, true to line, cut, and fitted. Fit rough carpentry to other construction; scribe and cope as needed for accurate fit. Locate furring, nailers, blocking, grounds, and similar supports to comply with requirements for attaching other construction.
- B. All lumber to be grade marked and surfaced 4 sides. Minimum grading of lumber shall be as set forth in this section. Minimum grade for exterior wall and partition framing shall be stud grade or better. Size shall be 2-inch x 4-inch, spacing shall be 16-inch on center, unless larger members are required by

Law. All toe plates shall be factory pressure treated. For three-story buildings, studs in the first story shall be not less than 2-inch x 6-inch nominal sizes. All rough and framing lumber in contact with concrete will be termite resistant pressure treated lumber. All wood structural members shall be of sufficient size to carry the dead and require live loads without exceeding the allowable working stresses.

- C. Anchorage of wood framing shall be in accordance with Manufactures' Specifications and the New York City Building Code.
- D. Apply field treatment complying with AWWPA M4 to cut surfaces of preservative-treated lumber and plywood.
- E. Apply building paper horizontally with 2-inch (50-mm) overlap and 6-inch (150-mm) end lap; fasten to sheathing with galvanized staples or roofing nails. Cover upstanding flashing with 4-inch (102-mm) overlap.

3.2 INSTALLATION OF WOOD FRAMING

A. Exterior Wood Support Beam

- 1. Installation shall comply with the All New York City Ordinance amendments for inspections when installing new exterior wall wood support beams, as follows:
 - a. Install a new beam;
 - b. Set and shim new solid concrete piers and pads;
 - c. Splice all joint;
 - d. Splices shall be overlapped a minimum of 24-inch;
 - e. Wood shim depth from pier to beam shall not exceed 2-inch;
 - f. Beam size shall be 4-inch x 6-inch or greater;
 - g. New wood shall be treated lumber and when in contact with concrete or ground shall be spaced with metal or felt paper. (Work shall comply with the State Board of Windstorm Insurance Inspection)
 - h. Use pressure treated #2 yellow pine; concrete piers and pads from local producer; or equal

B. Interior Wood Support Beam

- 1. Installation or repair shall comply with all Law relating to inspections and installation methods and requirements when installing interior wood support beams, as follow:
 - a. Set & shim good existing piers, install new solid concrete piers and pads as needed;
 - b. Install a new beam with all joints overlapped a minimum of 24";
 - c. Wood shim depth from pier to beam shall not exceed 2-inch; beam size shall be 4-inch x6-inch or greater;
 - d. New wood shall be pressure treated #2 yellow pine lumber and when in contact with concrete or ground shall be spaced with metal or felt paper

C. Wood Porch Repair

1. Remove all rotted or damaged parts of the deck and foundation structural members and correct all leans, bows & sags. Materials shall match existing work. Paint porch with two coats of exterior porch and deck enamel.

D. Floor Joist

1. Install
 - a. Install new floor joist with metal joist hangers a minimum of 16" O.C. Splices shall be overlapped a minimum of 24";
2. Repair
 - a. Jacking and shimming to remove sag, bow, and bounce. Splice weak areas. Anchor loose ends with metal joist hangers. Install cross braces to remove bow in joist.

E. Wood Floor Framing

1. Plywood subflooring shall be grade C-D plywood or better; minimum thickness shall be 3/4-inch where joists are spaced at 16-inch o.c. and edges shall be continuously supported. Plywood joints are to be staggered.
2. Plywood shall be underlayment grade or better with exterior glue in those areas subject to moisture penetration. Underlayment to be painted. Chipboard not allowed in kitchen and bath. Provide at least 1/2-inch clearance between subflooring and masonry or concrete walls.
3. Subfloor boards used as a base for adhesive applied resilient flooring and ceramic tile shall have a thickness of 3/4-inch.
4. Exterior plywood shall be used where exposed to weather or where necessary for structural purposes and shall be painted. Finished floors, when of wood, shall be of hardwood or vertical grain kiln-dried soft wood. All surfaces of finished wood floors shall be properly sanded, filled, sealed and varnished with two coats of polyurethane varnish.

F. Sills

1. Termite shields are to be metal and extend 2-inch over each side of foundation wall. Shields are to separate all exterior sill plates from masonry. Sill sealer is to be of fiberglass with a nominal dimension of 1-inch x 4-inch, and is to be placed over termite shield and under exterior sill plate. Sill plates are to be weather treated with a nominal thickness of 2-inch and a nominal width of 8-inch.

G. Floors Subfloor

1. Install
 - a. Remove damaged or rotted subfloor and replace any rotted or damaged floor frame members; install subfloor to match existing; install 15-lb roofing entire floor area
2. Repair

- a. Remove damaged or rotted subfloor (where existing is a single floor, repair as subfloor). Subfloor in solid good condition shall remain and be prepped to receive scheduled floor finish. Install new wood to complete subfloor; install 15-lb asphalt felt to entire area. Create a smooth and level subsurface for floor finish installation.

H. Floor Underlayment

1. Over top of floor joist, install new 3/4-inch C-D or better plywood across joists for subfloor; install 15-lb roofing felt to entire floor area; stagger all plywood joints; nail down plywood ring shank nails at 4-inch o.c. at edges and 8-inch in rows at middle; set all nail heads; fill all depressions and joints with hardrock putty; sand all rough areas for smooth surface finish. Paint with exterior grade paint.
- 2.

I. Wood Columns

1. Columns shall be continuous without splices. Shall bear on concrete or solid masonry base. In basements, top of base shall be at least 3-inch above finished floor. Top of column shall be fastened to girder with metal clip angles, with leg screws, spiked or bolted.

J. Wood Joists

1. Joists are laid 16-inch o.c. with a nominal thickness of 2-inch and the same width as existing joists or as specified. All nails and other metals are to be galvanized. Joists shall be doubled under all partitions, around stair wells, chimneys and other openings where unusual loading conditions.

K. Cross Bridging

1. Bridging shall be placed approximately 8-foot apart with 2 rows of 1-inch x 3-inch boards or compression type metal bridging double nailed and driven up tight.

L. Joist Framing at Masonry

1. Joists shall be "fire cut" sawed. The minimum bearing for joist shall be 3-inch.

M. Joist Framing at Side of Wood Beam

1. Steel joist hangers shall be 1-inch strap iron or as specified under Accessories. Steel angle shall be 3-inch x 2-inch 18 gauge 6-inch long applied to both sides of joists or as specified under accessories. Wood bearing strap shall be at least 2-inch x 2-inch. Joist shall not be notched more than 1/4 of joist depth. Toenail joist to girder.

N. Plywood Deck Sheathing

1. Plywood sheathing to match existing in thickness with tight joints at all edges. New decks over 16-inch o.c. joist shall have 5/8-inch T & G plywood glued and nailed perpendicular to joists. 24-inch o.c. joist shall use 3/4-inch T&G plywood. All nails and other metals are to be galvanized. Rows of plywood sheathing are to be staggered a minimum of 24-inch per row with recommended stagger of 48-inch.

O. Interior Partition Framing

1. Framing Studs in one and two-story buildings shall follow standard practice and shall not be less than nominal 2-inch x 4-inch with the wide face perpendicular to the partitions. In three-story buildings studs in the first story shall be no less than nominal 3-inch x 4-inch or 2-inch x 6-inch.

Studs supporting floors ceilings and roofs shall be spaced not more than 16-inch o.c. Double studs shall be provided on each side of openings exceeding 3-foot in width, and triple studs shall be provide on each side of openings exceeding 6-foot in width.

2. Headers not exceeding spans recommended by American Wood Products Association shall be provided over each opening in bearing partitions. Where the opening exceeds 3-foot in width, each end of the header shall be supported on one stud and where the opening exceeds 6-foot each end shall be supported by two studs.
3. Studs shall be capped with double top plates installed to provide overlapping at corners and at intersections with exterior walls. End joints in double top plates shall be offset at least 24-inch. For platform frame construction, studs shall rest on a single bottom plate.
4. Wall Structure Repair
 - a. Expose the noted area by removing carefully interior or exterior wall covering, remove and replace rotted or damaged wood and restore to match adjacent area;
5. 2 Hour Rated Fire Walls
 - a. Structural wood members in firewall are to be fire treated, with any plates in contact with concrete or masonry to be weather treated as well. Two layers of 5/8-inch fire code water resistant sheetrock is to be applied with nails and glue to the exterior side of the firewall. The first layer is to be installed vertically, the second layer horizon tally staggering every other row with a recommended stagger of 48-inch. Two layers of 5/8-inch fire code sheetrock is to be applied on the interior of the wall in the same manner.
6. Bath Wet Walls
 - a. 2-inch x 6-inch studs in partition of bathroom shall be used to form passage of bathroom pipes;
 - b. Unless reinforced, studs shall not be notched more than 1 in. of their depth or drilled through the wide face more than 1-1/4-inch in a 4-inch stud, or 2-inch in a 6-inch stud.

P. Exterior Wall Framing

1. Studs in one-and-two story buildings shall be not less than nominal 2-inch x 4-inch with the wide face perpendicular to wall. Studs supporting ceilings and roofs shall be spaced not more than 16-inch o.c..
2. All plates are to be 2 x 4's. Top plate is to be doubled and interlocking at corners and wall sections. Bottom plate is to be moisture treated if resting on or beside concrete or masonry. Bottom sill plates are to be secured by 1/2-inch x 8-inch anchor bolts or 1/2-inch x 6-inch compression anchor bolts at 8-foot x 0-inch O.C. and 1-foot x 0-inch from each corner.
3. Headers to be made up of 2 – 2 x 6's for spans up to 5-foot, 2 – 2 x 8's for spans up to 6-feet. Use 2 – 2 x 10's for spans up to 10-feet. Secure beams together so that load is distributed evenly for load bearing walls.
4. Bracing of Exterior Stud Walls
 - a. Not less than three (3) studs shall be installed at every corner of an exterior wall.
 - b. Stud walls shall be braced by one of the following methods:

- 1) Nominal 1-inch x 4-inch continuous diagonal strip set into the face of the studs and top and bottom places at each corner of the building or approved metal corner bracing. Wood boards of 5/8-inch (net) minimum thickness applied diagonally.
 - 2) Wood sheathing panels 4-foot by 8-foot of 5/8-inch minimum thickness applied horizontally.
 - 3) Plywood sheathing panels not less than 48-inch wide and 96-inch long applied vertically.
- c. Sheathing, where required for exterior walls, shall be applied solidly over the wall surface and shall be one or more of the following materials:
- 1) Wood boards and sheathing panes shall be minimum 5/8-inch plywood;
 - 2) Plywood not less than 5/16-inch thick for 16-inch stucco spacing.
- d. Sheathing may be omitted over plywood except where exterior wall stucco finish, brick veneer and exterior wall coverings are used which permit the passage of water.
- e. Studs shall be capped with double top plates installed to provide overlapping at corners and intersections with bearing partitions. In lieu of double top plate, a continuous header may be used.
- f. End joints in double top plates shall be offset at least 24-inch.
- g. For Platform Frame Construction, studs shall rest on a single bottom plate.
- h. Galvanized strapping as required by the New York City Building Code.
5. Openings in Exterior Walls

Work shall comply with all applicable regulatory requirements. Double studs shall be provided on each side of openings exceeding 3-foot in width, and triple studs shall be provided on each side of openings exceeding 6-foot in width.

- a. Double headers shall be provided over each opening in exterior bearing walls. Built up construction of double headers may be of solid lumber or equivalent cross-section. Where the opening does not exceed 3-foot, each end of the header shall be supported on a stud or framing anchor. Where the openings exceed 3-foot in width, each end of the double header shall be supported on one stud and where the opening exceeds 6-foot, each end shall be supported on 2 studs.
- b. Plates
 - 1) Bottom plates are to be weather treated if they rest on or beside concrete or masonry; top plates are to be 2 x 4's doubled and interlocking at corners and wall, if larger studs are required larger plates will be required as well.

Q. Roof Framing

1. Wood Rafters
 - a. Reference New York City Building Code Chapter 23.
2. Wood Trusses

- a. Trusses should be used whenever possible and match existing roof pitches whenever possible. Truss drawings and installation instruction shall be available on site in accordance with 2308.10.7 of the New York City Building Code.

3. Roof Sheathing

- a. Exterior glued 4-foot x 8-foot x 5/8-inch plywood, type CDX. Use “H” clips for intermediate support with spacing greater than 24-inch O.C.
- b. Install plywood perpendicular to rafters and stagger every other row 48-inch. Joints in lumber sheathing shall occur over supports unless end-matches lumber or approved clips are used in which case each piece shall bear on at least 2 rafters or joists.

R. Roof Structure Repair

1. Jack and brace to eliminate rafter (truss) sag, release pressure stress to stop rafter bowling. Splice weak or damaged rafters with a minimum of 24” overlap; anchor loose rafter tails to ceiling joist with metal plates. Use struts or braces to correct structural defects;

S. Roof Structure Install

1. Remove all rotted or damaged rafter(s) and roof members at location and install new 2-inch x 6-inch installation rafter(s) or trusses. Anchor rafters to joist ends with metal plates;

3.3 INSTALLATION OF STRUCTURAL STEEL

A. Columns and Plates

1. Steel bearing on walls shall be as required to distribute the load, but a minimum of 4-inch bearing is required. Bearing plates at least 1/4-inch thick shall be installed where beams or girders rest on concrete or brick. Plates shall be bedded in cement mortar.
2. Columns supporting wood beams or girders shall have installed a suitable column cap not less than 1/4-inch thick. Columns shall have a steel or cast iron base anchored by bolts.

B. Steel Joists

3. Open web steel joist shall be properly bridged. At termination of each row of bridging, secure same to side anchors which shall be built into the wall by the masonry contractor. All steel to steel connections shall be welded.

C. Metal Columns

1. Install

- a. Remove existing support columns and install securely anchored new metal replacement columns. Paint with metal primer.

2. Repair shall consists mainly of anchoring and painting

END OF SECTION 06100

SECTION 06200
FINISH CARPENTRY

PART 1 - GENERAL

1.1 SUMMARY

- A. Finish carpentry includes carpentry work which is exposed to view, is non-structural, and which is not specified as part of other sections.
- B. All work related to the repairs of historically eligible properties as deemed by the Program shall involve the repair and replacement of exterior wood architectural details and finish wood elements as listed in this section to match existing in size, shape, profile and installation method of the existing unless such installation method conflicts with governing codes at locations that are on the exterior and visible. It is the responsibility of the Contractor to verify size, shape, material and assembly of historic exterior woodwork and costs associated with the repair and replacement of said. Field measurement and inspection may be required.
- C. This Section includes the following:
 - 1. Standing and running trim.
 - 2. Stairs and railings.
 - 3. Misc. Metal related to Finish Carpentry.
 - 4. Historic Hand and Guard Rails
 - 5. Historic Standing and Running Trim
 - 6. Soffits
 - 7. Fascia
 - 8. Cornices
 - 9. Porch Repair
 - 10. Historic Wood Skirting
- D. See Section 06400 "Interior Architectural Woodwork" for interior woodwork not specified in this Section including cabinetry and laminate countertops.
- E. See Section 07460 "Siding" for wood siding.

PART 2 - PRODUCTS

2.1 MATERIALS - GENERAL

- A. Comply with the applicable provisions for grading and workmanship of the ARCHITECTURAL WOODWORK QUALITY STANDARDS ILLUSTRATED of the American Woodwork Institute (AWI).

- B. Lumber Standards: Comply with DOC PS 20, "American Softwood Lumber Standard," for lumber and with applicable grading rules of inspection agencies certified by the American Lumber Standards Committee Board of Review or equal.
 - C. Softwood Plywood: Comply with DOC PS 1, "U.S. Product Standard for Construction and Industrial Plywood."
 - D. Hardwood Plywood: Comply with HPVA HP-1, "Interim Voluntary Standard for Hardwood and Decorative Plywood."
 - E. Preservative Treatment: Comply with NWWDA I.S. 4 for exterior finish carpentry to receive water-repellent preservative treatment.
 - F. Fire-Retardant Treatment: Where indicated, use materials impregnated with fire-retardant chemicals per AWPA C20; exterior type or interior Type A as required.
 - G. Woodwork for Paint Finish
 - 1. Grade: AWI Section 300, Standard Grade.
 - 2. Species of wood: Any closed grain softwood or any closed grain hardwood species.
 - H. Woodwork for Transparent Finish
 - 1. Species: Match existing.
 - 2. Grade: AWI Section 300, Standard Grade.
 - I. Exceptions to Previous Quality Requirements for Interior Woodwork
 - 1. Ornamental woodwork: Comply with AWI Section 700, Custom Grade
- 2.2 STANDING AND RUNNING TRIM
- A. Exterior Standing and Running Trim: Finished lumber and moldings
 - 1. Species and Grade: Smooth-textured, B & B, southern yellow pine; SPIB.
 - B. Exterior Historic Standing and Running Trim: Finished lumber and moldings
 - 1. Species and Grade: Smooth-textured, B & B, southern yellow pine; SPIB.
 - 2. Profiles and Size: Matching existing profile and size. Contractor is responsible for measuring size and profile and quantity requiring replacement for Historically Eligible properties.
 - C. Primed Hardboard Trim: Fabricated from high-temperature-cured, high-resin, wood fiber composite; factory primed on face and two edges; and recommended by manufacturer for exterior use.
 - D. Interior Standing and Running Trim: Finished lumber and moldings.
 - 1. Species and Grade or Cut: C Select, eastern white pine; NELMA or B & Btr. Select or Supreme, Idaho white, lodge pole, ponderosa, or sugar pine; WWPA.
 - E. Wood Molding Patterns: Stock moldings made to patterns included in WMMPA WM 7 and graded under WMMPA WM 4.

1. Base: BASE STANDARD WM 713 (ranch base) 3-1/4-inch high.
 2. Shoe Mold: Clear, kiln-dried red oak; WM 126, 1/2-by-3/4-inch (13-by-19-mm) quarter-round shoe.
 3. Casings: 2-1/4-inch eased edge.
 4. Moldings for Transparent Finish: N-Grade.
 5. Moldings for Painted Finish: P-Grade.
- F. Shelving: 3/4-inch (19-mm) solid wood shelving with radiused and filled front edge.

2.3 STAIRS AND RAILINGS

- A. Interior Stair Treads except attic and basement: 1-1/16-inch (27-mm), clear, kiln-dried, edge-glued, rift-sawn red oak stepping with half-round nosing.
- B. Interior Stair Treads at attic and basement: 1-1/16-inch (27-mm), clear, kiln-dried, edge-glued, Douglas Fir, D Select, edge grain, or Southern Pine, Grade D, stepping with half-round nosing.
- C. Exterior Stair Treads: 1-1/4-inch (32-mm), kiln-dried, pressure-preservative-treated, southern yellow pine, B & B stepping with half-round nosing.
- D. Interior Railings except at basement and attic stairs: Clear, kiln-dried, Natural Birch A quality. Beech, Hard Maple, or Pecan, select grade.
- E. Exterior Railings: Clear, kiln-dried, pressure-preservative-treated, southern yellow pine railing stock of pattern indicated.
 1. ADA compliant height with bottom rails two (2) inches from decking and line pickets or treated trim board at a minimum of four (4) inches on center.
 2. Sizing is to be as follows:
 - a. Top Rail: 3 1/2"
 - b. Bottom Rail: 3 1/2"
 - c. Pickets: 1 1/4" Square pressure treated trim board
 - d. Top Cap: Water Shedding double beveled or smooth faced and round 3 1/2" minimum width x 1" nominal height at top of bevel or center of arch for the rounded railings.

2.4 STRIP PORCH FLOORING

- A. Where replacement exceeds 50%, use #2 or better 2 x 6 treated pine.

2.5 SIDING

1. Refer to Section 07460 for siding.
- 2.

2.6 HISTORIC SOFFIT

- A. Patch and repair or replace as required soffit at the homes deemed historically eligible. Soffits are to match pattern and size, shape and profile of the existing. Materials should match existing and should be exterior grade and moisture resistant.

2.7 HISTORIC FASCIA

- A. Patch and repair or replace as required fascia at the homes deemed historically eligible. Fascias are to match pattern and size, shape and profile of the existing. Materials should match existing and should be exterior grade and moisture resistant

2.8 HISTORIC HAND AND GUARDRAILS

- A. Patch and repair existing handrails at the homes deemed historically eligible. Handrails are to match pattern and size, shape and profile of the existing.
- B. Replacement of handrails at those locations where non-historic handrails are to be replaced or additional handrails are required on historically eligible homes, the handrails are to be as follows:
 - 1. Clear kiln dried pressure preservative treated, south yellow pine railing of ADA compliant height with top and bottom rails with in line pickets at a minimum of four (4) inches on center.
 - 2. Sizing is to be as follows:
 - a. Top Rail: 2 ¼"
 - b. Bottom Rail: 3 ¾"
 - c. Pickets: 1 1/4" Square Pickets
 - d. Top Cap: Water Shedding double beveled 4 ½" minimum width x 1" nominal Height at top of Bevel.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Prime and back-prime lumber for painted finish exposed on the exterior. Comply with requirements for surface preparation and application in Section 09912"Paint."
- B. Reference Section 09912 for paint finishes

3.2 INSTALLATION OF EXTERIOR FINISH CARPENTRY

- A. General Exterior Finish Carpentry
 - 1. Provide designs, sizes and materials to match existing whenever possible.
 - 2. Joints in millwork and trim shall be tight, concealing shrinkage and excluding water.
 - 3. In addition to nailing, glue joints of built-up items as necessary for weather resistant construction.
 - 4. Cope molded work at returns and interior angles and miter it at external corners.
 - 5. Furnish exterior door and window trim in single lengths.
 - 6. Furnish cornices and other exterior trim in maximum practicable lengths.
 - 7. Fasten woodwork with galvanized finish nails suitable for setting.
 - 8. Provide blind nailing as far as practicable.
 - 9. Set face nails for putty stopping.
- B. Wood Steps Repair

1. Remove and replace rotted, damaged or missing parts of the wood steps by nailing loose parts. Anchor steps securely to house. Prime new wood with acrylic primer and paint steps with two coats of exterior porch and deck enamel;
 2. New wood shall be treated lumber and when in contact with concrete or ground shall be spaced with galvanized metal or felt paper. Use pressure treated #2 yellow pine
- C. Wood Steps Install
1. Remove the existing steps and prepare for new site built steps. Minimum width shall be 44-inch wide; minimum run shall be 10-inch. Riser height maximum 7-1/2-inch. Use pressure treated # 2 yellow pine;
- D. Wood Fascia Repair
1. Remove and replace rotted or damaged area; nail down all loose fascias, replace missing pieces. Prime all new wood with an acrylic primer & apply two coats of exterior latex paint to all fascias and caulk all seams
- E. Wood Fascia Install
1. Remove and replace wood fascia as specified above (See Wood Facial Repair);
- F. Soffit Repair: Apply 3/8-inch Grade B-C Exterior Plywood with Medium Density Overlay, or match existing materials. Prime all new wood with prime and apply two coats of exterior latex paint to all soffits. Caulk all seams. Nail at 12-inches on center on all supports.
- G. Soffit Install: Apply 3/8-inch Grade B-C Exterior Plywood with Medium Density Overlay, or match existing materials. Fully prime all new wood with primer and paint with two coats of exterior latex. Caulk all seams.
- H. Exterior Stair Repair
1. Remove all rotted or damaged parts of the exterior stairway and replace as necessary to match existing. Prime all metal to prevent rust.
- I. Exterior Stair Install
1. Remove existing stairway and replace with new stairway using procedures as indicated in the above repair description. All work, dimensions and materials shall match existing. All work shall be treated lumber and be painted with exterior porch and deck enamel. All metal to be primed to prevent rust.
- J. Cornice
1. Assemble with necessary blocking to form protection for vertical joints. Fabricate lookouts for cornices of not less than 2-inch stock to provide nailing at all points of cornice.
- K. Wood Porch Repair
1. Remove all rotted or damaged parts of the deck and foundation structural members and correct faulty support piers. Match existing work. Materials used for repair shall match existing work; Paint porch with two coats of exterior porch and deck enamel. New wood shall be treated lumber and when in contact with concrete or grounds shall be spaced with metal or felt paper;

L. Porch Ceilings

1. Cover with 9/16-inch x 3-1/4-inch, dressed and matched, V-grooved ceiling, or 3/8-inch, exterior type plywood, grade A-C or medium density overlay, or match existing. Provide solid bearing at joints, ends, and edges of plywood. Joints shall be V-grooved or batten covered. Cut end joints of V-Grooved ceiling square and locate joints over centerline of bearings. Blind and face nail each piece at each end and at each bearing with two sixpenny finish nails with heads set for putty stopping

M. Porch Overhang/Canopy/Repair

1. Repair rotted or damaged parts of the porch overhang/canopy (include roof cover, porch ceiling cover, structural bracing) by removing rot. Prime and paint canopy with two coats of exterior Latex

N. Porch Overhang/Canopy Install

1. Remove the existing overhang/canopy and install new overhang/canopy constructed of 2" x 6" framing members. One half (1/2-inch) CDX plywood decking, 15 lbs. roofing felt, Number 3 tab fiberglass/asphaltic shingles. Install metal drip edging: Minimum size shall be 3-inch x 5-inch.
2. Metal roof flashing shall be installed between overhang/canopy and house;
3. Sealed with a water proof adhesive sealer; new wood shall be primed with latex primer and painted with two coats of exterior latex;

O. Strip flooring for Porches

1. Place strip flooring across supports, with close joints, driven tightly. Stagger joints and blind nail with 8 penny screw type or cement coated cut steel nails.

P. Railings

1. Construct of not less than 2-inch stock. Upper rails shall be grooved to receive balusters. Balusters shall be 1-5/16-inches square, fitted to bottom rail and toe-nailed in place.

Q. Wood Overhang Support Column Repair

1. Make columns secure by anchoring with metal "L" brackets at top and bottom;

R. Wood Overhang Support Column Install

1. Remove existing support column(s), install new wood column(s) at location. New column(s) shall be no less than 4-inch x 4-inch treated post. Prime wood columns with one coat acrylic primer and two coats of exterior Latex. Use Pressure Treated Columns; designed or square post.

S. Wood Skirting Repair

1. Remove and replace rotted or damaged parts of the skirt with treated lumber. Soft prime all new and bare wood; paint with two coats of exterior latex; and backfill. Place and compact backfill around skirt. Foundation vents shall be 8-inch x 10-inch galvanized metal

T. Wood Skirting Install

1. Remove existing skirting in the designated area; install new 18 gauge metal "L" channel 4-inch below surface. Install new 7/8-inch x 4-foot x 8-foot T-111, 105 1/2-inch x 10-inch tap siding; or 1/2-inch x 8-inch masonite lap siding with metal foundation vents; prime all new wood with acrylic primer; paint skirt with 2 coats of exterior latex paint. See above for backfill and foundation vents.

3.3 INSTALLATION OF INTERIOR FINISH CARPENTRY

A. Base Boards, Window and Door Casing, Crown and other Moldings Base

1. General installation:

- a. Whenever possible, new baseboard, moldings and casings are to be matched in size and shape to existing trim. All joints are to be cut to fit and be tight. Fasten trim work with the appropriate nails, fasteners, or adhesives. All nails are to be countersunk and filled. No new materials that are split or otherwise defective will be accepted. All joints in continuous rows of trim will be scarfed and break on a stud. Material used should be mill finished, and sanded, white pine free from scars. Sand wood before painting. Use stain grade trim where specified and stain and match existing. Paint all trim with two coats of interior Latex Semi-Gloss Enamel.

2. Base and Ceiling Trim Repair

- a. Repair all fixtures and attach surface items. Fill all holes, joints and damaged areas with Latex filler compound

3. Base and Ceiling Trim Install

- a. Remove the trim at location and install new trim at designated locations.

B. Thresholds

1. Cut to fit jambs. Secure with casing nails set for putty stopping on wood framing and with double headed screws and expansion shields on concrete or masonry.

C. Chair Rails

1. Match existing, shall have mitered corners, set back 3/8-inch from the face of jambs, and nailed to finish and rough jambs and grounds.

D. Casings

1. Match existing, shall have mitered corners, set back 3/8-inch from the face of jambs, and nailed to finish and rough jambs and grounds.

E. Plinth Blocks

1. Conform to profile of casings.

F. Ceiling Scuttles (Attic Access)

1. Attic space shall be provided with an interior access opening not less than 22-inch x 36-inch. Access opening shall be readily accessible and provided with lid or device that may be easily removed or operated, or with the installation of pull down stairs as per write-up.
2. Attic Access Repair

a. Repair frame, trim, and opening door cover. Access shall not allow insulation or dust infiltration;

3. Attic Access Install

a. Install new access, complete with all framing, trim and hardware or install pull down-stairs as per write up. (See Attic Disappearing Stair in Paragraph H.3.) Size shall be a minimum 22-inch x 30-inch. Access stairs to be fire rated, 350-lb weight limit stairs, sealed from conditioned space. Finish wood trim around framed opening.

G. Interior Stair

1. General

a. Interior stairs shall have a minimum, continuous headroom of 6-foot, 8-inch measured vertically. Minimum width clear of handrail shall be 2-foot, 10-inch for main stairs. Stringers shall have solid bearing top and bottom. Top of stringer shall have not less than 4-inch end bearing or be adequately anchored to header. Exterior stairs shall bear upon top of slab or on bottom stop constructed of concrete. Minimum effective stringer depth shall be 3-1/2-inch. When the distance between stringers exceeds 2-foot, 8-inch a center stringer shall be installed, except that 2-inch treads may span 3-foot between stringers. Treads and risers of required stairs shall be so proportioned that the sum of 2 risers and a tread exclusive of projection of nosing, is 25-inch. The height of the riser shall not exceed 7-3/4-inch and treads, exclusive of nosing, shall not be less than 10-inch wide. Every tread less than 10-inch wide shall have a nosing, or effective projection, of approximately 1-inch over the level immediately below that tread.

b. Treads shall be of uniform width and risers of uniform height in any one flight of stairs. A flight of stairs shall not have a vertical rise of more than 12-foot between floors or landings. The length and width of landings shall be not less than the width of stairways in which they occur. All stairs shall have handrails, or well secured handrails or guards on both sides of stairs of not less than 30-inch and nor more than 34-foot high. Stairs of less than 44-inch in width may have handrails on one side only. Horizontal runs of rails around open walls shall be not less than 36-foot high. All exterior stairways shall be constructed of treated lumber and painted with two coats exterior enamel. Wood stairs shall be of hardwood or vertical grain kiln-dried, soft wood. Finish treads shall match existing.

c. Stair work shall be fitted, nailed, screwed, or bolted, and glued together forming a strong and rigid structure without squeaks or vibration.

d. Treads and risers shall comply with the New York City Building Code.

e. Handrail shall comply with the New York City Building Code.

2. Attic and Basement Stair

a. Stair and rails to comply with General Interior Stair Guidelines.

3. Attic Disappearing Stair

a. Replace damaged or missing parts, and adjust operation for safe usage. If required, remove entire existing unit and replace with unit equivalent to Section 06200, 3.4, G. Provide unit if mechanical equipment or insulation is located in attic.

3.5 INSTALLATION OF MISCELLANEOUS ITEM

A. Vent Screening

4. Provide new screen cloth to match existing Install vents securely anchored in place and insect proof.

B. Metal Handrail Repair

1. Anchoring and painting: All handrails shall be securely anchored, metal “L” brackets bolted at top and bottom. Paint with metal primer.

END OF SECTION 06200

SECTION 06400
INTERIOR ARCHITECTURAL WOODWORK

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. General provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.
- B. Composite wood products must be certified compliant with California 93120. If using a composite wood product that does not comply with California 93120, all exposed edges and sides must be sealed with low-VOC sealants.

1.2 SUMMARY

- A. This Section includes the following:
 - 1. Wood cabinets: Match existing where applicable.
 - 2. Plastic-laminate countertops: Match existing where applicable.
 - 3. Solid-surfacing-material countertops: Match existing where applicable.
 - 4. Closet and utility shelving: Match existing where applicable.
 - 5. Shop finishing of interior woodwork: Match existing where applicable.
- B. Related Sections include the following:
 - 1. Section 06100 "Rough Carpentry" for wood furring, blocking, shims, and hanging strips required for installing woodwork and concealed within other construction before woodwork installation.
 - 2. Section 06200 "Finish Carpentry" for interior carpentry exposed to view that is not specified in this Section.

1.3 DEFINITIONS

- A. Interior architectural woodwork includes wood furring, blocking, shims, and hanging strips for installing woodwork items unless concealed within other construction before woodwork installation.

1.4 SUBMITTALS

- A. Shop Drawings: Show location of each item, dimensioned plans and elevations, large-scale details, attachment devices, and other components at a scale of 1/4-inch per foot.

1.5 QUALITY ASSURANCE

- A. Quality Standard: Unless otherwise indicated, comply with AWI's "Architectural Woodwork Quality Standards" for grades of interior architectural woodwork indicated for construction, finishes, installation, and other requirements.
 - 1. Provide AWI Quality Certification Program labels or certificates indicating that woodwork, including installation, complies with requirements of grades specified.

- B. Fire-Test-Response Characteristics: Where fire-retardant materials or products are indicated, provide materials and products with specified fire-test-response characteristics as determined by testing identical products per test method indicated by UL, ITS, or another testing and inspecting agency acceptable to authorities having jurisdiction. Identify with appropriate markings of applicable testing and inspecting agency in the form of separable paper label or, where required by authorities having jurisdiction, imprint on surfaces of materials that will be concealed from view after installation.

1.6 PROJECT CONDITIONS

- A. Field Measurements: Where woodwork is indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication, and indicate measurements on Shop Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
 - 1. Locate concealed framing, blocking, and reinforcements that support woodwork by field measurements before being enclosed, and indicate measurements on Shop Drawings.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. General: Provide materials that comply with requirements of AWI's quality standard for each type of woodwork and quality grade specified, unless otherwise indicated.
- B. Wood Species and Cut for Transparent Finish: Birch, plain sawn or sliced.
- C. Wood Products: Comply with the following:
 - 1. Veneer-Faced Panel Products (Hardwood Plywood): HPVA HP-1.
- D. High-Pressure Decorative Laminate: NEMA LD 3, grades as indicated or, if not indicated, as required by woodwork quality standard.
 - 1. Manufacturer: Subject to compliance with requirements, provide high-pressure decorative laminates by one of the following or approved equal:
 - a. Formica Corporation.
 - b. Nevamar Company, LLC; Decorative Products Div.
 - c. Wilsonart International; Div. of Premark International, Inc.
- E. Solid-Surfacing Material: See specifications for "Simulated Stone Countertops".

2.2 FIRE-RETARDANT-TREATED MATERIALS

- A. General: Where fire-retardant-treated materials are indicated, use materials complying with requirements in this Article that are acceptable to authorities having jurisdiction, and with fire-test-response characteristics specified.
 - 1. Do not use treated materials that do not comply with requirements of referenced woodworking standard or that are warped, discolored, or otherwise defective.
 - 2. Use fire-retardant-treatment formulations that do not bleed through or otherwise adversely affect finishes. Do not use colorants to distinguish treated materials from untreated materials.

3. Identify fire-retardant-treated materials with appropriate classification marking of UL, U.S. Testing, Timber Products Inspection, or another testing and inspecting agency acceptable to authorities having jurisdiction.

2.3 HARDWARE AND ACCESSORIES

- A. General: Provide cabinet hardware and accessory materials associated with architectural cabinets, except for items specified in Division 8.
- B. Exposed Hardware Finishes: For exposed hardware, provide finish that complies with BHMA A156.18 for BHMA finish number indicated.
 1. Satin Brass, Blackened, Bright Relieved, Clear Coated: BHMA 610 for brass base; BHMA 636 for steel base.
 2. Satin Chromium Plated: BHMA 626 for brass or bronze base; BHMA 652 for steel base.
- C. For concealed hardware, provide manufacturer's standard finish that complies with product class requirements in BHMA A156.9.

2.4 MISCELLANEOUS MATERIALS

- A. Furring, Blocking, Shims, and Hanging Strips: Softwood or hardwood lumber, kiln dried to less than 15 percent moisture content.
- B. Adhesive for Bonding Plastic Laminate: Un-pigmented contact cement.
 1. Adhesive for Bonding Edges: Hot-melt adhesive or adhesive specified above for faces.

2.5 FABRICATION, GENERAL

- A. Interior Woodwork Grade: Unless otherwise indicated, provide interior woodwork complying with referenced quality standard.
- B. Wood Moisture Content: Comply with requirements of referenced quality standard for wood moisture content in relation to ambient relative humidity during fabrication and in installation areas.
- C. Sand fire-retardant-treated wood lightly to remove raised grain on exposed surfaces before fabrication.
- D. Fabricate woodwork to dimensions, profiles, and details indicated. Ease edges to radius indicated for the following:
 1. Corners of Cabinets and Edges of Solid-Wood (Lumber) Members 3/4-inch (19-mm) Thick or Less: 1/16-inch (1.5-mm).
 2. Edges of Rails and Similar Members More Than 3/4-inch (19-mm) Thick: 1/8-inch (3-mm).
- E. Shop-cut openings to maximum extent possible to receive hardware, appliances, plumbing fixtures, electrical work, and similar items. Locate openings accurately and use templates or roughing-in diagrams to produce accurately sized and shaped openings. Sand edges of cutouts to remove splinters and burrs.
 1. Seal edges of openings in countertops with a coat of varnish.

2.6 WOOD CABINETS

- A. Grade: Standard.
- B. New kitchen cabinets will meet the ANSI A208.1 and A208.2 standard for formaldehyde content of particleboard and MDF, or have exposed edges of particleboard and MDF sealed to prevent the out-gassing of formaldehyde. Cabinets will have hardwood doors and face frames. There will be a minimum of 10 lineal feet of post-formed countertop with corresponding base cabinets and wall cabinets, and a dishwasher. Corners in countertop designs are permitted if factory assembled. A drawer base (12" or 15") will be included in new cabinetry.
- C. Cabinets to be Merillat Classic in the following door styles or approved equal. Color and style to be selected by Homeowner from program offerings.
 - 1. Door Styles:
 - a. Fusion
 - b. Portrait (with 5 piece drawer)
 - c. Avenue (with 5 piece drawer)
 - 2. Colors:
 - a. Cotton
 - b. Kona
 - c. Natural
 - d. Sable
- D. Manufacturers/Series
 - 1. Merillat/Merillat Classic
 - 2. Quality Cabinets/Quality Series

2.7 PLASTIC-LAMINATE COUNTERTOPS

- A. Grade: Standard.
- B. High-Pressure Decorative Laminate Grade: HGS. (Horizontal Grade) for Flat Laid installation.
- C. Colors, Patterns, and Finishes: Provide materials and products that result in colors and textures of exposed laminate surfaces complying with the following requirements:
 - 1. As selected by Homeowner from HRP offered choices in the following categories:
 - a. Solid colors, matte finish.
 - b. Patterns, matte finish.
- D. Edge Treatment: Same as laminate cladding on horizontal surfaces.
- E. Core Material: Exterior-grade plywood.
- F. Core Material at Sinks: Exterior-grade plywood.

2.8 CLOSET AND UTILITY SHELVING

- A. Shelf Material: 3/4-inch (19-mm) x 12-inch solid lumber, painted.

- B. Cleats: 3/4-inch (19-mm) solid lumber.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Grade: Install woodwork to comply with requirements for the same grade specified in Part 2 for fabrication of type of woodwork involved.
- B. Assemble woodwork and complete fabrication at Project site to comply with requirements for fabrication in Part 2, to extent that it was not completed in the shop.
- C. Install woodwork level, plumb, true, and straight. Shim as required with concealed shims. Install level and plumb (including tops) to a tolerance of 1/8-inch in 96-inches (3-mm in 2400-mm).
- D. Scribe and cut woodwork to fit adjoining work, refinish cut surfaces, and repair damaged finish at cuts.
- E. Cabinets: Install without distortion so doors and drawers fit openings properly and are accurately aligned. Adjust hardware to center doors and drawers in openings and to provide unencumbered operation. Complete installation of hardware and accessory items as indicated.
 - 1. Install cabinets with no more than 1/8-inch in 96-inch (3-mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 2. Fasten wall cabinets through back, near top and bottom, at ends and not more than 16-inches (400-mm) o.c. with No. 10 wafer-head screws sized for 1-inch (25-mm) penetration into wood framing, blocking, or hanging strips.
- F. Countertops: Anchor securely by screwing through corner blocks of base cabinets or other supports into underside of countertop.
 - 1. Align adjacent solid-surfacing-material countertops and form seams to comply with manufacturer's written recommendations using adhesive in color to match countertop. Carefully dress joints smooth, remove surface scratches, and clean entire surface.
 - 2. Install countertops with no more than 1/8-inch in 96-inch (3-mm in 2400-mm) sag, bow, or other variation from a straight line.
 - 3. Secure backsplashes to walls with adhesive.
 - 4. Caulk space between backsplash and wall
- G. Touch up finishing work specified in this Section after installation of woodwork. Fill nail holes with matching filler where exposed.

3.2 ADJUSTING AND CLEANING

- A. Repair damaged and defective woodwork, where possible, to eliminate functional and visual defects; where not possible to repair, replace woodwork. Adjust joinery for uniform appearance.
- B. Clean, lubricate, and adjust hardware.

END OF SECTION 06400

DIVISION 7 – THERMAL AND MOISTURE PROTECTION

SECTION 07140 FLUID APPLIED WATERPROOFING

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Residential applied waterproofing.

1.2 QUALITY ASSURANCE

- A. Utilize an applicator trained and approved by the waterproofing manufacturer and comply with Regulatory Requirements and Approvals: Comply with requirements of the following.
 - 1. ICC Evaluation Services, Inc. (ICC) ESR-3062.

PART 2 - PRODUCTS

2.1 WATERPROOFING SYSTEMS

- A. Provide waterproofing systems that prevent the passage of liquid water under hydrostatic pressure and that comply with specified physical requirements as demonstrated by testing performed by independent testing agency on manufacturer's current waterproofing formulations and system design; use materials specified below.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean and prepare substrate according to manufacturer's recommendations. Provide clean, dust-free, and dry substrate for waterproofing application.
- B. Prepare and treat vertical and horizontal 90 degree terminations, edge terminations, penetrations through waterproofing material, expansion joints, cracks, drains, and sleeves according to ASTM C 898 and manufacturer's recommendations.
- C. At each area to be treated, apply two coats of joint detailing mastic; embed joint reinforcing strip in first coat and apply second coat entirely covering the embedded joint reinforcing strip ensuring complete saturation.
 - 1. 90 Degree Terminations, Vertical and Horizontal: 6 inches (150 mm) on each side.
 - 2. Penetrations, Drains, Sleeves: 6 inches (150 mm) radius around penetration and 3 inches (75 mm) onto penetrating object.
 - 3. and Cracks: 6 inches (150 mm) wide on each side of joint/crack.
- D. Secure and protect plumbing, electrical, mechanical and structural items to be under or passing through waterproof membrane prior to membrane application.

- E. When it is not possible to install waterproofing before placement of reinforcing steel, exposed reinforcing steel shall be masked by General Contractor prior to membrane application.

3.2 BELOW GRADE INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. For vertical application apply a uniform coat of waterproofing to entire wall area. Obtain a seamless membrane free of entrapped gasses, with a minimum dry film thickness of 60 mil (1.5 mm) below-grade wall application.
 - 1. Apply fluid membrane onto footing area a minimum of 4 inches (102 mm) to prevent water pooling.
 - 2. Allow membrane to cure for 24 hours before placing any backfill against the wall.
 - 3. Apply drainage board.

- 3.3 Cure waterproofing according to manufacturer's recommendations, taking care to prevent contamination and damage during application stages and curing.

END OF SECTION 07140

**SECTION 07210
BUILDING INSULATION**

PART 1 - GENERAL

1.1 SUMMARY

A. Scope:

1. Provide all labor, materials, equipment, services, and perform all operations required for complete installation and related work as follows:
 - a. Insulations of attics, crawl spaces, and basements;
 - b. Insulation of subfloors and crawl spaces;
 - c. Insulation under slabs-on-grade;
 - d. Foundation wall insulation (supporting backfill);
 - e. Cavity wall insulation;
 - f. Concealed building insulation;
 - g. Exposed building insulation;
 - h. Loose-fill building insulation;
 - i. Insulation of heat conveying systems, radiator piping, duct work, and water conveying systems;
 - j. Provisions of vapor retarders;
 - k. Creation of adequate ventilation.
2. Ensure continuous unbroken air barrier surrounding all conditioned space and dwelling units. Align insulation completely and continuously with the air barrier. Seal all accessible gaps and penetrations in the building envelope. If applicable, use low VOC caulk or foam.
3. For attics with closed floor cavities directly above the conditioned space, blow in insulation per manufacturer's specifications to a minimum density of 3.5 Lbs. per cubic foot (CF). For attics with open floor cavities directly above the conditioned space, install insulation to meet or exceed IECC levels.
4. Install \geq R-19 insulation in contact with the subfloor in buildings with floor systems over vented crawl spaces. Install a 6-mil vapor barrier in contact with 100% of the floor of the crawl space (the ground), overlapping seams and piers at least 6 inches.

1.2 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics:** Provide insulation and related materials with the fire-test-response characteristics indicated, as determined by testing identical products per ASTM E84 for surface-burning characteristics and other methods indicated with product, by UL or another testing and

inspecting agency acceptable to authorities having jurisdiction. Identify materials with appropriate markings of applicable testing and inspecting agency.

B. Testing Regulations

1. Building envelope air tightness shall be demonstrated by a blower door test in accordance with _____ of the New York City Energy Conservation Code. Blower door tests will only be required on New Construction.
2. Fenestration air leakage shall not exceed requirements of _____ of the New York City Energy Conservation Code.
3. Duct tightness test shall be verified by either Post-construction test or Rough-in test in accordance with _____ of the New York City Energy Conservation Code for all new dwelling construction and all remodels where the duct system is to be replaced and is accessible for repair or replacement.
4. Repair, renovations, alterations, reconstructions of existing thermal protection shall comply with the New York City Building Code and the Law.

C. Insulation

1. General
 - a. Thermal Conductivity – Where insulation is identified by “R” value, provide appropriate thickness.
2. Reflective Insulation
 - a. Sheet metal or foil shall comply with Federal Specification HH-1-1252A.
3. Rigid Insulation
 - a. Edges shall be square cut; polystyrene shall comply with Federal Specification HH-1-524B, Mineral fiber shall comply with Federal Specification HH-1-526C, Mineral Aggregate shall comply with Federal Specification HH-1-529B, Urethane shall comply with Federal Specification HH-1-530A or with ASTM C591, and Asbestos-Cement Fiberboard Panels shall comply with Federal Specification HH-1-001084 or with ASTM C551.
4. Batt Insulation
 - a. Glass fiber or rock wool shall comply with Federal Specification HH-1-521E or ASTM C262 and C553. Only glass fiber insulation that qualifies as formaldehyde free shall be provided.
5. Loose Fill Insulation
 - a. Mineral fibers or fire-resistant treated cellulose fibers shall comply with Federal Specifications HH-1-515B.

D. Caulks and Sealants

1. Install the caulking and sealing material in strict accordance with the sealant manufacturer's printed directions and shall result in a completely weather tight job.

PART 2 - PRODUCTS

2.1 INSULATING MATERIALS

- A. General: Provide insulating materials that comply with requirements and with referenced standards and, for preformed units, in sizes to fit applications indicated, selected from manufacturer's standard thicknesses, widths, and lengths. Provide insulation material of uniform thickness and size for the following items.
 - 1. Reflective Insulation
 - 2. Rigid Insulation
 - 3. Batt Insulation
 - 4. Loose Fill Insulation

2.2 VAPOR RETARDERS

- A. General: Provide insulating materials that comply with requirements and with referenced standards.

2.3 CAULKING AND SEALANTS

- A. Sealants
- B. Acrylic-Emulsion Sealant
 - 1. Acrylic emulsion or latex rubber modified acrylic emulsion sealant compound, permanently flexible, non-staining and non-bleeding; recommended by manufacturer for general interior exposure.

C. VENTING DEVICES

- 1. Ridge Vents, Power Vents, and Soffit Vents
- 2. Screens for Soffit Vents
 - a. Wire cloth, 18 x 14 mesh of 0.013 diameter aluminum wire, complying with FS RR W 365, Type VII, except black anodized "gun metal" coating on wire.

2.4 INSULATION FASTENERS

- A. Adhesively Attached, Spindle-Type Anchors with Washers: Plate or Angle formed from perforated galvanized carbon-steel sheet, 0.030-inch (0.762-mm) thick by 2-inches (50-mm) square, welded to projecting steel spindle with a diameter of 0.105-inch (2.67-mm) and length capable of holding insulation of thickness indicated securely in position with 1-1/2-inch (38-mm) square or diameter self-locking washers complying with the following:
 - 1. Washers formed from 0.016-inch (0.41-mm) thick galvanized steel sheet, with beveled edge for increased stiffness, sized as required to hold insulation securely in place, but not less than in place.
 - 2. Where anchors are located in ceiling plenums, crawlspaces, or attic spaces provide capped self-locking washers incorporating a spring steel insert to ensure permanent retention of cap.

- B. Insulation Standoff: Spacer fabricated from galvanized mild-steel sheet for fitting over spindle of insulation anchor to maintain a minimum 1-inch (25-mm) air space between face of insulation and substrate to which anchor is attached.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Install insulation to comply with insulation manufacturer's written instructions applicable to products and application indicated. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Remove projections that interfere with placement.
- B. Preparation of Surface for Caulks and Sealants
 - 1. Clean and dry and rake out all joints and spaces to a depth of at least .375-inch (3/8); remove all dust by swabbing wet moistened with cleaner recommended by the caulking manufacturer. Fill deep joints and joints more than 0.25-inch (1/4) wide to within .375-inch of the surface with sealant backer, well forced in to provide a watertight seal. Fill the exposed space with caulking compound. On the exterior, prime surfaces of masonry, concrete or metal in contact with caulking, before caulking is applied.
- C. Install perimeter insulation on vertical surfaces by setting units in adhesive.
 - 1. If not otherwise indicated, extend insulation a minimum of 24-inches (610-mm) below exterior grade line.
 - 2. Protect below-grade insulation on vertical surfaces from damage during backfilling by applying protection board set in adhesive.
- D. Protect top surface of perimeter underlay insulation from damage during concrete work by applying protection board.
- E. Install cavity wall and masonry cell insulations as follows:
 - 1. Install foam plastic insulation with small pads of adhesive spaced approximately 24-inches (610-mm) o.c. both ways on inside face, as recommended by manufacturer.
 - 2. Install cellular glass insulation by applying insulation with closely fitting joints using gob or serrated trowel method per cellular glass insulations written directions and as follows:
 - a. Coat edges of insulation units with full bed of adhesive to seal joints between insulation and between insulation and adjoining construction.
 - b. Coat exterior face (cold face) of installed cellular glass block insulation course with asphalt coating recommended by insulation manufacturer for this purpose.
- F. Pour granular insulation into cavities indicated to receive insulation, taking care to fill voids completely. Maintain inspection ports to show presence of insulation at extremities of each pour area. Close ports after confirming complete coverage. Limit fall of insulation to one story in height, but not exceeding 20-feet (6-m).
- G. Installation of General Building Insulation: Apply insulation units to substrates by method indicated, complying with manufacturer's written instructions. If no specific method is indicated, bond units to substrate with adhesive or use mechanical anchorage to provide permanent placement and support of units.

1. Seal joints between closed-cell (non-breathing) insulation units by applying adhesive, mastic, or sealant to edges of each unit to form a tight seal as units are shoved into place. Fill voids in completed installation with adhesive, mastic, or sealant.
2. Set vapor-retarder-faced units with vapor retarder to warm side of construction, unless otherwise indicated. Do not obstruct ventilation spaces, except for firestopping.
3. Install mineral-fiber blankets in cavities formed by framing members according to the following requirements:
 - a. Use blanket widths and lengths that fill the cavities formed by framing members. If more than one length is required to fill cavity, provide lengths that will produce a snug fit between ends. Place blankets in cavities formed by framing members to produce a friction fit between edges of insulation and adjoining framing members
4. For metal-framed wall cavities where cavity heights exceed 96-inches (2438-mm) support unfaced blankets mechanically and support faced blankets by taping stapling flanges to flanges of metal studs.
5. For wood-framed construction, install mineral-fiber blankets according to ASTM C1320 and as follows:
 - a. With faced blankets having stapling flanges, secure insulation by inset, stapling flanges to sides of framing members.
 - b. With faced blankets having stapling flanges, lap blanket flange over flange of adjacent blanket to produce airtight installation after concealing finish material is in place.
6. Install board insulation on concrete substrates by adhesively attached, spindle-type insulation anchors as follows:
 - a. Fasten insulation anchors to concrete substrates with insulation anchor adhesive according to anchor manufacturer's written instructions.
7. Install board insulation in curtain-wall construction where indicated on Drawings according to curtain-wall manufacturer's written instructions.
8. Retain insulation in place by metal clips and straps or integral pockets within window frames, spaced at intervals recommended in writing by insulation manufacturer to hold insulation securely in place without touching spandrel glass. Maintain cavity width of dimension indicated between insulation and glass.
9. Install insulation where it contacts perimeter fire-containment system to prevent insulation from bowing under pressure from perimeter fire-containment system.
10. Place loose-fill insulation into spaces and onto surfaces as shown, either by pouring or by machine blowing to comply with ASTM C1015. Level horizontal applications to uniform thickness as indicated, lightly settle to uniform density, but do not compact excessively.
11. For cellulosic loose-fill insulation, comply with the Cellulose Insulation Manufacturers Association's "Special Report #3, "Standard Practice for Installing Cellulose Insulation."

12. Apply self-supported, spray-applied, cellulosic insulation according to manufacturer's written instructions. After insulation is applied, make it even with studs by using method recommended by insulation manufacturer.
 13. Stuff glass-fiber, loose-fill insulation into miscellaneous voids and cavity spaces where shown. Compact to approximately 40 percent of normal maximum volume equaling a density of approximately 2.5 lb/cu. ft. (40 kg/cu. m).
- H. Installation of Vapor Retarders: Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
1. Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs. Fasten vapor retarders to framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16-inches (406-mm) o.c.
 2. Seal overlapping joints in vapor retarders with adhesives or vapor-retarder tape according to vapor-retarder manufacturer's instructions.
 3. Firmly attach vapor retarders to substrates with mechanical fasteners or adhesives as recommended by vapor-retarder manufacturer.
- I. Attic Insulation
1. The Contractor shall install sufficient insulation to provide R-38 rating.
 2. Install blown cellulosic insulation as per manufacturer's direction. Blowing or pouring type insulation shall not be installed in attic space if roof slope is less than 3 to 12.
 3. Ceiling insulation shall be cellulose, glass fiber, or mineral wool non-asbestos material, not readily able to absorb or retain moisture, non-combustible, and shall not attract insects or vermin. Furnish and install cellulose or glass fiber insulation over entire attic area above conditional crawl space to provide a temperature resistance as specified in the work write-up.
 4. Seal any penetrations or holes.
 5. Furnish and install glass fiber or mineral wool batt insulation (R-13) with paper backing in exterior wall stud space as indicated in the work write-up.
 6. If a vapor barrier does not already exist, install polyethylene strips between joists or trusses.
- J. Contractor shall add cellulosic as per manufacturer's direction.
1. Use: Owens Corning or equal.
- K. Outer Attic Rafter
1. The Contractor shall install R-38 glass fiber batts backed with kraft paper between roof rafters by stapling batt facing flange to the edge of the rafter every 12-inches, with backed side facing inside or toward heated space
 2. In the event that flooring does not exist in the attic, work will be performed off of plywood sheets or boards so as not to damage the ceiling below.

L. Floor/Subfloor Insulation

1. Subfloor insulation system is comprised of R-38 batts, 1/2-inch plywood, mold-resistant primer and 2 coats of exterior grade latex paint.
2. The Contractor shall install R-38 glass fiber batt insulation, with kraft paper or open face faced on one side, between floor joists with wire mesh, chicken wire or spring wire stays as per manufacturer's instructions.
3. Do not block combustion air openings for furnace.

M. Stud Wall Blown Insulation

1. The Contractor shall install sufficient cellulose fiber insulation to provide R-13 rating. All spaces above and below blocking within the wall are to be completely filled.

N. Stud Wall Batt Insulation

1. The Contractor shall install kraft paper or open face batt insulation, R-13, between wall studs by stapling batt facing flange to the edge of studs every 12-inches, with kraft paper or open face facing toward heated area. Any cracks around door and window framing shall be packed with loose insulation.

O. Insulation Behind Vinyl or Alum Siding

1. Install 1/2-inch (R=3 to R=4) thermax foil faced sheathing per manufacturer's recommendations.

P. Domestic Hot and Cold Water Piping

1. Shall be insulated with 1-inch thick 4-7 lb. density glass fiber sectional pipe covering, with non-asbestos cement built up around fittings and valve bodies and jacket of .03 maximum permeability, lapped and sealed at all joints and seams.
2. Stapling will not be allowed.

Q. Covering for "Cold" Pipes

1. Covering for "cold pipes shall pass unbroken through hanger crevices, sleeves, etc.
2. All details of covering for cold surfaces shall be such that continuous covering with unbroken vapor barrier is provided.
3. The same covering and hanging detail shall be used for pipes connecting to vibrating equipment or carrying pulsating pressures to avoid metal to metal contact between pipes and hangers.

R. Ductwork

1. Sound lining shall be applied to all return air ducts and shall be fiberglass ultra liner 1/2-inch thick by C.S.B. Aeroflex by Owens Corning or equal.
2. Duct lining shall be installed in accordance with manufacturer's recommendations.
3. Liner shall be UL approved for use in accordance with NFPA Pamphlet 90A.

S. Interior and Exterior Caulking

1. Prepare surface and then seal all cracks between plaster and wood door trim, window trim and cabinets or wood items attached to wall. Seal at joints of plaster and ceramic tile. Remove old caulking and caulk all joints between brick and window frames. Use architectural grade oil or latex caulk. All caulking beads shall be smooth and neat and clean.

T. Weatherstripping

1. General: Install in accordance with manufacturer's installation instructions to ensure proper seal.
2. Doors: Contractor shall install weatherstrip to doors as follows:
 - a. Install new aluminum/vinyl weatherstrip at all edges to form a tight seal.
3. Thresholds
 - a. Install threshold the full width of the opening and cut to fit the door frame between jambs. Slot thresholds in place with matching countersunk screws in lead shields. Set thresholds in a full bed of caulking compound.
4. Windows: Contractor shall install weatherstrip to windows as follows:
 - a. Install foam weather-stripping at sash dividers and all edges. Final work shall result in a properly sealed window.
5. Hook Strips
 - a. Apply hook strips to the outside surface of the door and set in caulking compound.
6. Drips
 - a. Set drips over hook strips in caulking compound.
7. Gable End Vent Repair
 - a. Clean debris from between louvers. Install aluminum screen to interior side of vent to provide tight seal. Replace any broken louvers.

U. Vapor Retarder

1. Extend vapor retarder to extremities of areas to be protected from vapor transmission. Secure in place with adhesives or other anchorage system as indicated. Extend vapor retarder to cover miscellaneous voids in insulated substrates, including those filled with loose-fiber insulation.
2. Install 6-mil polyethylene plastic vapor barrier over dirt area in crawl space, overlap approximately 6-inch at each width.
3. Seal vertical joints in vapor retarders over framing by lapping not less than two wall studs. Fasten vapor retarders to framing at top, end, and bottom edges; at perimeter of wall openings; and at lap joints. Space fasteners 16-inches (406 mm) o.c.
4. Seal overlapping joints in vapor retarders with adhesives or vapor-retarder tape according to vapor-retarder manufacturer's instructions.

5. Firmly attach vapor retarders to substrates with mechanical fasteners or adhesives as recommended by vapor-retarder manufacturer.
6. Plastic to be held down with either bricks, rocks or other non-wood material (if wood is used, it must be pressure treated).

END OF SECTION 07210

SECTION 07311
ASPHALT SHINGLES

PART 1 - GENERAL

1.1 SUMMARY

- A. Comply with applicable requirements of other sections. Provide all labor, materials and equipment necessary to complete work specified herein.
- B. Furnish all labor and materials to complete work in this section which consists but is not limited to all roofing, sheet metal, and related items necessary to complete the work indicated on the drawings and in the Specifications. Repair or replacement as designated on the work order. Surfaces to which roofing and sheet metal are applied shall be even, smooth, thoroughly clean, sound and dry and free from all defects that might affect the application. Materials furnished under this section which are to be built-in by other trades shall be delivered to the site in time to avoid delays in construction progress.
- C. All replacement material shall match as close as possible and shall be installed per manufacturer's direction and Law.
- D. All accessories or other items essential to the completion of the sheet metal installation though not specifically shown or specified shall be provided.
- E. Nails, screws and bolts shall be of a composition that is compatible with the metal with which it will be in contact. All roofing materials shall be applied in accordance with manufacturer's approved directions.
- F. Repair, renovations, alterations, reconstructions of existing roofing shall comply with the New York City Building Code.
- G. When replacing or making a substantial repair to the roof, use radiant barrier sheathing or other radiant barrier material; use cool roofing materials when feasible.
- H. This Section includes the following:
 - 1. Asphalt shingles;
 - 2. Felt underlayment;
 - 3. Self-adhering sheet underlayment;
 - 4. Ridge vents.
- I. Related sections
 - 1. Section 06100 Rough Carpentry for wood sheathing and framing;

1.2 QUALITY ASSURANCE

- A. Source Limitations: Obtain ridge and hip cap shingles, ridge vents, felt underlayment through one source from a single asphalt shingle manufacturer.

- B. Each bundle of asphalt shingles, when used, shall be delivered to job site with seals unbroken and labels intact. Labeling shall indicate compliance with Underwriters Laboratories, Inc., Class C label or equivalent standards. In high wind zone, the asphalt shingles shall be selected per the New York City Building Code .

1.3 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace asphalt shingles that fail in materials within specified warranty period.
 - 1. Material Warranty Period: 30 years from date of Final Acceptance.
 - 2. Installation Warranty Period: 1 year written warranty on workmanship and material other than shingles.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Manufacturers: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, manufacturers specified below. Standard to be Owens Corning/Oakridge Shingle or approved equal.
 - 1. Manufacturers:
 - a. CertainTeed Corporation;
 - b. GAF Materials Corporation;
 - c. Georgia-Pacific Corporation;
 - d. Owens Corning.

2.2 ORGANIC-FELT-REINFORCED ASPHALT SHINGLES

- A. For houses within with Historic designation: Laminated-Strip Asphalt Shingles: ASTM D225, laminated, multi-ply overlay construction, organic-felt reinforced, mineral-granule surfaced, and self-sealing; passing ASTM D3161 for wind resistance.
- B. Multi tab-Strip Asphalt Shingles: Shall have self-sealed strips or be interlocking and comply with ASTM D225 or D3462; passing ASTM D3161 for wind resistance. Standard to be Owens Corning/Oakridge Shingle or approved equal.
 - 1. Tab Arrangement: Architectural style, regularly spaced according to manufacturer's specifications and the New York City Building Code.
 - 2. Colors:
 - a. Shasta White (ENERGY STAR rated shingle)
 - b. Onyx Black
 - c. Desert Tan
 - d. Estate Gray
 - e. Brownwood
- C. Hip and Ridge Shingles: Manufacturer's standard units to match asphalt shingles.

2.3 UNDERLAYMENT MATERIALS

- A. Felts: 2 Layers of ASTM D226 Type I, No. 15, asphalt-saturated organic felts perforated;

- B. Felt: 1 layer of ASTM D226 Type II No. 30, asphalt-saturated organic felts perforated.

2.4 RIDGE VENTS

- A. Rigid Ridge Vent: Manufacturer's standard rigid section high-density polypropylene or other UV-stabilized plastic ridge vent for use under ridge shingles.

2.5 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D4586, Type II, asbestos free.
- B. Roofing Nails: ASTM F1667; aluminum, stainless-steel, copper, or hot-dip galvanized steel wire shingle nails, minimum 0.120-inch (3-mm) diameter, barbed shank, sharp-pointed, with a minimum 3/8-inch (9.5-mm) diameter flat head and of sufficient length to penetrate 3/4-inch (19-mm) into solid wood decking or extend at least 1/8-inch (3-mm) through plywood sheathing.
 - 1. Where nails are in contact with metal flashing, use nails made from same metal as flashing.
- C. Felt Underlayment Nails: Aluminum, stainless-steel, or hot-dip galvanized steel wire with low profile capped heads or disc caps, 1-inch (25-mm) minimum diameter.

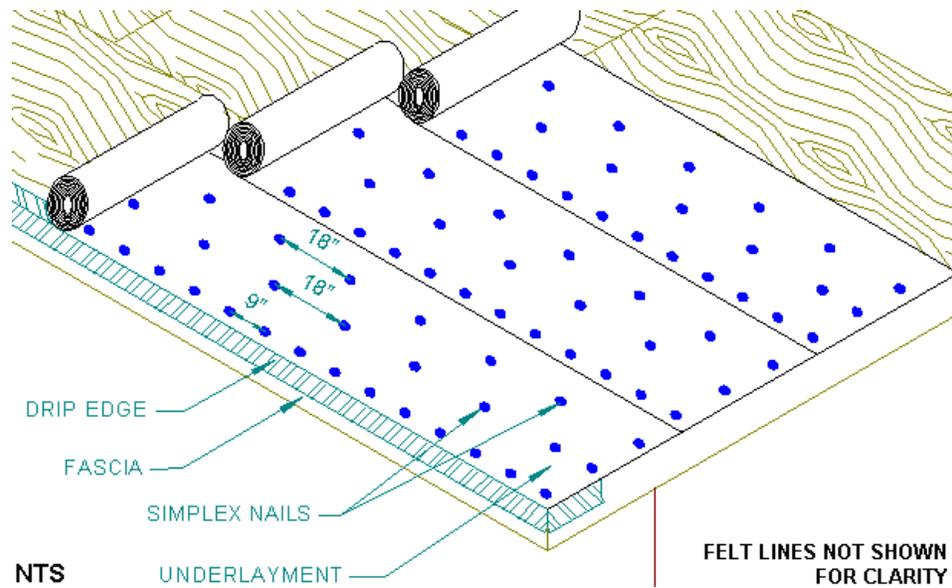
2.6 METAL FLASHING AND TRIM

- A. Sheet Metal Flashing and Trim:
 - 1. Sheet Metal: Zinc-coated (galvanized) steel;
 - 2. For Patch and repair, Sheet Metal: Match existing.
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.
- C. Metal flashing (where required per IRC) shall be galvanized steel and where exposed shall be painted to match adjacent surfaces.

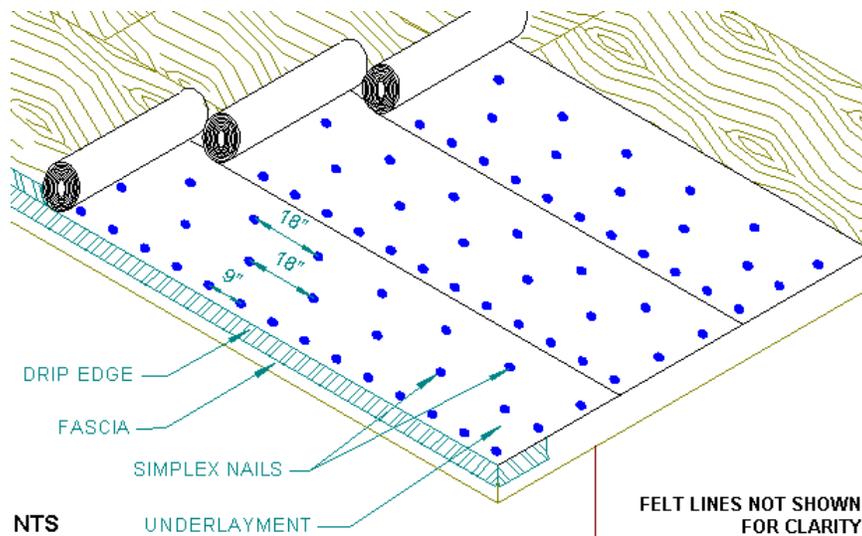
PART 3 - EXECUTION

3.1 UNDERLAYMENT INSTALLATION

- A. Single-Layer Felt Underlayment: Install single layer of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Lap sides a minimum of 2-inches (50-mm) over underlying course. Lap ends a minimum of 4-inches (100-mm). Stagger end laps between succeeding courses at least 72-inches (1830-mm). Fasten with felt underlayment nails in a 9-inch & 18-inch nail pattern.



- B. **Double-Layer Felt Underlayment:** Install double layers of felt underlayment on roof deck perpendicular to roof slope in parallel courses. Install a 19-inch (485-mm) wide starter course at eaves and completely cover with full-width second course. Install succeeding courses lapping previous courses 19-inches (485-mm) in shingle fashion. Lap ends a minimum of 6-inches (150-mm). Stagger end laps between succeeding courses at least 72-inches (1830-mm). Fasten with felt underlayment nails in a 9-inch nail pattern.



3.2 METAL FLASHING INSTALLATION

- A. **General:** Install metal flashings and other sheet metal to comply with requirements in Division 7.
1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

- B. Flashing shall be placed around all openings and extensions of mechanical appliances or equipment through the roof and otherwise as necessary to provide adequate drainage. Flashing on chimneys shall extend at least 4" upon wall and shall be counter-flashed and shall extend under roofing at least 12".
- C. Heads and sills of new openings shall be suitable flashed and caulked. Pipes projecting through the roof shall be flashed. All flashing shall be 29 Ga. galvanized sheet metal or 02. inch copper.
- D. Joints and seams in all metal work shall be neatly formed and have suitable watertight hot-solder joints. All exposed galvanized metal shall be primed with red-lead. All exposed nails in flashing shall be capped with lead.

3.3 ASPHALT SHINGLE INSTALLATION

- A. At locations where total roof replacement is occurring:
 1. Strip existing roof, removing all shingles and felt.
 2. Make repairs to the existing roof rafters where required to provide adequate strength and a true and level surface.
 3. Remove all warped and deteriorated decking and replace with like kind.
 4. Fill in all spaces between boards with securely nailed wood strips of the same thickness as the old deck, OR, if necessary, re-sheath over existing roof boards with CDX plywood, 5/8-inch minimum. Plywood is to be installed with outer plies at right angle to rafters and staggered so that end joints in adjacent panels break over different supports.
 5. Sink all protruding nails and re-nail sheathing securely at all locations. All large cracks, slivers, knot holes, loose knots, pitchy knots and excessively resinous areas are to be covered with 26 gauge sheet-metal securely nailed to sheathing.
 6. Before shingling, sweep roof thoroughly to remove all debris.
 7. Remove all roofing materials, debris, etc., from premises and leave in a clean condition.
- B. At locations where repair/patching is occurring:
 1. Repair existing roof. All replacement materials shall match existing as closely as possible, and shall be installed according to manufacturer's directions and Law.
 2. Repair any broken, damaged, missing, or rotted sheathing, fascia, rake, cornice, soffit flashing, etc., as specified in the Bid Document. Sheathing shall be replaced with full pieces/sheets only.
- C. Install asphalt shingles according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."
- D. Install starter strip along lowest roof edge, consisting of an asphalt shingle strip with tabs removed at least 7-inches (175-mm) wide with self-sealing strip face up at roof edge.
 1. Extend asphalt shingles 3/4-inch (19-mm).
- E. Install first and remaining courses of asphalt shingles stair-stepping diagonally across roof deck with manufacturer's recommended offset pattern at succeeding courses, maintaining uniform exposure.

- F. Fasten asphalt shingle strips with a minimum of six roofing nails located according to manufacturer's written instructions.
- G. Ridge Vents: Install continuous ridge vents over asphalt shingles according to manufacturer's written instructions. Fasten with roofing nails of sufficient length to penetrate sheathing.
- H. Ridge and Hip Cap Shingles: Maintain same exposure of cap shingles as roofing shingle exposure. Lap cap shingles at ridges to shed water away from direction of prevailing winds. Fasten with roofing nails of sufficient length to penetrate sheathing.

END OF SECTION 07311

SECTION 07460
SIDING

PART 1 - GENERAL

1.1 SUMMARY

- A. Exterior siding for new construction and historic and non-historic repair or partial replacement: Match existing siding in gauge, pattern, style, size, texture, and color.
 - 1. Repair shall mean to realign and re-secure existing siding to provide a weather-tight and secure surface that matches adjacent surfaces.
 - 2. Replacement shall mean complete removal of siding to existing end joints of all deteriorated wood siding, and the installation of new matching materials.
 - 3. Repair and replacement work shall be installed in such a manner as to match existing finish work.
 - 4. Repairs and replacements for historically eligible homes as noted in the Job Order shall match existing siding in material, size and installation.

- B. Section Includes:
 - 1. Wood Siding
 - 2. Wood Board Siding Repair;
 - 3. Beveled Wood Siding Repair;
 - 4. Vinyl Siding Repair;
 - 5. Fiber-cement siding;
 - 6. Skirting Replacement, See Finish Carpentry Section for historic board and batten skirting and wood lattice skirting.

1.2 QUALITY ASSURANCE

- A. Fiber Cement Siding: Labeling: Provide fiber-cement siding that is tested and labeled according to ASTM C1186 by a qualified testing agency acceptable to authorities having jurisdiction.
- B. Vinyl Siding Installer Qualifications: A qualified installer who employs a VSI-Certified (or equivalent certification) Installer on Project.
- C. Wood Siding Installer Qualifications: A qualified installer with not less than three years of experience.
- D. Store materials in a dry, well-ventilated, weather-tight place.

1.3 COORDINATION

- A. Coordinate installation with flashings and other adjoining construction to ensure proper sequencing.

PART 2 - PRODUCTS

2.1 WOOD SIDING

- A. Wood siding shall be redwood or cedar of a standard pattern to match existing or as specified in the Bid Document. Wood Siding designated for Historically Eligible properties as designated in the Job Order shall have siding matching the material, profile, sizing and installation method of the existing material of the home.
- B. Siding Patterns for historically eligible homes shall match the pattern of the existing historic siding .
- C. Sizing of siding for historically eligible homes may vary from property to property. Siding is to match the size of existing siding and it is the responsibility of the Contractor to measure and size siding according to match existing. Sizing may range from 2” to 8”in width for horizontal material for patterns listed, items 1 through 7. The thickness is to be a minimum of 5/16” . Sizing for vertical Board and Batten may range from 8” to 12” wide planks with 1 ¼” +/- battens.

2.2 FIBER-CEMENT SIDING

- A. General: ASTM C1186, Type A, Grade II, fiber-cement board, noncombustible when tested according to ASTM E136; with a flame-spread index of 25 or less when tested according to ASTM E84.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. CertainTeed Corp.;
 - b. GAF Materials Corporation;
 - c. James Hardie;
 - 2. Horizontal Pattern: Boards 5-1/4-inch (133-mm) or 6-1/4-inch to 6-1/2-inch (159 to 165-mm) or 7-1/4-inch to 7-1/2-inch (184 to 190-mm) or 8-1/4-inch to 8-1/2-inch (210 to 216-mm) or 9-1/4-inch to 9-1/2-inch (235 to 241-mm) wide in plain style.
 - a. Texture: Smooth
 - 3. Factory Priming: Manufacturer's standard acrylic primer. Color to match existing or choice of color similar to vinyl siding colors below.

2.3 VINYL SIDING

- A. General: Integrally colored vinyl siding complying with ASTM D3679, such as PlyGem/Cellwood/Dimensions Double 4" or approved equal.
 - 1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:
 - a. Alside;
 - b. CertainTeed Corp.;
 - c. Owens Corning;
 - d. PlyGem

- B. Width and pattern to match existing.
- C. Nominal Thickness to match existing.
- D. Minimum Profile Depth (Butt Thickness): Match existing.
- E. Nailing Hem: Double thickness.
- F. Finish: Wood-grain print with clear protective coating containing not less than 70 percent PVDF.
 - 1. Color choices to be below or equal to PlyGems Cellwood Double Dimensions 4":
 - a. White
 - b. Almond
 - c. Khaki
 - d. Russet Red
 - e. Wedgewood

2.4 ACCESSORIES

- A. Siding Accessories, General: Provide starter strips, edge trim, outside and inside corner caps, and other items as recommended by siding manufacturer for building configuration.
 - 1. Provide accessories made from same material as and matching color and texture of adjacent siding unless otherwise indicated.
- B. Vinyl Accessories: Integrally colored vinyl accessories complying with ASTM D3679 except for wind-load resistance.
 - 1. Texture: Match existing
- C. Decorative Accessories: Provide the wood, fiber-cement and vinyl decorative accessories as required to make repairs.
- D. Fasteners: Match existing.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Clean substrates of projections and substances detrimental to application.

3.2 INSTALLATION

- A. General: Comply with siding and soffit manufacturer's written installation instructions applicable to products and applications indicated unless more stringent requirements apply.
- B. Wood Siding Installation and Repair
 - 1. Remove all deteriorated materials and necessary trim.
 - 2. Repair all deteriorated sheathing materials and secure.

3. Install new materials to match existing coursings and patterns, locating end joints on bearing members or adequate backing. Fit all members for tight joints and proper overlap. All new siding shall be installed as per manufacturer's warranties and guidelines.

C. Wood Beveled Siding installation and Repair

1. After careful inspection and evaluation of existing wooden siding, repair and/or replace all damaged or deteriorated siding.
2. Repair of siding using a premium quality wood filler to rebuild minor holes and nail holes, and re-nailing of all loose siding with galvanized 7d nails.
3. Replacement of siding too deteriorated to patch shall consist of, the removal and proper disposal of all deteriorated boards, and replacement with new siding of appropriate size.
4. Replace siding to match existing on required areas of structure. Installation shall follow manufacturer's specifications and codes regarding surface preparation, nailing, lap, and joint staggering, etc.
5. All siding to be back primed before installation.
6. Allow for replacing and/or repair of sheathing and/or studs in areas where new sheathing and siding will be installed.

D. Vinyl Siding Repair

1. Repair Existing
 - a. Remove and replace all damaged or unsound material and associated flashing..
 - b. New siding shall match with coursing of existing and shall be located with end joints on framing member.
 - c. Stagger Joints at patch.
 - d. Securely nail with a minimum of two nails for every member.
 - e. Remove all caulking and recaulk as per manufacturer's recommendations.

E. Fiber Cement Siding Installation and Repair

1. Remove all damaged or unsound material and replace all damaged/deteriorated materials prior to installation for sound surface and sealing of exterior wall.
2. Existing exterior wall sheathing, as shown in the 2nd and 3rd rows of the diagram below, maybe used in lieu of replacing with new 5/8" plywood. Replace in kind any deteriorated sheathing.
3. Install all new prefinished manufactured siding on entire structure per manufacturers' requirements.

F. Skirting Repair and Replacement, See Finish Carpentry Section for Historic Board and Batten Shirting and Historic Wood Lattice Skirting.

1. Repair Existing;

2. Replacement with Cement Board in board and batten pattern;
3. Replacement with vinyl lattice and frame.

3.3 ADJUSTING AND CLEANING

- A. Remove damaged, improperly installed, or otherwise defective materials and replace with new materials complying with specified requirements.
- B. Clean finished surfaces according to manufacturer's written instructions and maintain in a clean condition during construction.

END OF SECTION 07460

**SECTION 07511
BUILT-UP ASPHALT ROOFING**

PART 1 - GENERAL

1.1 GENERAL

- A. This Section includes built-up asphalt roofing systems.

1.2 SUMMARY

- A. Comply with applicable requirements of other sections. Provide all labor, materials and equipment necessary to complete work specified herein.
- B. Furnish all labor and materials to complete work in this section which consists but is not limited to all roofing, sheet metal, and related items necessary to complete the work indicated on the drawings and in the Specifications. Repair or replacement as designated on the work order. Surfaces to which roofing and sheet metal are applied shall be even, smooth, thoroughly clean, sound and dry and free from all defects that might affect the application. Slope of Built –up roof shall not exceed 2%, except for coal tar built up roofs which shall not exceed 1%. Materials furnished under this section which are to be built-in by other trades shall be delivered to the site in time to avoid delays in construction progress.
- C. All replacement material shall match as close as possible and shall be installed per manufacturer's direction and Law.
- D. All accessories or other items essential to the completion of the sheet metal installation though not specifically shown or specified shall be provided.
- E. Nails, screws and bolts shall be of a composition that is compatible with the metal with which it will be in contact. All roofing materials shall be applied in accordance with manufacturer's approved directions.
- F. Repair, renovations, alterations, reconstructions of existing roofing shall comply with the New York City Building Code.
- G. This Section includes the following:
 - 1. Modified Bitumen Roofing System

1.3 DEFINITION

- A. Hot Roofing Asphalt: Roofing asphalt heated to its equiviscous temperature, the temperature at which its viscosity is 125 centipoise for mopping application and 75 centipoise for mechanical application, within a range of plus or minus 25 deg F (14 deg C), measured at the mop cart or mechanical spreader immediately before application.

1.4 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer, approved by manufacturer to install manufacturer's products.

- B. Source Limitations: Obtain components for roofing system approved by roofing system manufacturer.
- C. Material Standards: Built-up roof covering materials shall comply with Chapter 15 of the New York City Building Code Table

1.5 WARRANTY

- A. Warranty: Manufacturer's standard form, without monetary limitation, in which manufacturer agrees to repair or replace components of roofing system that fail in materials or workmanship within 10 years from date of Final Acceptance. Failure includes roof leaks.

PART 2 - PRODUCTS

2.1 BASE-SHEET MATERIALS

- A. Sheathing Paper: Red-rosin type, minimum 3 lb/100 sq. ft. (0.16 kg/sq. m).
- B. Base Sheet: ASTM D4601, Type I or II, non-perforated, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.

2.2 ROOFING MEMBRANE PLIES

- A. Ply Sheet: ASTM D2178, Type IV, asphalt-impregnated, glass-fiber felt.
- B. Cap Sheet: ASTM D3909, asphalt-impregnated and -coated, glass-fiber cap sheet, with white coarse mineral-granule top surfacing and fine mineral surfacing on bottom surface.

2.3 FLASHING MATERIALS

- A. Backer Sheet: ASTM D4601, Type I, asphalt-impregnated and -coated, glass-fiber sheet, dusted with fine mineral surfacing on both sides.

2.4 ASPHALT MATERIALS

- A. Asphalt Primer: ASTM D41.

2.5 AUXILIARY ROOFING MEMBRANE MATERIALS

- A. General: Auxiliary materials recommended by roofing system manufacturer for intended use and compatible with built-up roofing.
- B. Cold-Applied Adhesive: Roofing system manufacturer's standard asphalt-based, one- or two-part, asbestos-free, cold-applied adhesive specially formulated for compatibility and use with built-up roofing base flashings.
- C. Fasteners: Factory-coated steel fasteners and metal or plastic plates meeting corrosion-resistance provisions in FM 4470; designed for fastening roofing membrane components to substrate; tested by manufacturer for required pullout strength; and acceptable to roofing system manufacturer.

PART 3 - EXECUTION

3.1 ROOFING MEMBRANE INSTALLATION

- A. Install built-up roofing membrane system according to roofing system manufacturer's written instructions and applicable recommendations of ARMA/NRCA's "Quality Control Guidelines for the Application of Built-up Roofing."
- B. Where roof slope exceeds 1-inch per 12-inches (1:12), install sheets of built-up roofing membrane parallel with slope and backnail.
- C. Coordinate installing roofing system components so insulation and roofing membrane sheets are not exposed to precipitation or left exposed at the end of the workday or when rain is forecast.
- D. Substrate-Joint Penetrations: Prevent roofing asphalt from penetrating substrate joints, entering building, or damaging roofing system components or adjacent building construction.
- E. Loosely lay one course of sheathing paper, lapping edges and ends a minimum of 2-inches (50-mm) and 6-inches (150-mm), respectively.
 - 1. Mechanically fasten to substrate.
- F. Install two-ply sheets starting at low point of roofing system. Align ply sheets without stretching. Shingle side laps of ply sheets uniformly to achieve required number of plies throughout thickness of roofing membrane. Shingle in direction to shed water. Extend ply sheets over and terminate beyond cants.
 - 1. Embed each ply sheet in a solid mopping of hot roofing asphalt.
- G. Cap Sheet: Install lapped granulated cap sheet starting at low point of roofing system. Offset laps from laps of preceding ply sheets and align cap sheet without stretching. Lap in direction to shed water. Extend cap sheet over and terminate beyond cants.
 - 1. Embed cap sheet in a solid mopping of hot roofing asphalt.
- F. Roof Repair:
 - 1. Prepare existing roof for overlayment by nailing loose roofing and remove obstructions which will hinder new overlayment installations.
 - 2. Repair existing roof with Torch or Mop Down material surfaced rolled; overlap seams 4-inches.
 - 3. New roof cover shall be installed per roofing material manufacturer's directions and comply with State Board of Insurance Windstorm Inspection.

3.2 FLASHING AND STRIPPING INSTALLATION

- A. Install base flashing over cant strips and other sloping and vertical surfaces, at roof edges, and at penetrations through roof, and secure to substrates according to roofing system manufacturer's written instructions.
- B. Extend base flashing up walls or parapets a minimum of 8-inches (200-mm) above roofing membrane and 4-inches (100-mm) onto field of roofing membrane.
- C. Mechanically fasten top of base flashing securely at terminations and perimeter of roofing.
- D. Install stripping, according to roofing system manufacturer's written instructions, where metal flanges and edgings are set on built-up roofing.

END OF SECTION 07511

SECTION 07550
MODIFIED BITUMINOUS MEMBRANE ROOFING (ROLL ROOFING)

PART 1 - GENERAL

1.1 SUMMARY

- A. Comply with applicable requirements of other sections. Provide all labor, materials and equipment necessary to complete work specified herein.
- B. Furnish all labor and materials to complete work in this section which consists but is not limited to all roofing, sheet metal, and related items necessary to complete the work indicated on the drawings and in the Specifications. Repair or replacement as designated on the work order. Surfaces to which roofing and sheet metal are applied shall be even, smooth, thoroughly clean, sound and dry and free from all defects that might affect the application. Slope of roof shall not exceed 2%. Materials furnished under this section which are to be built-in by other trades shall be delivered to the site in time to avoid delays in construction progress.
- C. All replacement material shall match as close as possible and shall be installed per manufacturer's direction and Law.
- D. All accessories or other items essential to the completion of the sheet metal installation though not specifically shown or specified shall be provided.
- E. Nails, screws and bolts shall be of a composition that is compatible with the metal with which it will be in contact. All roofing materials shall be applied in accordance with manufacturer's approved directions.
- F. Repair, renovations, alterations, reconstructions of existing roofing shall comply with the New York City Building Code.
- G. This Section includes the following:
 - 1. Mineral Surface Modified Bituminous Sheet
 - 2. Asphalt Lap Cement Adhesive

1.2 QUALITY ASSURANCE

- A. Source Limitations: Obtain one source from a single manufacturer.
- B. Deliver materials in manufacturers' original unopened containers and rolls with labels intact & legible. Mark and remove wet or damaged material from site. Protect material from moisture absorbance. Store rolls on end on clean raised platforms or pallets in dry location with adequate ventilation. Maintain roll materials at temperatures above 10 degrees C, 50 degrees F, for 24 hours immediately before application. Each bundle of asphalt shingles, when used, shall be delivered to job site with seals unbroken and labels intact. Modified bituminous rolled roofing material shall comply with the standards in the New York City Building Code.

1.3 WARRANTY

- A. Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace roll roofing material that fail in materials within specified warranty period.

1. Installation Warranty Period: 1 year written warranty on workmanship and material other than roll roofing material.

PART 2 - PRODUCTS

2.1 ORGANIC-FELT-REINFORCED BITUMINOUS ROLL ROOFING

- A. Seldedge Edged Roll Roofing: organic-felt reinforced, mineral-granule surfaced, and self-sealing; passing ASTM D6162.
 1. 19-inch lap;
 2. 90-pounds;
 3. 17-inch exposure;
 4. Retain applicable option below based on type of shingle selected and roof configuration.

2.2 ACCESSORIES

- A. Asphalt Roofing Cement: ASTM D3019.
- B. Asphalt Roofing Adhesive: ASTM D3747.

2.3 METAL FLASHING AND TRIM

- A. Sheet Metal Flashing and Trim: Comply with requirements in Division 7.
 1. Sheet Metal: Zinc-coated (galvanized) steel.
 2. For Patch and repair, Sheet Metal: match existing.
- B. Fabricate sheet metal flashing and trim to comply with recommendations in SMACNA's "Architectural Sheet Metal Manual" that apply to design, dimensions, metal, and other characteristics of item.

PART 3 - EXECUTION

3.1 METAL FLASHING INSTALLATION

- A. General: Install metal flashings and other sheet metal to comply with requirements in Basis of Design.
 1. Install metal flashings according to recommendations in ARMA's "Residential Asphalt Roofing Manual" and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

3.2 BITUMINOUS ROLL ROOFING INSTALLATION

- A. At locations where total roof replacement is occurring:
 1. Strip existing roofing, removing all rolled roofing, shingles, and felt areas.
 2. Make repairs to the existing roof framing as required to provide adequate strength and a true and level surface.
 3. Remove all warped and deteriorated decking and replace with like kind.

4. Fill in all spaces between boards with securely nailed wood strips of the same thickness as the old deck, if necessary, resheath over existing roof boards with CDX plywood, 5/8-inch minimum.
 5. Sink all protruding nails and renail sheathing securely at all locations. All large cracks, slivers, knot holes, loose knots, pitchy knots and excessively resinous areas are to be covered with 26 gage sheet metal securely nailed to sheathing.
 6. Furnish and install new modified membrane roofing, as required, installed according to manufacturer's directions - using either cold process adhesive or heat welded process.
- B. At locations where repair/patching is occurring:
1. Repair existing roof. All replacement materials shall match existing as closely as possible, and shall be installed according to manufacturer's directions and Law.
 2. Repair any broken, damaged, missing, or rotted sheathing, fascia, rake, cornice, soffit flashing, etc., as specified in the Bid Document. Sheathing shall be replaced with full pieces/sheets only.
 3. Small Breaks - Nail holes and small breaks, if limited in number, should be repaired by applying asphalt plastic cement that meets with Federal Specifications SS-C-153, Type I, Class A (Summer Grade) or Class B (Winter grade).
 4. Large Breaks – Open horizontal seam below the break and insert through it a strip of roofing of the same type. Extend the strip at least 6-inch below the edge of break, with the lower edge flush with the horizontal exposed edge of the covering sheet. Coat strip liberally with lap cement, where it will come in contact with the covering sheet before inserting it. After inserting the strip, press down the edges of the roofing firmly and nail securely with nails 3/4-inches from the edge spaced 2-inches. Apply lap cement to the horizontal seam, press down firmly and re-nail if original seam was nailed.
 5. Large Damaged Areas – Remove the roofing from the damaged area and apply new roofing of the same type, using full width sheets applied in the same manner as the original roof.
- C. Install roll roofing according to manufacturer's written instructions, recommendations in ARMA's "Residential Asphalt Roofing Manual," and asphalt shingle recommendations in NRCA's "The NRCA Roofing and Waterproofing Manual."

END OF SECTION 07550

**SECTION 07712
GUTTERS AND DOWNSPOUTS**

PART 1 - GENERAL

1.1 SUMMARY

- A. Comply with applicable requirements of other sections. Provide all labor, materials and equipment necessary to complete work specified herein.
- B. Furnish all labor and materials to complete work in this section which consists but is not limited to all roofing, sheet metal, and related items necessary to complete the work indicated on the drawings and in the Specifications. Repair or replacement as designated on the work order. Slope of gutters shall be in accordance with the manufacturer's recommendations. Materials furnished under this section which are to be built-in by other trades shall be delivered to the site in time to avoid delays in construction progress.

1.2 REFERENCES

- A. Conform to IRC, state and local code compliance for water drainage and discharge.
- B. American Architectural Manufacturers Association (AAMA) 1405.1 – Specification for Aluminum rain carrying systems.

1.3 WARRANTY

- A. Provide the manufacturer's warranty for all materials.

PART 2 - PRODUCTS

2.1 Components:

- A. Gutters: Aluminum, continuous and seamless sheet metal, rolled formed
 - 1. Thickness
 - a. .027 inch
 - b. .032 inch
- B. Downspouts: Aluminum, continuous and seamless sheet metal, rolled formed
 - 1. Thickness
 - a. .027 inch
 - b. .032 inch
 - 2. Size:
 - a. 3 inch by 4 inch
- C. Endcaps: Aluminum, continuous and seamless sheet metal, rolled formed
 - 1. Thickness
 - a. .027 inch
- D. Elbows: Aluminum, continuous and seamless sheet metal, rolled formed. Minimum tensile strength 26,000 psi, minimum yield strength 25,000 psi or equivalent.
 - 1. Thickness
 - a. .027 inch
 - b. .032 inch

- 2. Size:
 - a. To match downspouts
- E. Gutter guards: Aluminum mesh, 5 inch (127 mm) by 3 foot (914 mm).
- F. Color: Full spectrum of manufacturers colors

PART 3 - EXAMINATION

3.1 FABRICATION

- A. Continuously form seamless gutters to the profiles and sizes specified.
- B. Form downspouts of profiles and sizes specified.
- C. Hem exposed edges of metal.

3.2 INSTALLATION

- A. Install in accordance with manufacturer's instructions.
- B. Install gutters using appropriate hangers to allow normal expansion and contraction.
- C. Install gutter hangers using two 1-1/4 inch (32 mm) screw shank nails and fastened into solid lumber.
- D. All gutters shall be in continuous length for each elevation (run). No end laps are allowed.
- E. Exercise care in placing aluminum in contact with other dissimilar metals or materials that are not compatible with aluminum.
- F. Providing adequate insulation/separation where ever necessary, such as by painting or otherwise protecting when they are in contact with aluminum or when drainage from them passes over aluminum surfaces.
- G. Install sealants where indicated to clean dry surfaces only without skips or void.

END OF SECTION 07712

DIVISION 8 – DOORS AND WINDOWS

SECTION 08211 DOORS

PART 1 - GENERAL

1.1 SUMMARY

- A. Scope: Provide all Labor, Materials, Equipment, and Services and perform all operations required for complete installation of and repairs:
 - 1. Doors: Exterior entrance doors, interior door, sliding glass door, door repair.
 - 2. Exterior Historic Door Replacements: Replacement of door for homes deemed historically eligible by the Program. Historic door replacement will require field measurement for size and may be non-standard in height and width. Sidelites and Transoms may be required and are covered in Section 08550.
- B. This Section includes solid, hollow-core wood doors and metal doors as follows:
 - 1. Wood Doors with wood-veneer faces;
 - 2. Wood Doors with Panels;
 - 3. Metal Doors;
 - 4. Slider Doors;
 - 5. Garage Doors;
 - 6. Access Doors;
 - 7. Hardware;
 - 8. Glazing.
 - 9. Wood Doors for Historic Replacements
- C. Related Section
 - 1. Section 08550 “Windows” contains fixed transoms and fixed side lites.
- D. Repair, renovations, alterations, reconstruction of existing windows, doors, and hardware shall comply with the New York City Building Code.

1.2 QUALITY ASSURANCE

- A. Quality Standard for wood Doors: Comply with AWI's "Architectural Woodwork Quality Standards Illustrated."
- B. Steel Door and Frame Standard: Comply with ANSI A250.8, unless more stringent requirements are indicated.

- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by a testing and inspecting agency acceptable to authorities having jurisdiction, for fire-protection ratings indicated, based on testing according to NFPA 252.

PART 2 - PRODUCTS

2.1 DOOR CONSTRUCTION

- A. Exterior Wood Doors for Historic Replacements. Field measurement of existing opening required. Size of door must match existing.
 - 1. Residential Grade Recessed Panel Door:
 - a. Two panel
 - b. Four Panel
 - c. Five Panel
 - 2. Frame: Constructed of kiln-dried pine, with mull casings on muller units, water repellent preservative treated in accordance with WDMA I.S. 4-07'A.
 - a. Wood frames may have 3-1/2 inch (89mm) profiled brick mould at brick wall assemblies. Exact depths may vary due to existing conditions and must be verified by Contractor.
 - b. Wood frames 3-1/2 inch (89mm) flat casing at wood siding wall assemblies. Exact depths may vary due to existing conditions and must be verified by Contractor.
 - c. At locations with Transom head drip cap to be field applied to frame.
 - 3. Jamb thickness: 3/4 inch (19mm) interior; 1-5/16 inch (33mm) exterior. One-piece sash set transom jamb for wood units is 3/4 inch (19mm) at the head, side, and sill.
 - a. Basic jamb width: 4 9/16 9116MM).
 - b. Sill Height: Standard Sill 1-27/32 inch (47mm) Heights may vary due to existing conditions
 - 4. Panels: Constructed of kiln dried pine, water repellent, preservative treated in accordance with WDMA I.S. 4-07'A.
 - a. Thickness: 1-23/32 inch (117mm).
 - b. Top rail: Face dimension is 4-17/32 inch (115mm).
 - c. Stiles: Face dimension is 4-17/32 inch (115mm). Bottom rail: Face dimension is 7-9/16 inch (192mm).
 - d. Corner construction: joined by wood dowels and glue.
 - 5. Surface Finish:
 - a. Exterior Finish - Wood:
- B. Interior Wood Doors for Opaque Finish:
 - 1. Faces Panels for Interior Doors: Hardboard, Six Panel Colonial Style.
 - 2. 1/8-inch hardboard, complying with PS-58 requirements for treated hardboard and any species of wood for exposed edges and other solid wood components.
 - 3. WIC has no Economy grade for doors.
- C. Interior Hollow-Core Wood Doors:
 - 1. Core: Standard hollow core.

2. Blocking: For mineral core doors, provide blocking as needed to eliminate through-bolting hardware. For mineral-core doors use composite blocking with improved screw-holding capability.

D. Exterior Insulated Steel Entrance Door

1. 1-3/4-inch thick both sides 23 gauge galvanized steel. Doors filled with polyurethane foam. Core to be foamed in place to form a monolithic unit. Door edges to be formed and locked into wood stiles and rails.
2. Six Panel Face.

E. Exterior Insulated Steel Entrance Door

1. 1-3/4-inch thick both sides 23 gauge galvanized steel. Doors filled with polyurethane foam. Core to be foamed in place to form a monolithic unit. Door edges to be formed and locked into wood stiles and rails.
2. Flush Face.

F. Exterior Wood Doors:

1. Core: Either glued block or structural composite lumber.
2. Construction: **Five** plies with stiles and rails bonded to core, then entire unit abrasive planed before veneering.

G. Exterior Wood Screen Door

1. Wooden screen doors shall be of select preservative treated pine with dowel joint construction and furnished with 18/16 mesh aluminum screen wire. Minimum thickness 1-1/8-inch.

H. Sliding Glass/Patio Door

1. Provide only AAMA "Quality Certified: Vinyl with attached label, of thermal break construction with 1/2-inch air space and insect screen.

2.2 DOOR FABRICATION

- A. Fabricate doors in sizes indicated for Project-site fitting.
- B. Factory fit doors to suit frame-opening sizes indicated. Comply with clearance requirements of referenced quality standard for fitting. Comply with requirements in NFPA 80 for fire-rated doors.
- C. Factory machine doors for hardware that is not surface applied.
 1. Metal Astragals: Pre-machine astragals and formed-steel edges for hardware for pairs of fire-rated doors.
- D. Openings: Cut and trim openings through doors to comply with applicable requirements of referenced standards for kind(s) of door(s) required.
 1. Light Openings: Trim openings with moldings of material and profile indicated.
 2. Louvers: Factory installed louvers in prepared openings.

- E. Exterior Doors: Flash top of out swinging doors (with manufacturer's standard metal flashing).

2.3 DOOR SHOP PRIMING

- A. Doors for Opaque Finish: Shop prime faces and edges of doors, including cutouts, with one coat of wood primer specified in Section 09912 "Paint."

2.4 HARDWARE MANUFACTURERS

- A. Manufacturer: Obtain each kind of hardware (latch and lock sets, hinges, closers, etc.) from only one manufacturer, complying with requirements ANSI A156.2.
- B. All hardware shall be standard brands, suitable for intended purpose, fit snugly, uniform in color, and free from imperfections. In existing structures, new hardware should match existing. Locks shall be installed on each exterior door. Exterior hinged doors shall be equipped with three butt hinges. Doors shall be provided for each opening to as bedroom, bathroom and toilet compartment and each door shall be provided with suitable privacy lock. Window units shall have suitable means of locking. Final installation of finish hardware shall occur after complete drying of the painting or surface finishing. Provide stops, hinge or baseboard type, for all doors where hardware or door will strike a finished wall or fixed wall or fixed equipment. "Builders' Hardware" includes items known commercially as builders' hardware which are required for swing and sliding doors, except special types of unique and non-matching hardware specified in the same section as the door and door frame. Types of items in this section include (but are not necessarily limited to):
 - 1. Lock cylinders and keys;
 - 2. Lock and latch sets;
 - 3. Sliding door equipment;
 - 4. Miscellaneous door devices.
- C. Provide two keys for each lock.
- D. See end of Section for Hardware Schedule for Interior and Exterior Doors.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General Door Installation
 - 1. All doors used to separate one dwelling from another within the same building shall be of the solid core fire rated type not less than 1-3/8-inch. Exterior doors, and garage passage door shall be 1-3/4-inch insulated metal doors. Wood frames shall have concealed metal reinforcement at latch/lock point. Exterior doors shall be made weatherproof and watertight and a suitable watertight threshold shall be installed. Each interior door shall be 1-3/8-inch flush panel hollow core with paint grade mahogany veneer faces. Each door will be hung in a wood frame with wood trim and one pair of butts and latch or locked hardware as scheduled. All wood doors and frames shall be primed and given two coats of enamel. Doors not used to separate dwellings shall be not less than 1-3/8-inch thickness and may be hollow core, good grade, rotary cut and have a face veneer of 1/28-inch. All interior doors shall be removable, stops shall be provided for all interior doors. Patio doors shall be 6-foot double insulated safety glazed glass.

2. Install doors to comply with manufacturer's written instructions, referenced quality standard, and as indicated.
3. Install fire-rated doors in corresponding fire-rated frames according to NFPA 80.
4. Job-Fitted Doors: Align and fit doors in frames with uniform clearances and bevels; do not trim stiles and rails in excess of limits set by manufacturer or permitted for fire-rated doors. Machine doors for hardware. Seal cut surfaces after fitting and machining.
5. Comply with NFPA 80 for fire-rated doors.
6. Factory-Fitted Doors: Align in frames for uniform clearance at each edge.
7. Plane door to provide uniform space between door and jamb and to allow smooth operation of door. Adjust striker plate to allow door to close tightly without excessive movement. Touch up with paint to match existing.
8. Factory-Finished Doors: Restore finish before installation if fitting or machining is required at Project site.

B. Installation of Steel Entrance Door

1. Provide threshold with weather-strip seal.

3.2 INSTALLATION OF EXTERIOR DOOR

A. Glass Sliding Door Repair

1. Remove and replace damaged or missing jamb, trim parts or screens;
2. Set door plumb to close and lock properly;
3. Replace all defective hardware (striker plates, locks, hangers, slides);
4. Replace any broken glass with tempered glass;
5. Paint trim inside and out;
6. Use door parts which are compatible with existing (All exterior doors shall be air tight and lockable).

B. Glass Sliding Door Install

1. All units shall contain tempered glass;
2. Remove existing door and replace damaged jamb, or trim parts;
3. Set new door plumb to close and lock properly;
4. Unit shall come complete with screen and hardware (striker plates, lock, hangers, slides);
5. Re-install and paint trim both inside and out;

6. Install as per manufacturer's recommendation all exterior doors shall be air tight, lockable and in a workmanlike manner.

C. Exterior Door Repair

1. Repair damaged jamb, or trim parts by nailing loose parts;
2. Install new parts where damage is too severe or missing parts are found;
3. Reset existing door plumb to close and lock properly;
4. Replace all defective hardware, (striker plates, locks, thresholds);
5. Install new aluminum vinyl weather-strip, peephole doorstop and threshold;
6. Re-install and paint door and trim both inside and out;
7. Trim shall match adjacent areas;
8. Locks shall be keyed alike for two units or more;
9. Use: Krestmark door or equal; Yale lock or equal; M-D door parts or equal; Sherwin Williams paint; or equal. (All exterior door(s) shall be air tight and lockable at final.).

D. Exterior Wood Door Replacement

1. Door is to be made of clear, kiln dried ponderosa pine with faces machine sanded. Door shall be four-panel type with solid core. Door is to be 1-3/4-inch in thickness and primed before installation and painted after installation. When specified, use stain grade door and trim. Finish selection by Homeowner. Style to be selected by Homeowner. Replace jamb, caulk, and prime. Install aluminum and vinyl threshold and bronze tension-type weather-stripping. Pre-hung units are to be used whenever possible with an aluminum and vinyl threshold and sweep.

E. Exterior Metal Door Install

1. Door is to be 1-3/4-inch thick metal with foam insulation and magnetic weather-stripping. Door design shall be selected by Homeowner. Plastic trim shall not be used on face of door. Threshold shall be aluminum with factory installed vinyl sweep with aluminum sill or aluminum sill with vinyl bubble. Jamb shall be wood, caulked, and primed. Pre-hung units are to be used whenever possible.
 - a. Remove door and jamb from existing frame.
 - b. Rework frame as necessary to install new pre-hung metal clad exterior door, type to be same or similar as door being replaced complete with exterior lock, keyless deadbolt, aluminum vinyl weather-strip, peephole, doorstop and threshold.
 - c. Re-install and paint door and trim both inside and out (trim shall match adjacent areas; locks shall be keyed alike for two units or more).

F. Wood Screen Door Repair

1. Repair any damaged frame members;
2. Replace screen;

3. Replace defective hardware;
4. Paint unit.

G. Wood Screen Door Install

1. Remove existing units and replace with new wood frame screen door complete with necessary hardware (closer, latch);
2. Prime and paint.

3.3 INSTALLATION OF INTERIOR DOORS

A. General Installation Information

1. All interior doors are to be pre hung jamb units, if possible. Jambs and casings are to be of clear pine material. Doors are to be 1-3/8-inch thick hollow core hardboard when door is to be painted (Sherwin Williams or equal) or luan mahogany when door is to be natural finish. Install two hinges and pre-bored for passage locks. All units are to be hung plumb, true, and square with equal margins. Doors are to fit tightly against stop and have no play in strike plate/lock assembly. Install passage lock and door stop (wall or hinge type).
2. Interior Doors Repair
 - a. Repair damaged frame, jamb or trim parts by nailing loose pieces;
 - b. Installing new parts where missing parts are found;
 - c. Reset door plumb to close and latch properly;
 - d. Replace defective hardware (striker plates/latches);
 - e. Paint or stain door unit on both sides, top and bottom (Sherwin Williams or equal);
 - f. Use: Banner latches.
3. Interior Doors Install
 - a. Remove existing door from existing jamb;
 - b. Remove all rotted or damaged jamb or trim parts;
 - c. Install new hollow core Luan Mahogany flush faced wood door with passage latch or bath lock at bathroom to set and close properly;
 - d. If six panel door exists, replace with a six panel door
 - e. Paint or stain door unit on both sides;
 - f. Use: Banner latches; Sherwin Williams enamel paint or stain; or equal.
4. Interior Doors Double Repair
 - a. Repair all damaged frame, jamb or trim parts by nailing loose pieces;

- b. Install new parts where missing parts are found;
- c. Reset door plumb to close and latch properly;
- d. Replace defective hardware (hinges, latches, slides, hangers);
- e. Paint door and trim on both sides;
- f. Use: Banner latches; Sherwin Williams paint or equal.

3.4 INSTALLATION OF GARAGE DOOR

A. Garage Door: Installation of garage doors in Dwelling with attached garages.

1. Install a 3/4-inch insulated steel garage door, flush finish (exterior) (Color as selected by Homeowner from manufacturer's standard factory finishes), tongue and groove section joints, 1-3/4-inch integral reinforcing struts, smooth interior finish with baked on two coat polyester finish and primer. Provide 10 year warranty on skin and delamination. Manufactured by Wayne Daulton Door System, or approved equal.
2. Door Frame Installation:
 - a. Door frame is to be made of 5/4-inch clear, treated, ponderosa pine, oak, or birch with faces machine sanded. No finger joints will be accepted when work write-up specifies stain finish. Frame is to be set square, level, and plumb. Anchor frame with 2-1/2-inch wood screws above and below each hinge and strike plate. Secure bottom of jamb and header in the same manner. Use shims where needed. Prime or seal before installation and paint after installation.
 - b. Framing shall include 2 x 6 members for railing to screw into for TDI approved rating. The 2 x 6 are to be attached to wall studs that have been hurricane clipped and strapped.
3. Plane or Adjust Door:
 - a. Plane door to provide uniform space between door and jamb and to allow smooth operation of door. Adjust striker plate to allow door to close tightly without excessive movement. Touch up with paint to match existing.

B. Garage Door Repair

1. Repair all defective parts of the door, frame, and hardware;
2. Remove cracked or peeling paint;
3. Paint with two coats of exterior Latex.

C. Garage Door Install

1. Remove and replace the door unit;
2. Repair any defective frame or hardware prior to installing new unit;
3. Paint with two coats of exterior Latex;

4. Use: Centurion, Sears or equal.

3.5 INSTALLATION OF ACCESS DOORS

- A. Install Milcor style "M", 24-inch x 30-inch, metal access panel. Installation shall be performed according to manufacturer's instructions.

3.6 INSTALLATION OF HARDWARE

A. Existing Hardware

1. Reinstall all existing door hardware including locksets, dead bolts, mail slots, peep holes, automatic closers, and security devices in accordance with UL 235.

B. Lockset with Deadbolt

1. Exterior keyed locksets are to be installed as per manufacturer's directions. Lockset is to include deadbolt within basic assembly. Use bright brass or nickel finish. Furnish key in knob lockset for all entrance doors and a deadbolt secondary locking (brass or nickel finish) device keyed on one side only. Key all locksets alike.

C. Exterior Lockset

1. Contractor shall install a keyed exterior lockset with turn knob or push button interior lock control. Lockset shall be installed as per manufacturer's directions. Finish and design shall be selected by the Homeowner.

D. Exterior Deadbolt

1. Contractor shall install a keyed deadbolt above the lockset. Deadbolt shall be keyed on one side on solid doors with at least 5/8-inch minimum throw with single cylinder. Note: No deadbolt keyed on both sides is allowed in the dwelling. Finish shall be satin or polished brass. Deadbolt shall be installed as per manufacturer's directions. All exit doors shall be openable from the interior without the use of a key or special knowledge or effort.

E. Exterior Door Threshold

1. Exterior Door Threshold: Contractor shall install new threshold. Unit shall be aluminum sill with a vinyl bulb, metal on metal carpet strip, or vinyl sweep under door with an aluminum sill. Sill shall be attached to floor with screws and caulked to form a tight seal.

F. Exterior Door Weather-stripping

1. Contractor to install new weather-stripping at sides and top of door jamb to form a tight seal with door closed. Material shall be new bronze tension-type weather-stripping.

3.7 HARDWARE SCHEDULE

A. Exterior Door

1. Deadlock: Yale No. 197 or approved equal;
2. Lockset: Schlage No. A53WD PLY x 605 or approved equal;
3. Butts: 3 hinges;

4. Loxam door chain No. 1860 or approved equal;
5. Viewer.

B. Interior Door

1. Butts: 2 Hinges;
2. Privacy lock.

C. Bathroom Door

1. Butts: 2 Hinges;
2. Privacy lock.

END OF SECTION 08211

**SECTION 08550
WINDOWS**

PART 1 - GENERAL

1.1 SUMMARY

A. Scope: Provide all Labor, Materials, Equipment, and Services and perform all operations required for complete installation of:

1. Windows:

a. Including replacement sash, window repairs, aluminum, wood, vinyl, vinyl replacement window units. Window units shall be constructed of type "S" or "T" stiles, check rail or plain rail. Material shall be minimum thickness of 1-3/8-inch. Repair of a window unit shall include but not be limited to putting the unit into working order, replacing rotten or broken sashes, re-glazing, installing latches and re-roped. Windows shall be low-E with a fenestration u-factor of .65 maximum and SHGC of .30 maximum to comply with Law.

B. This Section includes the following unfinished, aluminum-clad, vinyl-clad wood-framed window product types:

1. Wood windows Double-hung;
2. Casement or Sliding Windows;
3. Aluminum Window;
4. Vinyl Clad Window Double-hung.
5. Hurricane Window Templates
6. Fixed Side Lites and Transoms

1.2 PERFORMANCE REQUIREMENTS

A. General: Provide windows capable of complying with performance requirements indicated, based on testing manufacturer's windows that are representative of those specified and that are of minimum test size required by AAMA/NWWDA 101/I.S.2.

B. When replacing windows, install geographically appropriate ENERGY STAR rated windows.

1.3 QUALITY ASSURANCE

A. Installer: A qualified installer, approved by manufacturer to install manufacturer's products.

B. Fenestration Standard: Comply with AAMA/NWWDA 101/I.S.2, "Voluntary Specifications for Aluminum, Vinyl (PVC) and Wood Windows and Glass Doors," for minimum standards of performance, materials, components, accessories, and fabrication unless more stringent requirements are indicated.

C. Glazing Publications: Comply with published recommendations of glass manufacturers and GANA's "Glazing Manual" unless more stringent requirements are indicated.

1.4 WARRANTY

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

PART 2 - PRODUCTS

2.1 VINYL CLAD ALUMINUM WINDOWS

- A. Aluminum Extrusions and Rolled Aluminum for Cladding, Baked-Enamel Finish: Manufacturer's standard baked enamel complying with AAMA 2603.
 - 1. Color: Color as selected from Program choices.
- B. Vinyl for Cladding: Permanent, integral color, manufacturer's standard color finish.

2.2 WOOD DOUBLE HUNG WINDOWS

- A. Provide double hung wood windows at historically eligible homes as deemed by the Program. Windows shall be low-E with a fenestration u-factor of .65 maximum and SHGC of .30 maximum to comply with Law. Windows shall match existing in style, profile, shape and mullion pattern of existing.
- B. Frame: Constructed of Kiln Dried pine with Mull casings on mull units, water repellent preservative in accordance with WDMA I.S. 4-07'A. Wood frame is to have a flat casing for wood clad homes and is to have a profiled brick mold for brick clad homes.
- C. Jamb thickness may vary at the interior and require jamb extensions. Field verification shall be required. Exterior jamb thickness shall be 1 5/16"
- D. Basic jamb width is 4 9/16".
- E. Sill height: Sill height may vary in historic homes and field measurement will be required.
- F. Sill: Sill widths to match jamb width.
- G. Mullion Pattern: True divided lites with pattern to match existing windows to be replace.

2.3 FIXED TRANSOMS

- A. Provide fixed transom panels and frames at historically eligible homes as deemed by the Program. Transoms shall be low-E with a fenestration u-factor of .65 maximum and SHGC of .30 maximum to comply with Law and shall meet the requirements of the HRP. Transoms shall match existing in style, profile, shape and mullion pattern of existing.
- B. Transom panel frame is to be constructed of kiln dried vertical grain fur or pine, water repellent preservative treated in accordance with WDMA I.S. 4-07"A.
- C. Thickness: 1 23/32 inch
- D. Top Rail: Sash set transom rail face dimension of 2 7/16.
- E. Stiles: All locking stiles constructed of laminated veneer lumber with solid wood edge band or solid wood. Sash set transom rail face dimension of 2 7/16".

- F. Bottom rail: Sash set transom rail face dimension of 2 7/16”.
- G. Corner construction: Wood doweled and screwed.
- H. Interior Glazed.
- I. Exterior Finish: Exterior wood is to be treated wood, primed and painted.
- J. Interior Finish: Interior wood is to be treated, primed and painted.

2.4 FIXED SIDE-LITES

- A. Provide fixed side-lite panels and frames at historically eligible homes as deemed by the Program. Side- lites shall be low-E with a fenestration u-factor of .65 maximum and SHGC of .30 maximum to comply with Law and shall meet the requirements required by the HRP. Side lites shall match existing in style, profile, shape and mullion pattern of existing.
- B. Side-lite panel frames is to be constructed of kiln dried vertical grain fur or pine, water repellant preservative treated in accordance with WDMA I.S. 4-07”A.
- C. Thickness: 1 23/32 inch
- D. Top Rail: Sash set side-lite rail face to match adjacent door.
- E. Stiles: All locking stiles constructed of laminated veneer lumber with solid wood edge band or solid wood. Sash set side-lite rail face dimension of 2 7/16”.
- F. Bottom rail: Sash set side-lite rail face to match adjacent door.
- G. Corner construction: Wood doweled and screwed.
- H. Interior Glazed.
- I. Exterior Finish: Exterior wood is to be treated wood, primed and painted.
- J. Interior Finish: Interior wood is to be treated, primed and painted.

2.5 GLAZING

- A. Glass at Aluminum and Aluminum Vinyl Clad Windows: Clear, insulating-glass with low-e coating or film.
- B. Glazing System: Manufacturer's standard factory-glazing system that produces weather-tight seal. Low-E with a fenestration u-factor of .65 maximum and SHGC of .30 maximum to comply with Law.
- C. Glass at Wood window replacement: Clear float glass, Double strength, Grade B.
- D. Glass at Hazardous locations: Tempered glass per Chapter 24 of theNew York City Building Code .

2.6 INSECT SCREENS

- A. General: Design windows and hardware to accommodate screens in a tight-fitting, removable arrangement, with a minimum of exposed fasteners and latches. Locate screens on inside of window and provide for each operable exterior sash or ventilator.

1. Aluminum Tubular Frame Screens: Comply with SMA 1004, "Specifications for Aluminum Tubular Frame Screens for Windows," Residential R-20 class.

2.7 ACCESSORIES

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

2.8 FABRICATION

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

2.9 WOOD FINISHES

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

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install windows level, plumb, square, true to line, without distortion or impeding thermal movement, anchored securely in place to structural support, and in proper relation to wall flashing and other adjacent construction.
- B. Set sill members in bed of sealant or with gaskets, as indicated, for weathertight construction.
- C. Adjust operating sashes and ventilators, screens, hardware, and accessories for a tight fit at contact points and weather stripping for smooth operation and weather-tight closure. Lubricate hardware and moving parts.

- D. Protect window surfaces from contact with contaminating substances resulting from construction operations. In addition, monitor window surfaces adjacent to and below exterior concrete and masonry surfaces during construction for presence of dirt, scum, alkaline deposits, stains, or other contaminants. If contaminating substances do contact window surfaces, remove contaminants immediately according to manufacturer's written recommendations.
- E. Clean exposed surfaces immediately after installing windows. Avoid damaging protective coatings and finishes. Remove excess sealants, glazing materials, dirt, and other substances.
- F. Clean factory-glazed glass immediately after installing windows. Comply with manufacturer's written recommendations for final cleaning and maintenance. Remove nonpermanent labels and clean surfaces.
- G. Remove and replace glass that has been broken, chipped, cracked, abraded, or damaged during construction period.

3.2 INSTALLATION OF WINDOWS

A. Wood Window Replacement with Aluminum Window

1. Remove existing units;
2. Remove and replace all rotted or damaged frame or wood trim;
3. Install new single-hung aluminum unit into repaired frame (unit shall come complete with hardware and screen);
4. Reinstall exterior and interior trim;
5. Size of units shall match existing unless specified and approved;
6. In replacement of frames, sills and trim, all items shall match existing;
7. All windows shall be cleaned prior to final;
8. Wood panels to be cut to size for each window and ply locks installed.

B. Wood Window Repair with Aluminum Track

1. Remove paint from aluminum track to allow upper and lower window sash to operate smoothly and close to form tight seal.
2. Repair or replace locks to make operable.
3. Tracks should be firmly attached to window frame at top and bottom.
4. If fasteners are necessary, they should in no way impede the vertical motion of the window units. Tension of spring assembly should be adjusted to allow proper window movement.

C. Wood Window Repair and Reglaze

1. Remove paint from tracks to allow upper and lower window sash to operate smoothly and close to form tight seal. Repair or replace locks to make operable. Replace sash cords where necessary. Remove all loose or cracked glazing scrape down to wood. Replace broken or cracked glass and install new Latex base glazing compound and paint to match existing for

finished appearance. In replacements of frames, sills, and sash, trim and hardware shall match existing work in design and dimensions unless otherwise specified in the work write-up. Chain shall be used in all sash cord replacement. Two window lifts and one locking device shall be installed on all sash replacements.

2. When new sashes are installed into existing frame, the Contractor shall check all window parting stops. Stops that are missing, broken, or rotted or impaired, proper window operation shall be replaced by the Contractor.

D. Wood and Aluminum Window Repair

1. Free lower sash so that it opens properly;
2. Replace broken glass;
3. Reset loose glass;
4. Remove bad glazing;
5. Apply new glazing to units to make air tight seal;
6. Replace all rotted sills, casings, framing member, screens and trim both inside and out;
7. Install new lock and sash stop if existing is not present or cannot be repaired to operate;
8. Paint unit and trim both inside and out;
9. All items such as replacement frames, sills sash hardware and screens shall match existing;
10. Use: Part from local supplier or equal;
11. All windows shall be cleaned prior to final.

E. Vinyl Window Install

1. Furnish vinyl single hung-double glazed windows with insulated/laminated impact glass and screens. Windows to be of type and location specified in work write-up.
2. Window units shall be furnished with necessary anchors and clips to provide a complete installation.
3. Each unit shall be equipped with a cam lock and keeper.
4. Each sash shall be equipped with two (2) concealed sash balances in jambs, or equivalent, which permit removal of one (or both) sash to the interior of the structure for washing or maintenance without dismantling any frame members or use of special tools.

F. Window Opening Closure

1. Removal of window unit(s);
2. Replace rotted or damaged framing prior to closing opening;
3. Install R-11 batt insulation in cavity;

4. Install new wall covering inside and out to match adjacent areas;
5. Use: Local supplier or equal;
6. All closed openings shall blend as closely as possible to existing adjacent areas.

3.3 INSTALLATION OF WINDOW SCREENS

A. General:

1. Contractor shall replace or repair all screens as specified in the work write-up. Screens shall be mounted in a removable aluminum frame. If the frame is over four feet high, an aluminum cross member shall be used. Screen shall be aluminum; fiberglass screening is not acceptable. Screens shall not be patched; a minimum repair is replacing the screen in an existing frame. If wood screen bead is replaced, the wood shall be primed and painted to match existing.

B. Window Screen Install

1. Remove existing unit;
2. Install new aluminum frame screen to opening;
3. Use: A local supplier.

C. Window Screen Repair

1. Repair any damaged frame members;
2. Replace torn wire screen;
3. Paint units if wood;
4. Use: A local supplier.

3.4 INSTALLATION OF HURRICANE WINDOW TEMPLATES

A. Brick

1. 5/8-inch plywood with number for each window, plywood measured and cut for each window with a 1/8-inch – 1/4-inch clearance around
2. Plylox hurricane clips or equal to be provided, minimum of 4 per window or at every 24-inch or equal.

B. Cementious Board (Hardie Board or equal) or Wood Siding

1. 5/8-inch plywood with number for each window; with a maximum span of 8'-0". Plywood measured and cut for each window with a 1/8-inch – 1/4-inch clearance around;
2. 1/4-inch x 3-1/2-inch SS stud with 2-inch tapered wood screws, 1-1/2-inch standard SAE threads set 16-inch centered. Provided 1/4-inch washer and wing nut. Screws to be centered in exterior trim.

END OF SECTION 08550

DIVISION 9 – FINISHES

SECTION 09210 GYPSUM PLASTER

PART 1 - GENERAL

1.1 SUMMARY

- A. Plaster repair matching existing adjacent.
- B. This Section includes the following:
 - 1. Gypsum plastering.
 - 2. Metal, Wire and Gypsum lath.

1.2 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: Where indicated, provide assemblies identical to those tested for fire resistance per ASTM E119 by a testing and inspecting agency acceptable to authorities having jurisdiction.

1.3 PROJECT CONDITIONS

- A. Environmental Requirements, General: Comply with requirements of referenced plaster application standards and recommendations of plaster manufacturer for environmental conditions before, during, and after plaster application.

PART 2 - PRODUCTS

2.1 LATH

- A. Expanded-Metal Lath: ASTM C847, fabricated from uncoated or zinc-coated (galvanized) steel sheet and with uncoated steel sheet coated with corrosion-resistant coating after fabrication into lath.
 - 1. Diamond-Mesh Lath: Self-furring.
- B. Wire lath: ASTM C933-09.
- C. Gypsum Lath: ASTM C37 in length standard with manufacturer for thickness indicated.
 - 1. Core: Regular.
 - 2. Type: Plain, unless otherwise indicated; foil backed where indicated.
 - 3. Thickness: As indicated and as required to comply with ASTM C841 for type of installation and support spacing indicated.

2.2 ACCESSORIES

- A. General: Complying with ASTM C841; coordinate depth of accessories with thicknesses and number of plaster coats required.

2.3 MISCELLANEOUS MATERIALS

- A. Water for Mixing and Finishing Plaster: Potable and free of substances capable of affecting plaster set or of damaging plaster, lath, or accessories.
- B. Bonding Compound: ASTM C631.
- C. Steel Drill Screws:
 - 1. Complying with ASTM C1002 for fastening metal or gypsum lath to wood or steel members less than 0.033-inch (0.84-mm) thick.

2.4 PLASTER MATERIALS

- A. Base-Coat Plasters: ASTM C28, as follows: Match existing adjacent plaster material as close as possible.
 - 1. Gypsum ready-mixed plaster with mill-mixed perlite aggregate.
 - a. Products:
 - 1) National Gypsum Co.; Gypsolite or equal.
- B. Finish-Coat Plasters:
 - 1. Gypsum gauging plaster, ASTM C28.
 - 2. Gypsum ready-mixed finish plaster, manufacturer's standard mill-mixed gauged interior finish.
- C. Finishing Hydrated Limes: ASTM C206.
- D. Aggregates for Base-Coat Plasters: ASTM C35.
 - 1. Type: Perlite.
- E. Aggregates for Finish-Coat Plaster with Floated Finish: ASTM C35; graded per ASTM C842.
 - 1. Type: Perlite.

2.5 PLASTER MIXES AND COMPOSITIONS

- A. Plaster Base-Coat Compositions: Comply with ASTM C842 and manufacturer's written instructions for plaster base-coat proportions.
 - 1. Three-Coat Work over Metal Lath: Scratch coat, gypsum wood-fibered plaster, neat or with job-mixed sand; brown coat, gypsum ready-mixed plaster with mill-mixed perlite.
 - 2. Two-Coat Work over Gypsum Lath: Base coat, gypsum ready-mixed plaster with mill-mixed perlite.

3. Two-Coat Work over Unit Masonry: Base coats, gypsum ready-mixed plaster with mill-mixed perlite.
 4. Two-Coat Work over Concrete: Base coats of gypsum neat plaster with job-mixed sand.
- B. Finishing Hydrated Limes: ASTM C206.
1. Finishing Hydrated Limes, Type N:
 - a. United States Gypsum Co.; Grand Prize Hydrate Finish Limes.

PART 3 - EXECUTION

3.1 INSTALLATION OF LATH AND FURRING, GENERAL

- A. Interior Lathing and Furring: Comply with ASTM C841.

3.2 PLASTER REPAIR APPLICATION, GENERAL

- A. Protect contiguous Work from damage and deterioration caused by plastering with temporary covering and other provisions necessary.
- B. Prepare monolithic surfaces for bonded base coats and use bonding compound to comply with requirements of referenced plaster application standards for conditioning monolithic surfaces.
- C. Sequence plaster application with installation and protection of other work so that neither will be damaged by installation of other.
- D. On masonry walls remove all loose or dead plaster. Cut out cracks 1/4-inch wide in a V-joint. Wet existing plaster and tool in finishing lime. Using a steel trowel and water brush, finish lime flush and smooth with adjacent surfaces ready for painting. When plastering larger area, screed lime first with a wood float so that newly plastered area will be in the same plane as existing wall. No bulges or depressions will be allowed. All plaster areas should be invisible when painted.
- E. On wood lath remove all loose or dead non-keyed plaster. Remove all rotten wood lath. Renail all loose wood lath. Cut and install 1/8-inch flat rib "special mesh" metal lath securely. Apply base coat plaster leaving surface not less than 1/16-inch below adjacent surfaces. Allow base coat to dry at least 24 hours. Apply not less than 1/16-inch of finish coat plaster. Apply in same manner as on masonry walls. All plaster that is not true, smooth and flush with adjacent wall surfaces will be rejected and replaced at Contractor's expense.
- F. Cold weather protection - Contractor shall be responsible for protecting all plaster from freezing. Maintain a minimum temperature of 55 degrees F. All frozen plaster will be replaced.

3.3 PLASTER APPLICATION

- A. Plaster Application Standard: Comply with ASTM C842.
- B. Mechanically mix cementitious and aggregate materials for plasters to comply with applicable referenced application standard and with recommendations of plaster manufacturer.
- C. Finish Coats: Match existing adjacent.

3.4 CUTTING, PATCHING, AND CLEANING

- A. Cut, patch, replace, and repair plaster as necessary to accommodate other work and to restore cracks, dents, and imperfections. Repair or replace work to eliminate blisters, buckles, excessive crazing and check cracking, dry outs, efflorescence, sweat outs, and similar defects and where bond to substrate has failed.
- B. Leave plaster ready for painting.
- C. Remove temporary protection and enclosure of other work. Promptly remove plaster from door frames, windows, and other surfaces not to be plastered. Repair floors, walls, sinks, toilets, and other surfaces stained, marred, or otherwise damaged during plastering. Remove all plaster rubbish, excess material, and scaffolding from the building, leaving floors broom clean. Deposit no plastering materials in toilets, sinks or laundry trays. Wash all tools and equipment outside. Any blocked drains caused by plastering materials will be opened at Contractor's expense.

END OF SECTION 09210

**SECTION 09260
GYPSUM BOARD**

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, equipment and supplies to carry out the operations necessary to accomplish the following tasks:
 - 1. Installation of Gypsum Board at wall and ceilings;
 - 2. Installation of Moisture Resistant Gypsum board;
 - 3. Repair of Gypsum Board at walls and ceilings;
 - 4. Replacement of Gypsum Board;
 - 5. Removal of damaged gypsum board as related to repairs;
 - 6. Wall Covering Removal.
- B. Repair, renovations, alterations, reconstructions of existing wall and ceiling finishes shall comply with the New York City Building Code.
- C. When replacing or repairing tub and/or shower enclosures, use non-paper-faced backing materials such as cement board, fiber cement board, or equivalent in bathrooms.
- D. This Section includes the following:
 - 1. Interior gypsum wallboard.
 - 2. Tile backing panels.
- E. Related sections
 - 1. Section 06100 Rough Carpentry for wood sheathing and framing.
 - 2. Section 15410 Plumbing.
 - 3. Section 16600 Lighting.

1.2 QUALITY ASSURANCE

- A. Fire-Test-Response Characteristics: For gypsum board assemblies with fire-resistance ratings, provide materials and construction identical to those tested in assembly indicated according to ASTM E119 by an independent testing and inspecting agency acceptable to authorities having jurisdiction.
- B. Obtain gypsum board products from a single manufacturer, or from manufacturers recommended by the prime manufacturer of gypsum boards.
- C. Tolerances allowed are 1/8-inch offsets between planes of board faces, and 1/4-inch in 8-foot-0-inch for plumb, level, warp and bow.

1.3 PROJECT CONDITIONS

- A. It shall be the responsibility of this Contractor to insure that the areas in which drywall is being installed is adequately heated. He shall maintain a temperature of not less than 55 degrees and provide adequate ventilation during and following joint treatment application.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the products specified.
 - 1. Basis-of-Design Product: The design for each type of gypsum board and related products is based on G-P Gypsum products named.

2.2 PANEL PRODUCTS

- A. Panel Size, General: Provide in maximum lengths and widths available that will minimize joints in each area and correspond with support system indicated.
- B. Gypsum Wallboard: ASTM C36.
 - 1. Regular Type: 1/2-inch and with long edges tapered or beveled.
 - 2. Type X: 1/2-inch indicated and with long edges tapered.
- C. Tile Backing Panels/Moisture Resistant:
 - 1. Glass-Mat, Water-Resistant Backing Board: ASTM C1178/C1178M, with core type and in thickness indicated.
 - a. Product: G-P Gypsum Corp.; Dens-Shield Tile Backer or equal.

2.3 TRIM ACCESSORIES

- A. Interior Trim: Galvanized Wallboard Trim ASTM C1047.
 - 1. At external corners: Corner bead with smooth, rigid metal nose bonded to paper tape flanges.
 - 2. At exposed wallboard edges around openings: Beaded nose casing bead with exposed flange knurled for joint treatment.
 - 3. Where wallboard abuts dissimilar construction: Square edge semi-finishing casing bead.

2.4 JOINT TREATMENT MATERIALS

- A. General: Comply with ASTM C475.
- B. Joint Tape: Plain or perforated.
 - 1. Interior Gypsum Wallboard: Paper.
 - 2. Exterior Gypsum Soffit Board: Paper.
 - 3. Glass-Mat Gypsum Sheathing Board: 10-by-10 glass mesh.

4. Tile Backing Panels: As recommended by panel manufacturer.
- C. Joint Compound for Interior Gypsum Wallboard: For each coat use formulation that is compatible with other compounds applied on previous or for successive coats.
- D. Joint Compound for Tile Backing Panels:
 1. Glass-Mat, Water-Resistant Backing Panel: As recommended by manufacturer.

2.5 TEXTURE FINISHES

- A. Primer: As recommended by textured finish manufacturer.
- B. Texture: Medium.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Gypsum Board Wall installation: Comply with ASTM C840 and GA-216.
 1. Interior finish of all exterior walls and all interior partitions shall be sheathed with 1/2-inch thick gypsum wall board applied vertically, and with all joints taped and floated smooth.
 2. Wall board shall be attached to studs with galvanized 1-3/8-inch long nails at a maximum spacing of 8-inches.
 3. Exposed gypsum board corners shall be reinforced with #118 continuous corner bead.
 4. All exposed gypsum board will be textured and painted. Sheetrock shall be installed with all external corners protected with metal corner beads.
 5. Joints and corners on sheetrock must be taped, topped and made smooth and ready for paint.
- B. Fire-Resistance Gypsum Board
 1. Where gypsum drywall systems with fire resistance ratings are indicated or are required to comply with governing regulations, provide materials and installations identical with applicable assemblies which have been tested and listed by recognized authorities, including UL.
 2. Fire wall joints must be taped. A high quality taping compound not containing asbestos shall be used. All work shall be in conformance with manufacturer's printed directions.
- C. Gypsum Board Ceiling installation: Comply with ASTM C840 and GA-216.
 1. Ceiling shall be sheathed with 1/2-inch thick gypsum board panels nailed at maximum 7-inches o.c.
 2. Remove all fixtures and attached surface items not to be painted; clean all surfaces as per paint manufacturer's directions; spot fill holes, cracks, etc. with latex compound; repel loose tape work.
 3. Reinstall fixtures; items not removed from ceiling shall be protected from paint work unless replacement specified.
- D. Gypsum Board Replacement

1. 1/2-inch thick gypsum ASTM C36, with paintable paper-faced surfaces and with long edges tapered for standard joint treatment.
2. Remove all fixtures, nails, and attached surface items not to be painted; clean all surfaces as per paint manufacturer's directions; remove the area designated for replacement from stud to stud as necessary; install new sheetrock at replacement area.
3. Tape, bed and float joints at replacement area. For remaining wall surfaces: Fill all cracks, etc. with latex compound; rebel loose tape work; apply a coat of texture to all wall surfaces; replace all damaged or missing trim to match existing; apply two coats.

E. Gypsum Board Repair

1. Gypsum board, ASTM C36, with paintable paper-faced surface in thicknesses to match adjacent wallboard.
2. Install wallboards with edges occurring on supporting members.
3. Place boards with the long dimension vertical and each board continuous from floor to ceiling.
4. Remove existing defective wallboard to expose 1/2 of the existing supporting members on opposite sides.
5. Cut wallboard to fit snugly and fasten to supporting members.
6. Reset fastener heads and re-tape joints as required.
7. Remove all fixtures and attached surface items not to be painted; clean all surfaces as per paint manufacturer's directions; spot fill holes, cracks, etc. with latex compound; rebel loose tape work.
8. Replace all damaged or missing trim to match existing; apply two coats of interior latex paint (if bath or kitchen use latex enamel).
9. Reinstall fixtures; items not removed from wall shall be protected from paint work unless replacement specified.

F. Moisture-Resistant Gypsum board

1. Georgia-Pacific DensArmor, or Equal Water-Resistant/ Moisture resistant gypsum board treated to resist moisture to comply with ASTM C1288, C1325, C1178 or C1278 as a wall tile back up board around kitchens, shower stalls, bathtubs, and bathroom wainscots.
2. Georgia-Pacific DensArmor, or Equal Water-Resistant Backing Panel: Install with 1/4-inch (6.4-mm) gap where panels abut other construction or penetrations. At laundry rooms, showers, tubs and similar "wet" areas, install water-resistant backing board. Apply with tin-cut long edge at bottom of work, and space 1/4-inch above fixture lips. Seal ends, cut edges and penetrations of each piece with water-resistant sealant before installation.

G. Wall Covering Removal & Surface Prep

1. Remove all wallpaper and loose paint to bare plaster. Cut out and patch all plaster cracks.
2. Remove any and all loose plaster and re-plaster leaving a smooth true even surface.

3. Spackle all nicks, holes, wall blemishes and paint removed patches.
4. Sand and/or scrape smooth all wall and ceiling surfaces smooth ready for painting.
5. Clean all grease, grime and oils from all kitchen walls by washing with degreasing agents.
6. Roughen all previously semi-gloss or gloss painted surfaces prior to painting.
7. Remove all grease, grime, peeling paint, wallpaper and trash from walls behind radiators.
8. Remove radiators if necessary.
9. Remove all excess surface run telephone wires, staples and boxes prior to painting.
10. Remove all existing protruding nails, wires, brackets, hooks, eyes, hangers and any and all mechanical devices not required or obsolete from all wood trim and walls prior to painting.

H. Damaged Walls with Wallpaper Repair

1. Wallpaper will not be repaired as part of rehabilitation. Damaged walls with wallpaper will be repaired in the same manner as non-wallpapered walls and painted. The remaining walls in the room will be prepared as in 8.29 and painted to match the repaired wall.

3.2 FINISHING

- A. Installing Trim Accessories: For trim with back flanges intended for fasteners, attach to framing with same fasteners used for panels. Otherwise, attach trim according to manufacturer's written instructions.
- B. Finishing Gypsum Board Panels: Treat gypsum board joints, interior angles, edge trim, control joints, penetrations, fastener heads, surface defects, and elsewhere as required to prepare gypsum board surfaces for decoration.
 1. Pre-fill open joints, rounded or beveled edges, and damaged surface areas.
 2. Apply joint tape over gypsum board joints, except those with trim having flanges not intended for tape.
 3. Glass-Mat Gypsum Sheathing Board: Finish according to manufacturer's written instructions for use as exposed soffit board.
 4. Glass-Mat, Water-Resistant Backing Panels: Finish according to manufacturer's written instructions. See "Gypsum Board Finish Levels" Article in the Evaluations for a discussion of ASTM C840 requirements.
- C. Gypsum Board Finish Levels: Finish panels to levels indicated below, according to ASTM C840, for locations indicated:
 1. Level 1: Embed tape at joints in ceiling plenum areas, concealed areas, and where indicated, unless a higher level of finish is required for fire-resistance-rated assemblies and sound-rated assemblies.
 2. Level 2: Embed tape and apply separate first coat of joint compound to tape, fasteners, and trim flanges where panels are substrate for tile.

3. Level 3: Embed tape and apply separate first and fill coats of joint compound to tape, fasteners, and trim flanges.
 - D. Surface Preparation and Primer: Prepare and apply primer to gypsum panels and other surfaces receiving texture finishes. Apply primer to surfaces that are clean, dry, and smooth.
 - E. Texture Finish Application: Mix and apply finish using powered spray equipment, to produce a uniform texture free of starved spots or other evidence of thin application or of application patterns.
 - F. Prevent texture finishes from coming into contact with surfaces not indicated to receive texture finish by covering them with masking agents, polyethylene film, or other means. If, despite these precautions, texture finishes contact these surfaces, immediately remove droppings and overspray to prevent damage according to texture finish manufacturer's written recommendations.

END OF SECTION 09260

**SECTION 09310
CERAMIC TILE**

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, tools, equipment, incidentals, and services necessary for the flooring material:
 - 1. Ceramic Floor tile to replace base standard flooring material, VCT for the kitchen and or the bathrooms.
- B. This Section includes provisions and installation of ceramic tile and removal of existing material:
 - 1. Paver tile.
 - 2. Stone thresholds installed as part of tile installations.
 - 3. Waterproof membrane for thin-set tile installations at wet locations.
- C. Related divisions:
 - 1. Section 06100 Rough Carpentry
 - 2. Section 06200 Finish Carpentry.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. The following requirements apply for product selection:
 - 1. Basis-of-Design Product: The design for each tile type is based on the product named. Subject to compliance with requirements, provide either the named product or a comparable product by one of the other manufacturers specified.

2.2 TILE PRODUCTS

- A. ANSI Ceramic Tile Standard: Provide Standard grade tile that complies with ANSI A137.1, "Specifications for Ceramic Tile," for types, compositions, and other characteristics indicated.
- B. Glazed Paver Tile: Flat tile as follows:
 - 1. Composition: Impervious natural clay or porcelain.
 - 2. Facial Dimensions: 11-13/16 by 11-13/16-inches (300 by 300-mm) kitchen, 5 13/16 x 5 13/16 bath.
 - 3. Thickness: 5/16-inch.
 - 4. Face: **Plain with square edges.**
 - 5. Basis-of-Design Product: Daltile, "Color Scheme".
 - a. Arctic White – B900

- b. Desert Gray - B905
 - c. Black – B901
 - d. C.O.F: 0.60;
 - e. Grade: 1.
6. Bathroom – American Olean SatinGlo Hexagon 0D251HEX35MSC1P White w/Black insets or approved equal.

2.3 ACCESSORY MATERIALS

- A. Thresholds: Metal Edge Band.
- B. Waterproofing Membranes for Thin-Set Tile Installations: Manufacturer's standard product that complies with ANSI A118.10.
 - 1. Polyethylene-Sheet Product: Polyethylene faced on both sides with fleece webbing, 0.008-inch (0.203-mm) nominal thickness.

2.4 SETTING AND GROUTING MATERIALS

- A. Dry-Set Portland Cement Mortar (Thin Set): ANSI A118.1.
- B. Standard Sanded Cement Grout: ANSI A118.6, color: no white.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Remove and dispose of Remove coatings, including curing compounds and other substances that contain soap, wax, oil, or silicone, that are incompatible with tile-setting materials.
- B. Fill cracks, holes, and depressions with trowelable leveling and patching compound according to tile-setting material manufacturer's written instructions.
- C. Remove protrusions, bumps, and ridges by sanding or grinding.
- D. Blending: For tile exhibiting color variations, use factory blended tile or blend tiles at Project site before installing.
- E. Field-Applied Temporary Protective Coating: Where indicated under tile type or needed to prevent grout from staining or adhering to exposed tile surfaces, pre-coat them with continuous film of temporary protective coating, taking care not to coat unexposed tile surfaces.

3.2 INSTALLATION, GENERAL

- A. ANSI Tile Installation Standards: Comply with parts of ANSI A108 Series "Specifications for Installation of Ceramic Tile" that apply to types of setting and grouting materials and to methods indicated in ceramic tile installation schedules.
- B. TCA Installation Guidelines: TCA's "Handbook for Ceramic Tile Installation." Comply with TCA installation methods indicated in ceramic tile installation schedules.

- C. Extend tile work into recesses and under or behind equipment and fixtures to form complete covering without interruptions, unless otherwise indicated. Terminate work neatly at obstructions, edges, and corners without disrupting pattern or joint alignments.
- D. Accurately form intersections and returns. Perform cutting and drilling of tile without marring visible surfaces. Grind cut edges of tile abutting trim, finish, or built-in items. Fit tile closely to electrical outlets, piping, fixtures, and other penetrations so plates, collars, or covers overlap tile.
- E. Jointing Pattern: Lay tile in grid pattern, unless otherwise indicated. Align joints when adjoining tiles on floor, base, walls, and trim are same size. Lay out tile work and center tile fields in both directions in each space or on each wall area. Adjust to minimize tile cutting. Provide uniform joint widths, unless otherwise indicated.
- F. Grout tile to comply with requirements of ANSI A108.10, unless otherwise indicated.
- G. Metal Edge Strips: Install at locations indicated or where exposed edge of tile flooring meets carpet, wood, or other flooring that finishes flush with top of tile.

END OF SECTION 09310

**SECTION 09650
RESILIENT TILE FLOORING**

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, tools, equipment, and services necessary for and reasonably incidental to the base (standard) flooring material:
 - 1. Vinyl Composition Tile (VCT) in all wet areas (kitchen, bathroom, entry, laundry room) and hallways.
- B. Repair, renovations, alterations, reconstructions of existing floor finishes comply with the New York City Building Code.
- C. This Section includes the following:
 - 1. Vinyl composition floor tile.
- D. Related section:
 - 1. Section 06100 Rough Carpentry for sheathing and substrates
 - 2. Section 06200 Finish Carpentry for trim and transitions.

1.2 QUALITY ASSURANCE

- A. Source Limitations: Obtain each type, color, and pattern of product specified from one source with resources to provide products of consistent quality in appearance and physical properties without delaying the Work.

PART 2 - PRODUCTS

2.1 RESILIENT TILE

- A. Vinyl Composition Floor Tile: Products complying with ASTM F 1066 and with requirements as specified herein.
- B. When replacing flooring, use environmentally preferable flooring, including the FloorScore certification.
- C. Product: Subject to compliance with requirements, listed. Basis of design is:
 - 1. Manufacturer: Armstrong Commercial, or Equal.
 - 2. Color and Pattern:
 - a. Arteffects, Full Range of Colors or equal. Color to be selected by Homeowner from Program choices.
 - 3. Class: Class 2 (through-pattern tile).

4. Wearing Surface: Smooth.
 5. Thickness: 0.125-inch (3.2-mm).
 6. Size: 12-inch by 12-inch (304.8-mm by 304.8-mm).
2. Tarkett - Better Living Collection – Better Living Planks
 - a. Colors:
 - 1) Dorchester Plank - Dark Pine
 - 2) Dorchester Plank – Hemlock
 - 3) Sapele – Tuscan Toast

2.2 INSTALLATION ACCESSORIES

- A. Trowelable Leveling and Patching Compounds: Latex-modified, portland-cement-based formulation provided or approved by flooring manufacturer for applications indicated.
- B. Adhesives: Water-resistant type recommended by manufacturer to suit resilient products and substrate conditions indicated.

PART 3 - EXECUTION

3.1 PREPARATION

- A. General: Comply with resilient product manufacturer's written installation instructions for preparing substrates indicated to receive resilient products.
- B. Use trowelable leveling and patching compounds, according to manufacturer's written instructions, to fill cracks, holes, and depressions in substrates.
- C. Remove coatings, including curing compounds, and other substances that are incompatible with flooring adhesives and that contain soap, wax, oil, or silicone, using mechanical methods recommended by manufacturer. Do not use solvents.
- D. Broom and vacuum clean substrates to be covered immediately before product installation. After cleaning, examine substrates for moisture, alkaline salts, carbonation, or dust. Do not proceed with installation until unsatisfactory conditions have been corrected.

3.2 TILE INSTALLATION

- A. General: Comply with tile manufacturer's written installation instructions.
- B. Lay out tiles from center marks established with principal walls, discounting minor offsets, so tiles at opposite edges of room are of equal width. Adjust as necessary to avoid using cut widths that equal less than one-half of a tile at perimeter.
 1. Lay tiles square with room axis, unless otherwise indicated.
- C. Match tiles for color and pattern by selecting tiles from cartons in the same sequence as manufactured and packaged, if so numbered. Cut tiles neatly around all fixtures. Discard broken, cracked, chipped, or deformed tiles.
 1. Lay tiles in pattern of colors and sizes indicated on Drawings.

- D. Scribe, cut, and fit tiles to butt neatly and tightly to vertical surfaces and permanent fixtures, including built-in furniture, cabinets, pipes, outlets, edgings, door frames, thresholds, and nosings.
- E. Extend tiles into toe spaces, door reveals, closets, and similar openings.
- F. Maintain reference markers, holes, and openings that are in place or marked for future cutting by repeating on finish flooring as marked on subfloor. Use chalk or other nonpermanent, non-staining marking device.
- G. Adhere tiles to flooring substrates using a full spread of adhesive applied to substrate to comply with tile manufacturer's written instructions, including those for trowel notching, adhesive mixing, and adhesive open and working times.
 - 1. Provide completed installation without open cracks, voids, raising and puckering at joints, telegraphing of adhesive spreader marks, and other surface imperfections.
- H. Hand roll tiles according to tile manufacturer's written instructions.

3.3 CLEANING AND PROTECTING

- A. Perform the following operations immediately after installing resilient products:
 - 1. Remove adhesive and other surface blemishes using cleaner recommended by resilient product manufacturers.
 - 2. Sweep or vacuum floor thoroughly.
 - 3. Do not wash floor until after time period recommended by flooring manufacturer.
 - 4. Damp-mop floor to remove marks and soil.
- B. Protect flooring against mars, marks, indentations, and other damage from construction operations and placement of equipment and fixtures during the remainder of construction period. Use protection methods indicated or recommended in writing by flooring manufacturer.
 - 1. Apply protective floor polish to floor surfaces that are free from soil, visible adhesive, and surface blemishes, if recommended in writing by manufacturer.
 - a. Use commercially available product acceptable to flooring manufacturer.
 - 2. Cover products installed on floor surfaces with undyed, untreated building paper until Final Inspection.
 - 3. Do not move heavy and sharp objects directly over floor surfaces. Place plywood or hardboard panels over flooring and under objects while they are being moved. Slide or roll objects over panels without moving panels.
- C. Clean products according to manufacturer's written recommendations.
 - 1. Before cleaning, strip protective floor polish that was applied after completing installation only if required to restore polish finish and if recommended by flooring manufacturer.
 - 2. After cleaning, reapply polish to floor surfaces to restore protective floor finish according to flooring manufacturer's written recommendations.

END OF SECTION 09650

**SECTION 09680
CARPET**

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish all labor, materials, tools, equipment, and services necessary for and reasonably incidental to the base (standard) flooring material:
 - 1. Carpeting for bedrooms.
- B. This Section includes woven carpet, carpet cushion and removal of existing material.
- C. Any carpet products used must meet the Carpet and Rug Institute's Green Label or Green Label Plus certification for carpet, pad, and carpet adhesives.
- D. Related sections:
 - 1. Section 06100 Rough Carpentry for sheathing and substrates
 - 2. Section 06200 Finish Carpentry for trim and transitions.

1.2 QUALITY ASSURANCE

- A. Installer Qualifications: A qualified installer who is certified by the Floor Covering Installation Board or who can demonstrate compliance with its certification program requirements.
- B. All carpet must be clearly marked as conforming to HUD Bulletin No: UM44D.

1.3 DELIVERY, STORAGE, AND HANDLING

- A. Comply with CRI 104, Carpet Installation Standards, "Storage and Handling." and "Site Conditions; Temperature and Humidity."

1.4 WARRANTY

- A. Carpet Warranty: Manufacturer's standard form in which manufacturer agrees to replace carpet that does not comply with requirements or that fails within 10 years from date of Final Acceptance. Warranty does not include deterioration or failure of carpet from unusual traffic, failure of substrate, vandalism, or abuse. Failures include, but are not limited to, more than 10 percent loss of face fiber, edge raveling, snags, runs, and delamination.
- B. Carpet Cushion Warranty: Manufacturer's standard form agreeing to replace carpet cushion that does not comply with requirements or that fails within 10 years from date of Final Acceptance. Warranty does not include deterioration or failure of carpet cushion from unusual traffic, failure of substrate, vandalism, or abuse. Failure includes, but is not limited to, permanent indentation or compression.

PART 2 - PRODUCTS

2.1 CARPET

- A. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, the following:

B. Products: Subject to compliance with requirements, provide the following or equal:

1. Manufacturer: Shaw.
2. Style: Cliché Classic II.
3. Fiber: 100% Nylon.
4. Face Weight 32.00
5. Number of Colors: 8 (Color number may vary).
6. Green Label Plus certification

2.2 CARPET CUSHION

A. Traffic Classification: CCC Class I, moderate traffic.

B. Carpet Cushion Standards must comply with FHA/HUD standards, ASTM D3574-91 or ASTM D3676-89.

C. Polyurethane Foam Cushion:

1. Products: Subject to compliance with requirements, provide the following or equal:
 - a. Leggett & Platt, Monterey Carpet Cushion
2. Type: Bonded foam.
3. Compression Force Deflection at 65 Percent: per ASTM D3574.
4. Thickness: 0.5-inch.
5. Density: 5.0 lb/cu. ft. (kg/cu. m).

PART 3 - EXECUTION

3.1 INSTALLATION

A. Comply with CRI Carpet Installation Standards and as recommended by manufacturer.

B. Maintain uniformity of carpet direction and lay of pile. At doorways, center seams under door in closed position. Bind or seal cut edges as recommended by carpet manufacturer.

C. Install pattern parallel to walls and borders.

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

E. General broom cleaning of surfaces which support the carpeting will be done by General Contractor. Before starting any carpeting operations in any one location, the Carpet Subcontractor shall remove from the surfaces supporting the carpeting all dust, dirt, debris, oil, grease, or other substances which

may in any manner affect the satisfactory execution and serviceability of the carpeting. Debris resulting from the installation operations shall be promptly removed from the site and none shall be left under any carpet.

- F. Carpet shall be installed only after all other work in a given location has been completed. Carpets shall be laid with the seams running in the same direction, or as directed in the field by PROGRAM. All seams shall be made so that pile of adjoining pieces has the same directional run, and so as to be practically invisible in the opinion of PROGRAM. Each run of carpet located between the adjoining parallel seams shall be a single piece of carpet without any piecing out.
- G. All doors shall be cut off where necessary to clear the new carpet.
- H. Carpet shall be carefully stretched to a uniform tautness until perfectly smooth and even as well as free from ripples, sags, or buckles.
- I. A decorative flat bar/transition strip to match adjacent flooring material shall be installed to protect carpet/vinyl intersections.

3.2 PROTECTION OF WORK

- A. The Contractor shall take all necessary precautions to protect the existing construction and finishes of the building against any damage due to the carpeting operations. The Contractor will be responsible for the cost of such damages.
- B. Vacuum carpet using commercial machine with face beater element. Remove spots and replace carpet where spots cannot be removed.
- C. Sequence carpeting with other work so as to minimize possibility of damage and soiling of carpet during remainder of construction period.
- D. After completion of carpeting operations in an area, Contractor shall remove all waste and surplus items of carpeting. Salvage, except for unused rolls, shall be the property of the Homeowner, if wanted.

END OF SECTION 09680

**SECTION 09912
PAINTING**

PART 1 - GENERAL

1.1 SUMMARY

- A. This Section includes surface preparation and field painting of exposed exterior and interior items and surfaces throughout the project.
- B. Surface preparation, priming and coats of paint specified are in addition to shop priming and surface treatment specified under other sections of work.
- C. Previously coated surface Preparation. All surface contamination such as oil, grease loose paint, mill scale, dirt foreign matter, rust, mold, mildew, mortar and sealers must be removed to assure sound bonding of paint being applied. Testing of product to be used in areas previously painted should be performed prior to use of new product being application.
- D. Prior to beginning work on housing older than 1978, in which children will be occupying the home, provide Homeowner and Occupants a copy of EPA's lead hazard information pamphlet "*Renovate Right: Important Lead Hazard Information for Families, Child Care Providers, and Schools*". Contractors must document compliance with this requirement; EPA's pre-renovation disclosure form may be used for this purpose.
- E. Contractors are required to be certified and to use lead-safe work practices as stipulated by the EPA.
- F. All interior paints and primers must be less than or equal to the following VOC levels: Flats--50 g/L; Non-flats--50 g/L; Floor--100 g/L. [g/L = grams per liter; levels are based on a combination of the Master Painters Institute (MPI) and GreenSeal standards.]

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Available Products: Subject to compliance with requirements, basis of design is Sherwin Williams or equivalent. All interior paints and primers must be less than or equal to the following VOC levels in grams per liter (g/L), based on a combination of the Master Painters Institute (MPI) and GreenSeal standards:

<u>Paint Type</u>	<u>Maximum VOC Limit</u>
Flat	50 g/L
Non-Flat	50 g/L
Floor	100 g/L
Anti-Corrosive	250 g/L

2.2 PAINT MATERIALS, GENERAL

- A. Material Compatibility: Provide block fillers, primers, and finish-coat materials that are compatible with one another and with the substrates indicated under conditions of service and application, as demonstrated by manufacturer based on testing and field experience.

- B. Material Quality: Provide manufacturer's best-quality paint material of the various coating types specified that are factory formulated and recommended by manufacturer for application indicated. Paint-material containers not displaying manufacturer's product identification will not be acceptable.
- C. Colors: Homeowner selected from HRP options.* (* Within Historic District approval of color selections may require approval by the governing historic review agency, commission or group).

2.3 PREPARATORY COATS

- A. Concrete Unit Masonry Block Filler: High-performance latex block filler of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
- B. Exterior Primer: Exterior alkyd or latex-based primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
 - 1. Ferrous-Metal and Aluminum Substrates: Rust-inhibitive metal primer.
 - 2. Zinc-Coated Metal Substrates: Galvanized metal primer.
 - 3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.
- C. Interior Primer: Interior latex-based or alkyd primer of finish coat manufacturer and recommended in writing by manufacturer for use with finish coat and on substrate indicated.
 - 1. Ferrous-Metal Substrates: Quick drying, rust-inhibitive metal primer.
 - 2. Zinc-Coated Metal Substrates: Galvanized metal primer.
 - 3. Where manufacturer does not recommend a separate primer formulation on substrate indicated, use paint specified for finish coat.

2.4 EXTERIOR FINISH COATS

- A. Exterior Flat Acrylic Paint:
 - 1. Sherwin-Williams; A-100 Exterior Latex Flat House & Trim Paint A6 Series or approved equal.
- B. Exterior Low-Luster Acrylic Paint:
 - 1. Sherwin-Williams; A-100 Exterior Latex Satin House & Trim Paint A82 Series or approved equal.
 - 2. Retain finish-coat materials below for a semi-gloss acrylic-enamel finish, including medium shades, over concrete, stucco, masonry, concrete masonry units, gypsum soffit boards, smooth wood, medium-shade wood trim, ferrous and zinc-coated metal, and aluminum.
- C. Exterior Semi-gloss Acrylic Enamel:
 - 1. Sherwin-Williams; A-100 Latex Gloss A8 Series or approved equal.
 - 2. Retain finish-coat materials below for a full-gloss acrylic-enamel finish over concrete, stucco, masonry, concrete masonry units, gypsum soffit boards, smooth wood, and wood trim. Consult manufacturers if deep-tone-color full-gloss finishes are required. Some deep-tone-color products require use of a different base or a different primer.

- D. Exterior Full-Gloss Acrylic Enamel for Concrete, Masonry, and Wood:
 - 1. Sherwin-Williams; DTM Acrylic Coating Gloss (Waterborne) B66W100 Series or approved equal.
- E. Exterior Full-Gloss Acrylic Enamel for Ferrous and Other Metals:
 - 1. Sherwin-Williams; DTM Acrylic Coating Gloss (Waterborne) B66W100 Series or approved equal.
- F. Exterior Full-Gloss Alkyd Enamel:
 - 1. Sherwin-Williams; Industrial Enamel B-54 Series or approved equal.

INTERIOR FINISH COATS

- G. Available Products: Subject to compliance with requirements, provide the following or equal:
 - 1. Interior Flat Acrylic Paint: Sherwin-Williams; ProMar 200 Interior Latex Flat Wall Paint B30W200 Series.
 - 2. Interior Flat Latex-Emulsion Size: Sherwin-Williams; ProMar 200 Interior Latex Flat Wall Paint B30W200 Series.
 - 3. Interior Low-Luster Acrylic Enamel: Sherwin-Williams; ProMar 200 Interior Latex Egg-Shell Enamel B20W200 Series.
 - 4. Interior Semigloss Acrylic Enamel: Sherwin-Williams; ProMar 200 Interior Latex Semi-Gloss Enamel B31W200 Series.
 - 5. Interior Full-Gloss Acrylic Enamel: Sherwin-Williams; ProMar 200 Interior Latex Gloss Enamel B21W201.
 - 6. Interior Semigloss Alkyd Enamel: Sherwin-Williams; ProMar 200 Interior Alkyd Semi-Gloss Enamel B34W200 Series.
 - 7. Interior Full-Gloss Alkyd Enamel for Gypsum Board and Plaster: Sherwin-Williams; ProMar 200 Alkyd Gloss Enamel B35W200 Series.
 - 8. Interior Full-Gloss Alkyd Enamel for Wood and Metal Surfaces: Sherwin-Williams; ProMar 200 Alkyd Gloss Enamel B35W200 Series.

2.5 INTERIOR WOOD STAINS AND VARNISHES

- A. Available Products: Subject to compliance with requirements, provide the following or equal:
 - 1. Open-Grain Wood Filler: Sherwin-Williams; Sher-Wood Fast-Dry Filler.
 - 2. Interior Wood Stain: Alkyd based. Sherwin-Williams; Wood Classics Interior Oil Stain A-48 Series.
 - 3. Clear Sanding Sealer: Fast-drying alkyd based. Sherwin-Williams; Wood Classics Fast Dry Sanding Sealer B26V43.

4. Interior Alkyd- or Polyurethane-Based Clear Satin Varnish: Sherwin-Williams; Wood Classics Fast Dry Oil Varnish, Satin A66-300 Series.
5. Interior Waterborne Clear Satin Varnish: Sherwin-Williams; Wood Classics Waterborne Polyurethane Satin, A68 Series.
6. Interior Waterborne Clear Gloss Varnish: Sherwin-Williams; Wood Classics Waterborne Polyurethane Gloss, A68 Series.

PART 3 - EXECUTION

3.1 APPLICATION

- A. Comply with procedures specified in PDCA P4 for inspection and acceptance of surfaces to be painted.
- B. Coordination of Work: Review other Sections in which primers are provided to ensure compatibility of the total system for various substrates. On request, furnish information on characteristics of finish materials to ensure use of compatible primers.
- C. Remove hardware and hardware accessories, plates, machined surfaces, lighting fixtures, and similar items already installed that are not to be painted. If removal is impractical or impossible because of size or weight of the item, provide surface-applied protection before surface preparation and painting.
 1. After completing painting operations in each space or area, reinstall items removed using workers skilled in the trades involved.
- D. Surface Preparation: Clean and prepare surfaces to be painted according to manufacturer's written instructions for each particular substrate condition and as specified.
 1. Provide barrier coats over incompatible primers or remove and re-prime.
 2. Cementitious Materials: Remove efflorescence, chalk, dust, dirt, grease, oils, and release agents. Roughen as required to remove glaze. If hardeners or sealers have been used to improve curing, use mechanical methods of surface preparation.
 3. Wood: Clean surfaces of dirt, oil, and other foreign substances with scrapers, mineral spirits, and sandpaper, as required. Sand surfaces exposed to view smooth and dust off.
 - a. Scrape and clean small, dry, seasoned knots, and apply a thin coat of white shellac or other recommended knot sealer before applying primer. After priming, fill holes and imperfections in finish surfaces with putty or plastic wood filler. Sand smooth when dried.
 - b. Prime, stain, or seal wood to be painted immediately on delivery. Prime edges, ends, faces, undersides, and back sides of wood, including cabinets, counters, cases, and paneling.
 - c. If transparent finish is required, backprime with spar varnish.
 - d. Backprime paneling on interior partitions where masonry, plaster, or other wet wall construction occurs on back side.
 - e. Seal tops, bottoms, and cutouts of unprimed wood doors with a heavy coat of varnish or sealer immediately on delivery.

4. Ferrous Metals: Clean un-galvanized ferrous-metal surfaces that have not been shop coated; remove oil, grease, dirt, loose mill scale, and other foreign substances. Use solvent or mechanical cleaning methods that comply with SSPC's recommendations.
 - a. Touch up bare areas and shop-applied prime coats that have been damaged. Wire-brush, clean with solvents recommended by paint manufacturer, and touch up with same primer as the shop coat.
 5. Galvanized Surfaces: Clean galvanized surfaces with nonpetroleum-based solvents so surface is free of oil and surface contaminants. Remove pretreatment from galvanized sheet metal fabricated from coil stock by mechanical methods.
- E. Material Preparation:
1. Maintain containers used in mixing and applying paint in a clean condition, free of foreign materials and residue.
 2. Stir material before application to produce a mixture of uniform density. Stir as required during application. Do not stir surface film into material. If necessary, remove surface film and strain material before using.
- F. Exposed Surfaces: Include areas visible when permanent or built-in fixtures, grilles, convactor covers, covers for finned-tube radiation, and similar components are in place. Extend coatings in these areas, as required, to maintain system integrity and provide desired protection.
1. Paint surfaces behind movable equipment and furniture the same as similar exposed surfaces. Before final installation of equipment, paint surfaces behind permanently fixed equipment or furniture with prime coat only.
 2. Paint interior surfaces of ducts with a flat, non-specular black paint where visible through registers or grilles.
 3. Paint back sides of access panels and removable or hinged covers to match exposed surfaces.
 4. Finish exterior doors on tops, bottoms, and side edges the same as exterior faces.
 5. Finish interior of wall and base cabinets and similar field-finished casework to match exterior.
- G. Sand lightly between each succeeding enamel or varnish coat.
- H. Scheduling Painting: Apply first coat to surfaces that have been cleaned, pretreated, or otherwise prepared for painting as soon as practicable after preparation and before subsequent surface deterioration.
1. Omit primer over metal surfaces that have been shop primed and touchup painted.
 2. If undercoats, stains, or other conditions show through final coat of paint, apply additional coats until paint film is of uniform finish, color, and appearance.
- I. Application Procedures: Apply paints and coatings by brush, roller, spray, or other applicators according to manufacturer's written instructions.
- J. Minimum Coating Thickness: Apply paint materials no thinner than manufacturer's recommended spreading rate. Provide total dry film thickness of the entire system as recommended by manufacturer.

- K. Mechanical and Electrical Work: Painting of mechanical and electrical work is limited to items exposed in equipment rooms and occupied spaces.
- L. Block Fillers: Apply block fillers to concrete masonry block at a rate to ensure complete coverage with pores filled.
- M. Prime Coats: Before applying finish coats, apply a prime coat, as recommended by manufacturer, to material that is required to be painted or finished and that has not been prime coated by others. Recoat primed and sealed surfaces where evidence of suction spots or unsealed areas in first coat appears, to ensure a finish coat with no burn-through or other defects due to insufficient sealing.
- N. Pigmented (Opaque) Finishes: Completely cover surfaces as necessary to provide a smooth, opaque surface of uniform finish, color, appearance, and coverage. Cloudiness, spotting, holidays, laps, brush marks, runs, sags, ropiness, or other surface imperfections will not be acceptable.
- O. Transparent (Clear) Finishes: Use multiple coats to produce a glass-smooth surface film of even luster. Provide a finish free of laps, runs, cloudiness, color irregularity, brush marks, orange peel, nail holes, or other surface imperfections.
- P. Stipple Enamel Finish: Roll and redistribute paint to an even and fine texture. Leave no evidence of rolling, such as laps, irregularity in texture, skid marks, or other surface imperfections.
- Q. Unless otherwise noted within document all paint shall include additional coats beyond coat number specified to achieve good cover and hide.

3.2 CLEANING AND PROTECTING

- A. At the end of each workday, remove empty cans, rags, rubbish, and other discarded paint materials from Project site.
- B. Protect work of other trades, whether being painted or not, against damage from painting. Correct damage by cleaning, repairing or replacing, and repainting, as approved by Architect.
- C. Provide "Wet Paint" signs to protect newly painted finishes. After completing painting operations, remove temporary protective wrappings provided by others to protect their work.
 - 1. After work of other trades is complete, touch up and restore damaged or defaced painted surfaces. Comply with procedures specified in PDCA P1.

EXTERIOR PAINT SCHEDULE

- D. Concrete, Stucco, and Masonry (Other Than Concrete Unit Masonry):
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Exterior concrete and masonry primer.
 - b. Finish Coats: Exterior low-luster acrylic paint.
- E. Concrete Unit Masonry:
 - 1. Acrylic Finish: Two finish coats over a block filler.
 - a. Block Filler: Concrete unit masonry block filler.

- b. Finish Coats: Exterior low-luster acrylic paint.
- F. Mineral-Fiber-Reinforced Cement Panels:
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Exterior concrete and masonry primer.
 - b. Finish Coats: Exterior flat acrylic paint.
- G. Smooth Wood:
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Exterior wood primer for acrylic enamels.
 - b. Finish Coats: Exterior semi-gloss acrylic enamel.
 - 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Exterior wood primer for alkyd enamels.
 - b. Finish Coats: Exterior full-gloss alkyd enamel.
- H. Wood Trim:
 - 1. Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Exterior wood primer for acrylic enamels.
 - b. Finish Coats: Exterior semi-gloss acrylic enamel.
 - 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Exterior wood trim primer for full-gloss alkyd enamels.
 - b. Finish Coats: Exterior full-gloss alkyd enamel.
- I. Plywood (Exterior plywood floor underlayment):
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Exterior wood primer for acrylic enamels.
 - b. Finish Coats: Exterior low-luster acrylic paint.
- J. Ferrous Metal:
 - 1. Acrylic Finish: Two finish coats over a rust-inhibitive primer.
 - a. Primer: Exterior ferrous-metal primer (not required on shop-primed items).
 - b. Finish Coats: Exterior semi-gloss acrylic enamel.
 - 2. Alkyd-Enamel Finish: Two finish coats over a rust-inhibitive primer.

- a. Primer: Exterior ferrous-metal primer (not required on shop-primed items).
- b. Finish Coats: Exterior full-gloss alkyd enamel.

K. Zinc-Coated Metal:

- 1. Acrylic Finish: Two finish coats over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal primer.
 - b. Finish Coats: Exterior semi-gloss acrylic enamel.
- 2. Alkyd-Enamel Finish: Two finish coats over a galvanized metal primer.
 - a. Primer: Exterior galvanized metal primer.
 - b. Finish Coats: Exterior full-gloss alkyd enamel.

L. Aluminum:

- 1. Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Exterior aluminum primer under acrylic finishes.
 - b. Finish Coats: Exterior semi-gloss acrylic enamel.
- 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Exterior aluminum primer under alkyd finishes.
 - b. Finish Coats: Exterior full-gloss alkyd enamel.

3.3 INTERIOR PAINT SCHEDULE

A. Concrete and Masonry (Other Than Concrete Unit Masonry):

- 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior semi-gloss acrylic enamel.
- 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior concrete and masonry primer.
 - b. Finish Coats: Interior semi-gloss alkyd enamel.

B. Concrete Unit Masonry:

- 1. Acrylic Finish: Two finish coats over a block filler.
 - a. Block Filler: Concrete unit masonry block filler.

- b. Finish Coats: Interior low-luster acrylic enamel.
 - 2. Alkyd-Enamel Finish: Two finish coats over a filled surface.
 - a. Block Filler: Concrete unit masonry block filler.
 - b. Finish Coat: Interior semi-gloss alkyd enamel.
- C. Mineral-Fiber-Reinforced Cement Panels:
 - 1. Flat Acrylic Finish: Two finish coats.
 - a. Finish Coats: Interior flat acrylic paint.
- D. Gypsum Board:
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior low-luster acrylic enamel.
 - 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior gypsum board primer.
 - b. Finish Coats: Interior semi-gloss alkyd enamel.
- E. Plaster:
 - 1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior plaster primer.
 - b. Finish Coats: Interior flat acrylic paint.
 - 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior plaster primer.
 - b. Finish Coats: Interior semi-gloss alkyd enamel.
- F. Wood and Hardboard:
 - 1. Acrylic-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior wood primer for acrylic-enamel and semi-gloss alkyd-enamel finishes.
 - b. Finish Coats: Interior low-luster acrylic enamel.
 - 2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior wood primer for acrylic-enamel and semi-gloss alkyd-enamel finishes.
 - b. Finish Coats: Interior semi-gloss alkyd enamel.

G. Ferrous Metal:

1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior semi-gloss acrylic enamel.
2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior ferrous-metal primer.
 - b. Finish Coats: Interior semi-gloss alkyd enamel and full-gloss alkyd enamel for wood and metal surfaces.

H. Zinc-Coated Metal:

1. Acrylic Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior semi-gloss acrylic enamel.
2. Alkyd-Enamel Finish: Two finish coats over a primer.
 - a. Primer: Interior zinc-coated metal primer.
 - b. Finish Coats: Interior semi-gloss alkyd enamel.

I. All-Service Jacket over Insulation:

1. Acrylic Finish: Two finish coats. Add fungicidal agent to render fabric mildew proof.
 - a. Finish Coats: Interior flat latex-emulsion size.

3.4 INTERIOR STAIN AND NATURAL-FINISH WOODWORK SCHEDULE

A. Stain-Varnish Finish: Two finish coats of varnish over a sealer coat and interior wood stain. Wipe wood filler before applying stain.

1. Filler Coat: Open-grain wood filler.
2. Stain Coat: Interior wood stain.
3. Sealer Coat: Clear sanding sealer.
4. Finish Coats: Interior alkyd or polyurethane-based clear satin varnish.

B. Natural-Varnish Finish: Two finish coats of varnish over a sealer coat and a filler coat.

1. Filler Coat: Open-grain wood filler.
2. Sealer Coat: Clear sanding sealer.
3. Finish Coats: Interior alkyd- or polyurethane-based clear satin varnish.

END OF SECTION 09912

DIVISION 10 – SPECIALTIES

SECTION 10747 WINDOW WELLS

PART 1 - GENERAL

1.1 SECTION INCLUDES

- A. Window wells for below-grade egress
- B. Covers for window wells
 - 1. Dome
 - 2. Metal grate
 - 3. Polycarbonate

1.2 REFERENCES

- A. New York City Building Code Chapter 10.

1.3 QUALITY ASSURANCE

- A. Certificates: Submit certificate that applicator complies with requirements of this section.
- B. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.
- C. Verification Samples: For each finish product specified, two samples representing actual product, color, and patterns.
- D. Installer shall be responsible for complying with New York City Building Code and requirements of the Department of Buildings.

1.4 DELIVERY, STORAGE, AND HANDLING

- A. Deliver materials to site in manufacturer's original, unopened packaging, with labels clearly identifying product name and manufacturer.
- B. Store products in manufacturer's unopened packaging until ready for installation.
- C. Protect materials during handling and installation to prevent damage

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. Wellcraft Egress Systems
- B. Bilco
- C. Marflex

- D. Boman Kemp
- E. Approved equal

2.2 DESIGN REQUIREMENTS

- A. Dimensions of window wells shall be in accordance with Chapter 10 of the New York City Building code. Ladders or steps shall be provided in accordance with Section _1025.5.2_____of the New York City Building Code.
- B. Ladder rungs shall be designed for a minimum load of 300 pounds (136 kg) applied on a maximum 4-inches (102 mm) wide section located at the center of the ladder rung and the edge of the ladder rung. The ladder rungs need not be designed for both loads occurring simultaneously.
- C. Window wells shall be provided with an opening cover. The cover shall be designed in accordance with the applicable code to support a minimum live load of 40 pounds per square foot (195 kg/m²). The cover shall be operable from within the window well without the use of tools or special knowledge, and shall require no more than 30 pounds (13.6 kg) of force to fully open.
- D. All components and materials from which the window well is constructed shall be corrosion-resistant.

PART 3 - PRODUCTS

3.1 PREPARATION

- A. Clean surfaces thoroughly prior to installation.
- B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
- C. Dig out and remove existing window well if present.

3.2 INSTALLATION – GENERAL

- A. Install in accordance with manufacturer's instructions.
- B. Window Wells should be mounted flush against the foundation wall. Apply a thick bead of quality polyurethane silicone around the face flange of the well and set against the wall.
- C. Determine height needed.
- D. Center the window well and level to desired depth.
- E. Install by working from top of each flange to bottom of flange.

3.3 BACKFILLING

- A. Follow manufacturer's specific requirements for each well.
- B. Use pea gravel or 3/4 inch (19 mm) or smaller free-draining rock to create a backfill barrier around the outer perimeter of the window well and approximately 1 foot (305 mm) down from the top of the window well.

- C. The top 6 inches (152 mm) of the window well perimeter can be backfilled with topsoil to final grade. Slope final grade away from well in all directions.
- D. Drainage is required. Connect to existing drainage or if there is no existing drainage system exits make provisions to direct drainage away from the well to well drained soil.
- E. Gutter downspouts should be a minimum of 8 to 10 feet (2.4 m to 3 m) from the window well or at least 10 feet from the foundation wall and should be directed away from the window well with rigid or flexible pipe.

END OF SECTION 10747

**SECTION 10801
BATH ACCESSORIES**

PART 1 - GENERAL

1.1 SUMMARY

A. This Section includes the following:

1. Toilet and bath accessories;
2. Medicine Cabinet;
3. Tub Surround.

1.2 WARRANTY

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

PART 2 - PRODUCTS

2.1 MANUFACTURERS

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

2.2 MATERIALS

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

1. Accessories shall be chrome finish brass or zinc die cast metal with concealed mounting brackets.

B. Stainless Steel: ASTM A666, Type 304, No. 4 finish (satin), 0.0312-inch (0.8-mm) minimum nominal thickness, unless otherwise indicated.

C. Brass: ASTM B19, ASTM B16 (ASTM B16M), or ASTM B30 castings.

D. Steel Sheet: ASTM A366/A366M, 0.0359-inch (0.9-mm) minimum nominal thickness.

E. Galvanized Steel Sheet: ASTM A653/A653M, G60 (Z180).

F. Chromium Plating: ASTM B456, Service Condition Number SC2 (moderate service).

G. Baked-Enamel Finish: Factory-applied, gloss-white, baked-acrylic-enamel coating.

H. Mirror Glass: ASTM C1036, Type I, Class 1, Quality q2, nominal 6.0-mm thick, with silvering, electroplated copper coating, and protective organic coating complying with FS DD-M-411.

2.3 TOILET AND BATH ACCESSORIES

A. Towel Bar: Install 1 at Lavatory and 1 at tub/shower

1. Basis-of-Design Product: Nutone;
 2. Model: HM 896;
 3. Mounting: Recessed;
 4. Towel Type and Capacity: 24-inch;
 5. Material: Chrome plated.
- B. Toilet Tissue Dispenser: 1 at toilet
1. Basis-of-Design Product: Nutone;
 2. Model: HM 770;
 3. Type: Single-roll dispenser;
 4. Mounting: Surface mounted with concealed anchorage;
 5. Material: Chrome plated.
- C. Shower Curtain Rod: 1 at shower/tub
1. Basis-of-Design: Nutone;
 2. Model: HM 610;
 3. Stainless-steel shower curtain rod with 3-inch (75-mm) stainless-steel flanges designed for exposed fasteners, in length required for shower opening indicated;
 4. Type: Normal-duty, 1-inch (25.4-mm) OD;
 5. Size: 5-foot – 0-inch.
- D. Medicine Cabinet: 1 at lavatory
1. Basis-of-Design Product: Broan Metro Collection Bath cabinets;
 2. Type: Surface Mount with surface mount kit;
 3. Size: 15-inch x 35-inch;
 4. Construction: **Corrosion-resistant steel** cabinet;
 5. Door: Framed mirror door concealing storage cabinet equipped and with continuous hinge and spring-buffered, rod-type stop and magnetic door catch;
 6. Shelves: Five.
- E. ADA Compliant Grab-Bar: 1 at lavatory
1. Basis-of-Design Product: Bobick or Equal
 2. 36-inch Minimum length;

3. 1-1/2-inch to 1-1/4-inch diameter;
4. Stainless Steel;
5. Install 33-inch to 36-inch above finished floor.

F. ADA Compliant Grab-Bar: 1 at shower/tub

1. Basis-of-Design Product: Bobick or Equal
2. 42-inch Minimum length;
3. 1-1/2-inch to 1-1/4-inch diameter;
4. Stainless Steel;
5. Install 33-inch to 36-inch above finished floor.

G. Tub Surround

1. Basis of Design: American Standard Acrlux
2. Model: 6032Y1.BWT
3. Type: Acrylic Tile Bath Wall Set
4. Size: 60-inch
5. Meets or exceeds Standards:
 - a. ANSI Z124.1 for Plastic Bathtubs
 - b. ASTM E162 for Flammability
 - c. NFPA 258 for Smoke Density

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install accessories using fasteners appropriate to substrate indicated and recommended by unit manufacturer. Install units level, plumb, and firmly anchored in locations and at heights indicated.
 1. Install grab bars to withstand a downward load of at least 250 lbf (1112 N), when tested according to method in ASTM F446.
- B. Adjust accessories for unencumbered, smooth operation and verify that mechanisms function properly. Replace damaged or defective items. Remove temporary labels and protective coatings.

END OF SECTION 10801

DIVISION 14 – CONVEYING EQUIPMENT

SECTION 14410 LIFTS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions apply to this Section.
- B. This section includes:
 - 1. Lift
 - 2. Concrete Pad
- C. Related Sections:
 - 1. Section 16100 “Electrical”.
 - 2. Section 03205 “Concrete”.
 - 3. Section 06200 “Finish Carpentry” for exterior woodwork for handicap-accessible ramp with handrail.

1.2 SUMMARY

- A. Homes that shall be elevated may require one ramp or lift entrance in place of stairs. Ramps shall be Uniform Federal Accessibility Standards (“UFAS”) compliant with a slope of 1 to 12. Ramps shall also incorporate a set of stairs in the ramp design at the Dwelling entrance. Where a lift is required, they shall be residential vertical platform lift, including electrical installation in accordance with local code, maintenance-free operation and 24V DC battery backup with reference to the UFAS Section 4.11. The lift installation shall also incorporate a set of stairs in the lift design.
- B. When a Dwelling is elevated as part of rehabilitation, a ramp shall be installed in place of stairs for one Dwelling entrance at the Homeowner’s choice if the Homeowner or an Occupant is elderly or disabled as noted in the Job Order. If the Dwelling is located within a historical district governed by the Design Standards for Historic properties then the location of the ramp or lift must comply with those guidelines.
- C. A lift may be installed in place of a ramp under several circumstances. If the ramp is eligible and of such a height that a lift is more cost effective, the lift must be installed and would be eligible. If the ramp cannot be constructed to meet UFAS due to site and Dwelling location geometry, a lift may be constructed and would be eligible even if more costly. If the Homeowner chooses to construct a lift instead of the ramp and the lift is more costly than the ramp the Homeowner must pay for the incremental lift installation costs. In the majority of cases and due to the 1:12 slope requirements, lifts shall be necessary for homes elevated 3-foot or above.
- D. Repair, renovations, alterations, reconstructions of existing wood framing shall comply with the New York City Building Code.

1.3 QUALITY ASSURANCE

- A. Installer Qualifications: An employer of workers trained and approved by manufacturer for installation and maintenance of units required for this Project.

1.4 WARRANTY

- A. Warranties: Manufacturer's standard form in which manufacturer agrees to repair or replace residential appliances or components that fail in materials or workmanship within specified warranty period.

- 1. Warranty Period: One year from date of Final Acceptance.

PART 2 - PRODUCTS

2.1 PRODUCT DELIVERY, STORAGE AND HANDLING

- A. All materials used in framing and constructing ramps and landing associated with the installation of a Lift shall be pressure treated wood.

2.2 MATERIAL STANDARDS FOR RAMPS AND FRAMING AROUND LIFT

- A. Rough Lumber Exterior

- 1. All lumber to be grade marked and surfaced 4 sides. Minimum grading of lumber shall be as set forth in this section. All rough and framing lumber in contact with concrete will be termite resistant pressure treated lumber. All wood structural members shall be of sufficient size to carry the dead and require live loads without exceeding the allowable working stresses. A minimum size for support members shall be nominal dimension 4 x4. Anchorage of wood framing shall be in accordance with Wind Storm Specifications and Law.

- B. The width of ramp and associated landings shall conform to the dimensional requirements of UFAS and shall be a minimum width of 36-inches. Hand rails shall be located 34 to 38-inches above ramp or landing surface and shall be 1-½" from face of wall if that condition occurs.

- C. Lumber Grading Rules and Wood Species to be in conformance with Voluntary Product Standard PS 20-70. Grading rules of the following associations apply to materials furnished under this section:

- 1. Northeastern Lumber Manufacturer's Association, Inc. (NELMA).
- 2. Southern Pine Inspection Bureau (SPIB).
- 3. Northern Hardwood and Pine Manufacturer's Association (NHPMA).

- D. General Standards

- 1. Identify all lumber and plywood by official grade mark.
 - a. Specified lumber dimensions are nominal.
 - b. Actual dimensions conform to industry standards established by the American Lumber Standards Committee and the rules writing agencies.
- 2. Surfacing:
 - a. Surface four sides (54S), unless specified otherwise.

3. Moisture Content
 - a. 15% maximum for lumber items not specified to receive wood preservative treatment.
- E. Framing Lumber
 1. Furring and grounds: Minimum Grade, No. 3 common.
 2. Light framing lumber (less than 6-inch wide) minimum grade #2 (SPIB).
 3. Structural framing (6-inch and wider): Any species and grade meeting the following value: $F_b = 1150 \text{ psi}$, $E + 1,400,000 \text{ psi}$.
- F. Plywood
 1. Plywood Grading Rules
 - a. Softwood Plywood: Construction and Industrial: Product Standard PS 1-66.
 - b. Hardwood Plywood: Product Standard PS 51-71.
- G. Concealed Plywood
 1. Where plywood will be concealed by other work, provide C-D Plugged/ INT-APA.
- H. Treated Wood
 1. Preservative
 - a. Pressure method in accordance with interim FS TT - W - 571 H Table III C.C.A. 0.25 pounds retention per cu. ft. "Wood Preservative Treating Practice" and published standards of AWP. Treatment shall be dry salt method.
 - b. Kiln-dry to 15% moisture content after treatment of the following:
 - 1) Wood sills, sleepers, blocking, furring, stripping and similar concealed members in contact with masonry or concrete.
 - 2) Pressure-treat the following with water-borne preservatives for ground contact use complying with AWPB LP-22.
 - 3) Wood members in contact with ground.
- I. Fasteners: Rough Hardware Bolts:
 1. FS FF-B-575C.
 2. FS FF-B-584 D.
 3. Nuts: FS FF-N-836C.
 4. Expansion shields: FS FF-B-561C.
 5. Lag screws and bolts: FS FF-B-561C.

6. Toggle bolts: FS FF-B-588C.
7. Wood screws: FS FF-S-IIIIC.
8. Nails and staples: FS FF-N-105B.

J. Standards for Lift

1. Where applicable when space is limited for Ramp configuration and travel/lift distance is in excess of 3'-0" provide weather resistant electrical lift with adjacent access.
 - a. Basis of design is the Trus T Lift by Ram manufacturing. The following are the product specifications:
 - 1) Adjacent Access.
 - 2) Deck Dimension: 54" x 40" x 54"
 - 3) Travel distance: 28" to 144"
 - 4) Tower Height: 48" to 166"
 - 5) Lift Capacity: 550 Lbs.
 - 6) Lift Speed: 8 feet per Minutes
 - 7) Finish: Baked Powder Coat
 - 8) UL & CSA Certified
 - 9) 20 Amp Dedicated Circuit
 - 10) Emergency Manual Operation
 - 11) Emergency Battery Backup
2. Manufacturers: Subject to compliance with requirements. Provide products by one of the following:
 - a. T-Ram;
 - b. AmeriGlide;
 - c. McKinley Elevator;
 - d. Or equal.
3. Lift shall comply with Law, including UFAS (Uniform Federal Accessibility Standards).
4. Reframing of exiting deck or porch may be required. In some cases a platform must be created to create a barrier free ADA compliant access to the Dwelling.

5. Provide minimum 72" x 72" x 4" broom finished concrete pad with 3000 PSI Compressive strength at 28 days with steel reinforcing installed per the Concrete Reinforcing Steel Institute's recommended best practices for placing & supporting reinforcement.

END OF SECTION 14400

DIVISION 15 – MECHANICAL

SECTION 15100 HEATING VENTILATION AND AIR CONDITIONING

PART 1 - GENERAL

1.1 SUMMARY

- A. Provide all labor, materials, equipment, services and perform all operations required for complete installation of all packaged units and related work as specified herein including:
 - 1. Ductwork.
 - 2. Air distribution devices.
 - 3. Heating and air conditioning control wiring.
 - 4. Fuel burning furnaces.
 - 5. Electric heat pumps.
- B. All non-compliant heating systems should be replaced with the Minimum Property Standards as referenced in the bid documents.
- C. Referenced in other Divisions
 - 1. Bath and kitchen vent fans.
 - 2. Attic vent fans.
 - 3. Kitchen exhaust fan.
- D. Electrical work associated with the mechanical system including, but not limited to, equipment, devices shall be included within the scope of the Mechanical work.
- E. HVAC System Scope
 - 1. Construction and installation of HVAC equipment, accessories and appurtenances shall comply with the published accepted standards of the relevant professional associations.
 - 2. Air-conditioning and air-handling units shall sit on cantilevered platforms on homes being elevated.
 - 3. Equipment shall be replaceable without requiring dismantling of adjacent piping, equipment or any fixed construction.
 - 4. Controls shall be by electronic thermostat.
 - 5. Gas System shall have an energy rating of 92 AFUE or better.
 - 6. All duct work shall be constructed of rigid fiberglass with aluminum vapor barrier. Joints will be stapled and taped with aluminum foil tape manufactured for this purpose. The use of “Flex-duct” will be permitted with, but the length shall not exceed 15-foot. Ducts will be provided with dampers, turning vanes, and extractors as recommended by ASHRAE.

7. Air handlers shall be installed with condensate drain which shall drain into the domestic waste system. All return air shall be through filtered grill with replaceable type filters.
8. HVAC system is to be a minimum of 14 SEER.
9. When replacing, size heating and cooling equipment in accordance with the Air Conditioning Contractors of America (ACCA) Manuals, Parts J and S, or 2012 ASHRAE Handbook--HVAC Systems and Equipment or most recent edition.
10. Install an in-unit ventilation system capable of providing adequate fresh air per ASHRAE 62.2 requirements.
11. In buildings with ducted forced-air heating and cooling systems, seal all penetrations of the air distribution system to reduce leakage in order to meet or exceed ENERGY STAR for Homes' duct leakage standard.

F. Related Electrical Scope

1. Electrical work associated with the mechanical system including, but not limited to, equipment, devices shall be included within the scope of the Mechanical work.
2. All electric motors for plumbing and HVAC equipment shall be provided by Mechanical trades.
3. All other electrical devices such as thermostats, etc., for the control or operation of HVAC and plumbing equipment shall be provided and wired by mechanical trades. These items shall comply with Section 16100, Electrical.
4. Power supply wiring for all equipment shall be provided by electrical trades.
5. Mechanical trades shall coordinate with the Electrical trades for wiring of power requirements of approved equipment submittals. Also coordinate specified control functions.
6. Each bidder shall thoroughly inspect the site and existing conditions affecting the work.
7. For equipment consisting of an assembly of multiple components such multiple components do not have to be the products of a single manufacturer.

1.2 QUALITY ASSURANCE

A. Testing

1. The Contractor shall, at his expense, conduct capacity and general operating test on each system when requested by the Engineer or Inspector. The test shall demonstrate the specified capacities of the various pieces of equipment, and shall be conducted in the presence of the Homeowner or his/her authorized representative. The general operating tests shall demonstrate that the entire equipment is functioning in accordance with the contract documents.

B. Codes

1. All work must conform to the following codes and regulations adopted by its participating local governments:
 - a. New York City Building Code ("NYCBC")

- b. New York City Mechanical Code (“NYCMC”)
- c. New York City Energy Conservation Code (“NYCECC”)

C. Performance

- 1. All performance data specified herein shall be considered actual performance of equipment as installed. If installation details are such that actual operating conditions unfavorably affect performance as compared to conditions under which the equipment was rated, suitable allowance shall be made by the Contractor.
- 2. Labeling and listing of equipment by Underwriter’s Laboratories, Inc., is accepted as conforming to design standards.
- 3. Required ductwork shall be corrosion-resistant materials, be air tight to prevent leaking along runs, and shall comply with other such requirements as the Engineer or the local building inspector may deem necessary.

1.3 SUBMITTALS

- A. Submit shop drawings for approval in all cases of system addition, modification and new installation.
- B. Shop drawings: Five sets of drawings and original catalog data sheets of all apparatus giving full information as to dimensions, materials, fitness and other pertinent facts shall be submitted.
- C. The approval of the drawings by the City shall not be construed as a complete check but will indicate only that the general method of construction and detailing is deemed satisfactory by the City.
- D. The Contractor shall maintain one copy of each approved shop drawing in a separate file, and present the entire set arranged in a brochure to the Homeowner at Final Inspection.
- E. Manufacturer's wiring diagrams shall be furnished for all heat pump units.

1.4 PERFORMANCE

- A. All performance data specified herein shall be considered actual performance of equipment as installed. If installation details are such that actual operating conditions unfavorably affect performance as compared to conditions under which the equipment was rated, suitable allowance shall be made by the Contractor.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

- A. In other Part 2 articles where titles below introduce lists, the following requirements apply to product selection:
 - 1. Available Products: Subject to compliance with requirements, products that may be incorporated into the Work include, but are not limited to, products specified.
 - 2. Products: Subject to compliance with requirements, provide one of the products specified.
 - 3. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated into the Work include, but are not limited to, manufacturers specified.

4. Manufacturers: Subject to compliance with requirements, provide products by one of the manufacturers specified.

2.2 EQUIPMENT

A. Forced Air and Gravity Air Furnaces

1. Approved manufacturers:

- a. Carrier.
- b. Fedders.
- c. Lennox.
- d. Mueller.
- e. National Heater.
- f. Trane.
- g. Approved Equal

B. Duct Work

1. All duct work is to be shop fabricated
2. Provide and install all units and accessories in accordance with the provisions of the following:
 - a. SMACNA Installation Standard and Guides
 - b. ASHRAE Guide and Data Books
 - c. UL 181, UL 181A and UL 181B Insulated Air Ducts.

C. Devices

1. Approved manufacturers or approved equal
 - a. U.S. Register
 - b. Anemostat
 - c. Connors
 - d. Tuille and Bailey

D. Controls

1. Approved manufacturers or equal
 - a. Honeywell
 - b. Johnson

- c. Barber-Colman
- E. Air Conditioning Equipment
 - 1. Approved manufacturers or equal
 - a. Carrier
 - b. Fedders
 - c. Lennox
 - d. Trane.
- F. Heat Pumps
 - 1. UNITARY HEAT PUMPS shall comply with the requirement of ARI-240 and UL-559. Units shall be tested, rated, labeled and listed accordingly.
 - 2. Outdoor sections of all heat pump units shall be sound rated in accordance with ARI-270, and installed to produce a sound pressure level not exceeding 60 db (a) maximum.
- G. Air Distribution Devices
 - 1. Devices must comply with provisions of Air Diffusion Council 106R2.
- H. Control Wiring
 - 1. All control wiring shall be as per the NEC. The NEC requirements are hereby upgraded to the extent that all control wiring, except that concealed in walls or partitions, shall be run in EMT indoors, and rigid steel conduit outdoors.
- I. Split System Heat Pump
 - 1. Indoor Fan Coil Section: Furnish and install direct expansion fan coil equipped with electric heater. Unit shall operate in the vertical upflow position and is to be installed with duct-work. Unit enclosure shall be insulated and constructed of galvanized steel, bonderized and finished with baked enamel. Reversible filter rack shall have duct connection flanges and be equipped with permanent or throw away type filter. Fan shall be forward curved with double inlet mounted on motor shaft, dynamically and statically balanced. The multi-speed fan motor shall be factory lubricated, have internal overload protection, and be resiliently mounted. Cooling coil shall be constructed with aluminum fins bonded to copper or aluminum tubing, coil shall have factory installed; refrigerant metering device, refrigerant line fittings, (2) condensate pans. Electric heater shall be factory installed and wired for single stage operation. All heaters shall be equipped with both thermal and current overload protection, and the required heating and cooling system controls, including a control circuit transformer.
 - 2. Outdoor unit - Furnish and install an air to air electric heat pump designed and tested for Refrigerant 22. Brass service valves with refrigerant line fittings and service parts shall be provided. Outdoor coil shall be constructed with aluminum fins mechanically bonded to copper or aluminum tubes. Coil shall be protected by grille. Fan shall be direct drive propeller type. Compressor shall be of the welded hermetic type with internal vibration isolation. Compressor motor shall have both thermal and current sensitive overload device and be equipped with crank-case heater and high pressure protection. Controls and protective devices shall include a liquid

line low pressure switch, suction line accumulator and pressure relief device. Provide an automatic defrost system. Accessories shall include indoor thermostat, pre-charged tubing, outdoor thermostat, emergency heat relay, filter drier, time guard and start thermostate.

J. Temperature Control System:

1. Furnish and install a system of electric temperature control as hereinafter specified and as recommended by heat pump unit manufacturer.
2. Warm Air Heating System: A wall mounted heating cooling thermostat with manual changeover, fan on-auto switch, and emergency heat switch shall control the heat pump compressor, outdoor fan, and indoor fan to maintain its setting. When additional heat is required, the thermostat shall energize the supplementary electric heating coil unless overridden by the setting of the outdoor air thermostat (located in the heat pump outdoor unit). The emergency switch shall override the outdoor thermostat and permit use of the supplementary heating coil for heating if the compressor is inoperative.
3. Cool Air Cooling System: The wall mounted thermostat shall control the heat pump compressor, outdoor fan and indoor fan to maintain its setting.

K. Duct Construction

1. In accordance with "Low Velocity, Duct Construction Standards" as published by Sheet Metal, Air Conditioning Contractors National Association, Inc. (SMACNA), all references to tables, plates in this paragraph: refer to referenced manual. Duct: Constructed of galvanized sheet steel or sheet aluminum. Duct dimension, metal gauges, seam construction, reinforcing angles: In accordance with SMACNA's latest edition.
2. Fittings, Hangers
 - a. Constructed in accordance with SMACNA tables 1-1 thru 5-2.

L. Flexible Duct Connectors

1. Provide flexible duct connectors at duct connections with fan units. Connectors: neoprene coated glass fabric, 30 oz. per square yds or approved equal. Shall be in accordance with SMACNA Low Velocity Table 2-1. Each flex connector shall be designed to allow one inch of free movement, completely air tight, and shall have sewed and cemented seams.

M. Volume Dampers

1. Shall be installed where indicated on the drawings and at locations where branches take off by splitter connections in the mains. Damper control hardware shall be of the locking quadrant type.

N. Turning Vanes

1. Turning vanes of the double thickness type shall be provided in all square elbows and shall be of galvanized steel. Vanes shall be as shown in SMACNA Fig. 2-4.

O. Sheet Metal Gauges

1. Sheet metal gauges for low velocity rectangular ductwork shall be governed by the major duct dimension and shall be as follows:

- a. Up to 12-inches: No. 26 gauge; 13-inches to 30-inches: No. 24 gauge and shall be as per the New York City Building Code.

P. Low Velocity Ductwork

1. Low velocity ductwork shall have joints fabricated by approved methods of crimping which will provide a neat appearance and which will be substantial and air tight. Transverse joint connections shall be governed by the major duct dimensions and shall be as follows:
 - a. Up to 24-inches: S or Drive slips; 25 to 40 inches: 1-inch pocket or 1-inch bar slips

Q. Rectangular Ducts

1. All rectangular ducts shall be securely hung or attached to the building construction with hanger design and spacing governed by major dimension as follows:
 - a. Up to 12-inches: Band hangers around bottom and sides and attached to two points above top of duct.
 - b. 8-foot O.C. 13-inches to 30-inches: Band hangers on bottom and sides and attached to two points above edges of duct 6 ft O C.

R. Registers and Grills

1. Return and exhaust registers, unless otherwise specified shall be steel, fixed bar type, with opposed blade key operated dampers. Registers in walls shall have horizontal bars set at angle like Tuttle & Bailey Type T-117D. Registers in ceilings shall have straight bars and shall be equivalent to Tuttle & Bailey Type T117. Finish shall be baked on white enamel. Grilles shall be the same as specified for registers except volume dampers are omitted.

S. Furnaces

1. All fuel fired equipment shall provide full cut off electric ignition.
2.
 - a. Gas fired furnaces: American Gas Association (AGA) approved.
 - b.
 - c. Oil fired furnaces: Underwriter's Laboratories (UL) approved.

T. Roof Self Mounted Air Conditioning Unit

1. Unit shall be designed for outdoors complete with full roof curb and be a factory tested, assembled piped and fully charged unit.
2. Unit to be equipped with 100% outside air economizer cycle relief and return dampers for "free cooling".
3. Unit to be wired in accordance with the National Electrical Code. Unit to be rated in accordance with ARI Standard 210.
4. Installation, maintenance and operating instructions with electrical diagrams to be shipped with unit.
5. Exterior casing could be heavy zinc coated steel with an epoxy primer and finished paint. Doors to be hinged and have fasteners and air tight gaskets.

6. Interior surfaces on the casings shall be insulated for thermal insulation.
7. All joints of metal panels shall be sealed internally to provide an air tight, water tight enclosure.
8. Compressor shall be industrial type with forced feed lubrication and electric unloading controls, plus safety controls which shall include hi and low pressure cut off, oil pressure cut off, non-recycling pump down and reset relays among others.
9. Fan shaft shall be mounted on at least two greased lubricated ball bearings designed for 200,000 hours average life. Grease lines to be extended outside of unit.
10. Entire fan assembly shall be completely isolated from the unit on rubber and cork isolators.
11. Unit shall be supplied with a remote control monitor panel to be mounted on an interior wall.

U. Insulation

1. Coverings and insulation of equipment, ductwork and piping, including vapor barriers, shall have a flame spread rating not over 25 without evidence of continued progressive combustion and with a smoke developed rating not higher than SO based on test procedure ASTM E-84. If the coverings and insulation, including vapor barriers, are to be applied with adhesives, the adhesives used shall have a flame spread rating not over 25 and a smoke developed rating not higher than 50.
2. Flexible foamed plastic insulation shall be O-C flexible tubing.
3. Rigid duct liner board insulation (sound-lining) shall be O-C Fiberglass A-6.
4. Flexible duct insulation shall be OC Faced Duct Warp FRK 25, Series ED-150.
5. Insulating cement shall be O-C 110.
6. Sound Lining
 - a. All sound lining materials shall conform to U.L. requirements for use in air duct systems, and shall be guaranteed by the manufacturer against erosion of fibers at the actual air velocities in the system.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Install diffusers, registers, and grilles level and plumb.
- B. Ceiling-Mounted Outlets and Inlets: Drawings indicate general arrangement of ducts, fittings, and accessories. Air outlet and inlet locations have been indicated to achieve design requirements for air volume, noise criteria, airflow pattern, throw, and pressure drop. Make final locations where indicated, as much as practicable. For units installed in lay-in ceiling panels, locate units in the center of panel. Where architectural features or other items conflict with installation, notify the Engineer for a determination of final location.
- C. Install diffusers, registers, and grilles with airtight connections to ducts and to allow service and maintenance of dampers, air extractors, and fire dampers.
- D. Gas Furnace Installation

1. All equipment and installations shall be in compliance with Law.
2. All equipment and installations shall be in accordance with the Manufacturer's recommendations.
3. Contractor shall furnish and install electric start gas fixed heating unit system(s) complete and operable in every detail, as shown on drawings supplied by Contractor and hereinafter specified.
4. Unit shall be complete with all necessary connections for operation including: fans, blowers, controls and thermostatic controls.
5. Unit is to contain electric spark ignition.
6. Clearances shall be in accordance with the listing and the Manufacturer's installation requirements.
7. All duct work in finished areas that is not to be enclosed shall be painted with metal primer finish paint.
8. All ducts in unheated spaces to be insulated with min. R-8 duct insulation and taped in place.
9. Contractor shall guarantee a trouble free system and shall repair or replace all defective parts and/or workmanship at his expense for a period of one year from date of Final Acceptance in addition to the previous warranty requirements listed.
10. He shall further guarantee that the heating system will maintain heat within the house at 70 degrees F. when the outside temperature is 36 degrees F. and the wind has a velocity of 15 mph.

E. Electric Furnace Installation

1. Contractor shall furnish and install system(s) complete and operable in every detail, as shown on drawings supplied by Contractor and hereinafter specified.
2. Electric furnace complete with all electrical connections: fans, blowers, controls, thermostatic controls and all other necessary connections and controls for a completely operable unit.
3. All equipment and installations shall be in compliance with the New York City Building Code.
4. Contractor shall guarantee a trouble free system and shall repair or replace all defective parts and/or workmanship at his expense for a period of one year from date of Final Acceptance. He shall further guarantee that the heating system will maintain heat within the house at 70 degrees F. when the outside temperature is 36 degrees F. and the wind has a velocity of 15 mph.
5. All duct work in finished area that is not to be enclosed shall be painted with metal primer finish paint.
6. All ducts in unheated spaces to be insulated with min. R-8 duct insulation and taped in place.

F. Electrical Central Air Conditioner

1. Contractor shall furnish and install air conditioning system(s) complete and operable in every detail, as shown on drawings supplied by Contractor and hereinafter specified. With all electrical connections, thermostatic controls that can be set for fan only, condensing unit, "A" type evaporator coils, housings, lines, ducts, registers and all other necessary connections, controls and

equipment for a completely operable unit, including concrete exterior pad (location selected by Homeowner).

2. If not existing, return ducting with registers shall be installed at each floor of house. All supply registers shall be replaced and adjustable for most effective air distribution for heating and air conditioning. All duct work in finished area that is not to be enclosed shall be painted with metal primer finish paint. All ducts in unheated spaces shall be insulated with a minimum of 2-inch fiberglass duct insulation and taped in place.
3. All equipment and installations shall be in compliance with Law.
4. Contractor shall guarantee a trouble free system and shall repair or replace all defective parts and/or workmanship at his expense for a period of one year from date of Final Acceptance. It shall further guarantee that the cooling system will maintain a temperature of 78 degrees F when the outside temperature is 89 degrees F.
5. Interior units shall be provided with a full coverage auxiliary drain pan with a cut off switch to prevent water damage when the unit pan fills. The outlet of the pan shall be piped to the perimeter of the house to permit visible detection of a failed system.

G. Heat Pump

1. Contractor shall furnish and install Carrier or approved equal heat pump complete with all electrical connections, fans, blowers, controls, thermostat, compressor unit and pad, ducts and registers and all other necessary components and connections for a completely operable heating and cooling unit.

H. Fan Forced Ceiling Heaters

1. Contractor shall furnish and install a Miami-Carey #586 Fan-Forced Ceiling Heaters and switch or approved equal. Installation is to be in accordance with Law and manufacturer's recommendations. Contractor is to guarantee work and equipment for one year from date of Final Acceptance.

I. Installation of Wall A.C. Unit

1. A.C. unit to be installed in hole in wall. Unit to be supported with metal angle brackets where necessary; all exterior metal to be galvanized or aluminum.
2. Cut hole minimum size to allow proper fit of unit cover. Any masonry or wood structural elements cut shall be headed off with proper size steel angles or wood headers. Exterior hole to be clean cut, flashed on top with Fiberglass insulation to allow removal for service.
3. Trim and caulk where necessary on interior and exterior wall, all trim to be finished to match existing.
4. All glass panels removed for the installation of units shall be infilled with 1/8-inch clear plastic window glazing.
5. Electric outlet to have individual circuit for each A.C. unit; use no extension cord to plug in unit.

J. Installation of Controls

1. Thermostats shall be mounted 54-inch above finished floor. All controls shall be installed by this Contractor.

K. Installation of Sound Lining

1. Linings shall be secured to ducts with mechanical clips on 15-inch centers each way and with adhesive over the entire back surface. Caulk all joints with a fire retardant mastic and tape all joints with fire retardant duct tape. Duct construction at leading edge of sound lining must provide a shoulder to receive edge of lining so that interior of lined and unlined sections shall be identical. The installation of all duct sound linings shall comply with the SMANA Sound Liner Application Manual.

3.2 REPAIR AND MAINTENANCE

A. Gas Equipment Maintenance

1. When existing gas fired equipment is to remain, clean burners, combustion chambers, vent stacks, chimney if needed, adjust flame and pilot, correctly set fan limit control switches. Clean and oil blowers and install new filter. Test heating system under stress conditions long enough to establish proper operation, including automatic parts and controls. Proper sized, usable slide baffles shall be provided if missing.

B. Gas Furnace

1. Contractor shall furnish and install electric start gas fixed heating unit system(s) complete and operable in every detail, as shown on drawings supplied by Contractor and hereinafter specified. Unit shall be complete with all necessary connections for operation including: fans, blowers, controls and thermostatic controls. Contractor shall guarantee a trouble free system and shall repair or replace all defective parts and/or workmanship at his expense for a period of one year from date of Final Acceptance. He shall further guarantee that the heating system will maintain heat within the house at 70 degrees F when the outside temperature is 36 degrees F and the wind has a velocity of 15 mph. Unit is to contain electric spark ignition.
2. All duct work in finished areas that is not to be enclosed shall be painted with metal primer finish paint.
3. All ducts in unheated spaces to be insulated with min. R-8 duct insulation and taped in place.
4. Old heating unit is to be removed and disposed.

C. Heat Unit

1. Housing repair: Install new housing panels to replace damaged panels.
2. Heat exchanger:
 - a. Install replacement heat exchanger in accordance with manufacturer's instructions.
 - b. Reassemble furnace unit.
3. Forced Air furnace fan motor:
 - a. Rebuild fan motor.
 - b. Reinstall motor in furnace assembly.
 - c. Reinstall fan drive assembly.

D. Central Heat Furnace

1. Clean existing system
2. Check all functional parts for proper working order
3. All defective parts shall be replaced
4. Repair any defective venting and ducts.
5. Use: Parts from a local supplier
6. All work shall be performed in accordance with the New York City Electrical Code and the New York City Plumbing Code.

E. Heat Registers

1. Replace missing or damage grills and or registers for hot air system.

3.3 ADJUSTING

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

3.4 CLOSEOUT

- A. After installation, adjust diffusers, registers, and grilles to air patterns indicated, or as directed, before starting air balancing.

B. Operator Instructions

1. At the completion of the project, and after all systems have been tested and accepted by PROGRAM, the Contractor shall provide a trained representative to instruct Homeowner in the operation of all systems. During this period, instruct the Homeowner or his/her representative fully in the operation, adjustment and maintenance.

C. Operating Manuals

1. The Contractor shall provide two copies of the Maintenance Manuals, as specified below, to the Homeowner at the Final Inspection.
2. Make-up of manuals: The manuals shall be bound in a three-ring loose leaf binder No sheets larger than 8" x 11" shall be used except sheets that may be neatly folded to 8" x 11" and used as a pull out.
3. Contents of manuals: The manuals shall contain a complete description of each new mechanical and electrical system in the building as hereinafter outlined. Complete maintenance instructions on each piece of equipment in the building as hereinafter described, the name, address and telephone number of each Subcontractor that installed the system, and the name, address and telephone number of the local representative of each piece of equipment installed in the building.

END OF SECTION 15100

SECTION 15410 PLUMBING

PART 1 - GENERAL

1.1 SCOPE

- A. Furnish materials accessories, fittings, fixtures, and equipment; perform work required to place the plumbing system in a complete, proper and legal operating condition.
- B. This Section includes plumbing fixtures and related components.
- C. This section includes gas and electric hot water heaters.
- D. All appliances in rehabilitation and reconstruction projects must be energy star rated, where possible.
- E. Provide connections for applicable appliances referenced in Section 16600.
- F. Related sections:
 - 1. Section 16600 Residential Appliances
 - 2. Section 10801 Bath Accessories including Tub Surrounds and Vanity Combos.
- G. The **Base** standard for plumbing faucets & shower tub trim is based on Delta with chrome finish.
- H. Repair, renovations, alterations, reconstructions of existing plumbing and hot water heating shall comply with the New York City Building Code.
- I. Make any necessary arrangements with the utility service companies for services or for work required on their equipment or systems.
- J. Install or retrofit water conserving fixtures in any unit and common facility, use the following specifications: Toilets-- 1.28 gpf; Urinals-- 0.5 gpf; Showerheads-- 2.0 gpm; Kitchen faucets-- 2.0 gpm; and Bathroom faucets-- 1.5gpm. [gpf = gallons per flush; gpm = gallons per minute]
- K. When replacing domestic water heating system(s), ensure the system(s) meet or exceed the efficiency requirements of ENERGY STAR for Homes' Reference Design. Insulate pipes by at least R-4.
- L. Provide adequate drainage for water heaters that includes drains or catch pans with drains piped to the exterior of the dwelling.
- M. When installing new space and water-heating equipment, specify power-vented or direct vent combustion equipment.

1.2 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.
- B. All plumbing work shall conform, as a minimum, to the New York City Plumbing Code and all piping, supply, draining and venting, shall be sized in accordance with the New York City Building Code. All supply piping shall be seamless copper tubing, sanitary from the New York City Building Code. All supply piping shall be seamless copper tubing. Sanitary drains and venting may be schedule 40 PVC as permitted by the New York City Plumbing Code. All supply piping running in exterior walls or attic

shall be insulated with formed insulation jacket. Exterior hose bibs shall be freeze proof. All fixtures and plumbing appliances shall be provided with stops on the supply at each fixture. Contractor is responsible for extending service from meter to building. Contractor shall be responsible for obtaining *all* required permits and inspections.

- C. Select combinations of fixtures and trim, faucets, fittings, and other components that are compatible.
- D. Comply with the following applicable standards and other requirements specified for plumbing fixtures:
 - 1. Enameled, Cast-Iron Fixtures: ASME A112.19.1M.
 - 2. Hand Sinks: NSF 2 construction.
 - 3. Plastic Bathtubs: ANSI Z124.1.
 - 4. Plastic Lavatories: ANSI Z124.3.
 - 5. Plastic Sinks: ANSI Z124.6.
 - 6. Porcelain-Enameled, Formed-Steel Fixtures: ASME A112.19.4M.
 - 7. Slip-Resistant Bathing Surfaces: ASTM F462.
 - 8. Vitreous-China Fixtures: ASME A112.19.2M.
- E. Comply with the following applicable standards and other requirements specified for lavatory and sink faucets:
 - 1. Backflow Protection Devices for Faucets with Side Spray: ASME A112.18.3M.
 - 2. Backflow Protection Devices for Faucets with Hose-Thread Outlet: ASME A112.18.3M.
 - 3. Diverter Valves for Faucets with Hose Spray: ASSE 1025.
 - 4. Faucet Hose: ASTM D3901.
 - 5. Faucets: ASME A112.18.1M.
 - 6. Hose-Connection Vacuum Breakers: ASSE 1011.
 - 7. Hose-Coupling Threads: ASME B1.20.7.
 - 8. Integral, Atmospheric Vacuum Breakers: ASSE 1001.
 - 9. NSF Materials: NSF 61.
 - 10. Pipe Threads: ASME B1.20.1.
 - 11. Supply and Drain Fittings: ASME A112.18.1M.
- F. Comply with the following applicable standards and other requirements specified for bathtub and shower faucets:
 - 1. Backflow Protection Devices for Hand-Held Showers: ASME A112.18.3M.

2. Combination, Pressure-Equalizing and Thermostatic-Control Antiscald Faucets: ASSE 1016.
3. Faucets: ASME A112.18.1M.
4. Hand-Held Showers: ASSE 1014.
5. Hose-Coupling Threads: ASME B1.20.7.
6. Pipe Threads: ASME B1.20.1.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. In other Part 2 articles where subparagraph titles below introduce lists, the following requirements apply for product selection.

1. Bathtubs
2. Bathtub trim
3. Kitchen sink, stainless steel: American Standard only
4. Kitchen sink drain.
5. Kitchen sink supply/trim.
6. Lavatory
7. Lavatory trim
8. Shower head, trim.
9. Toilet.
10. Toilet trim.
11. Hose bibb
12. Faucet
13. Bath/Shower Fittings

B. Approved manufacturers: American Standard, Crane, Eljer, Kohler and Delta or approved equal.

2.2 FAUCETS

A. Lavatory Faucet:

1. Base Standard: Delta, Foundation Core single handle center set faucet with pop-up drain, model: B510LF, 4-inch center. Flow \leq 1.5 gpm. WaterSense & ADA Compliant.

B. Bathtub Faucet: Tub and Shower Trim

1. Base Standard: Delta Foundation Core Monitor 13 Series Tub & Shower Trim, with rough valve, Model: BT13410 or equal. Flow \leq 2.0 gpm. ADA Compliant.

C. Sink Faucet

1. Base Standard: Delta Faucet, Foundation Core Single Handle Kitchen Faucet with Integral Sprayer, model: B3310LF (3 hole *” installation) or equal. Flow \leq 2.0 gpm. WaterSense & ADA Compliant.

2.3 FIXTURES

A. Toilet Seat: Solid plastic. Include in Water Closet

1. Configuration: Closed front with cover
2. Size: Verify and coordinate with toilet
3. Class: Residential
4. Color: White

B. Water Closets: Water closet shall be "Kohler WaterSense Highline two-piece comfort height dual flush toilet in white, Model# K-3989-0" with seat included or Kohler WaterSense "Wellworth two-piece 1.28 GPF or American Standard WaterSense H2Option Siphonic Right Height Elongated Toilet Model # 3705.216.020 or approved equal.

C. Countertop Lavatory: Countertop Lavatory, shall be "American Standard" or equal Aqualyn sink, Model: 0476.028, vitreous china lavatory with 4-inch center

D. Kohler Wellworth Pedestal Sink with 4" centers K-2293-4-0 or approved equal.

E. Lavatory Cabinet Combo: Vanity combo by American Classics, Model: PPAGJVO24, Size: 24-inch x 18-inch, with culture marble top with integral bowl, and 4-inch centerset faucet or approved equal.

F. One Piece Tub and Shower Unit: Fiberglass, 5-foot length, "American Standard" Acrylux, Model 6030Y1K.102 (right outlet) or 6030Y1K.202 (left outlet) unit where feasible or approved equal.

G. Bathtubs: "American Standard" Princeton, Model: 2390.202 (left hand) or 2391.202 (right hand), 5-foot formed tub complete with lever operated pop-up drain and overflow or approved equal.

H. Tub surrounds to be white cultured marble, single piece per side.

I. Kitchen sink shall be approximately 22-inch x 33-inch x 8-inch double compartment or 22-inch x 25-inch x 8-inch single compartment, 20-gauge, self-rimming, nickel stainless steel, with back ledge. Underside of bowl coated with sound deadening material. Standard shall be Kohler Toccata 25" single bowl, 33" double bowl or approved equal.

2.4 PIPING

A. All underground water piping shall be schedule 40 PVC.

- B. All other domestic hot and cold water piping above ground shall be schedule 40 CPVC piping, flex or copper.
- C. All underground soil, waste, and vent piping shall be schedule 40 PVC or A.B.S.
- D. All above grade waste and vent piping shall be CPVC schedule 40 or PVC schedule 40-type pipe and fittings.
- E. All gas piping shall be galvanized black steel pipe with malleable fittings. Copper tubing shall not be used for gas lines.

2.5 EQUIPMENT

A. Water Heater

- 1. Gas: GE Model: SG40T12AVG, 40 Gal.; Warranty: Minimum 7 years; Provide material for a complete installation. Heater shall be 240 V, have cut-off valve on cold water supply, and a thermal and pressure safety relief valve. Installation shall comply with the New York City Building Code.
- 2. Electric: GE Model SE40M12TAH, 40 Gal.; Warranty: Minimum 7 years; Provide materials for a complete installation. Heater shall have cut-off valve on cold water supply, and a thermal and pressure safety relief valve. Installation shall comply with the New York City Building Code.

B. Boilers

- 1. Acceptable manufacturers:
 - a. Weil-McLain
 - b. Lennox
 - c. Crown
 - d. Rinnai
 - e. Or Equal provider.
- 2. Gas: Weil-McLain, Model GV90+, Or Equal, Gas-fired water boiler, Provide material for a complete installation. Installation shall comply with the New York City Building Code.

C. Flood Control System

- 1. Must have a minimum of 10 years installation experience.
- 2. Acceptable manufacturers:
 - a. Eveready
 - b. Xpert Flood control
 - c. Or Equal provider and installer.
- 3. System shall consist of:
 - a. Back water valve to stop the sewer water backflow made of corrosive free material and parts.
 - b. Ejector pump/ Sump pump, water resistant, ½ hp or greater motor with automatic heat dissipation. Discharge shall be a 2"-3" NPT fitting for tie in.
 - c. Flood prevention using a French drain diversion system.
 - d. Housing or Basin for the valves and ejector pump. Basin cover shall be recessed with a plated cover so the cover can be mowed over.
 - e. Interior and exterior drain tiles for seepage and flood protection.
 - f. Control panel shall be wired with a battery back up for operation of the pump.
- 4. Test and Inspect
 - a. Plumbing sub-contractor will be responsible for testing and inspecting the flood control system.

- b. All parts including the motors, switches, valves, and piping shall be in good working order as specified by the manufacturer.

PART 3 - EXECUTION

3.1 CUTTING AND PATCHING

- A. Perform cutting and patching of materials which are essential to installation or to work. Do not cut structural framing members, wiring, or mechanical work. Notching, cutting and drilling to comply with the New York City Building Code.
- B. Provide sleeving for rough-in work.
- C. Restore cut or damaged surfaces to original finish to match surrounding work.
- D. Install chrome-plated escutcheons where piping passes through finished surfaces which are exposed to view.
- E. Piping shall be installed without critical damage to the structural members. No notching, cutting, or drilling over 2-inch shall be done without permission.

3.2 PIPING INSTALLATION

- A. Piping - Supply & Distribution
 - 1. All water supply pipes and control valves shall be of sufficient size and capacity to supply water to all fixtures. All water supply pipes, riser pipes, and distributing pipes shall be graduated as to size and shall be interconnected in such manner that a full volume of water may be discharged into forty percent of the plumbing fixtures, of any building, when operated at any given time, without causing loss of more than ten pounds pressure at the plumbing fixtures, which are located on upper floor of such building for a length of time not less than sixty minutes.
 - 2. Shutoff valves shall be provided to and at each lavatory, water closet, and kitchen sink.
 - 3. Drainage
 - a. All connections to risers and fixtures shall be provided so that the entire system can be drained at low point.

3.3 FIXTURE INSTALLATION

- A. Assemble fixtures, trim, fittings, and other components according to manufacturers' written instructions.
 - 1. Kitchen Sink and Faucet
 - 2. Lavatory and Faucet
 - 3. Bathtub and Shower with Faucet and trim kit
 - 4. Toilet and Seat
- B. Install floor-mounting fixtures on closet flanges or other attachments to piping or building substrate.
- C. Install counter-mounting fixtures in and attached to casework.

- D. Install fixtures level and plumb according to manufacturers' written instructions and roughing-in drawings.
- E. Install water-supply piping with stop on each supply to each fixture to be connected to water distribution piping. Attach supplies to supports or substrate within pipe spaces behind fixtures. Install stops in locations where they can be easily reached for operation.
 - 1. Exception: Use ball, gate, or globe valve if stops are not specified with fixture.
- F. Install trap and tubular waste piping on drain outlet of each fixture to be directly connected to sanitary drainage system.
- G. Install tubular waste piping on drain outlet of each fixture to be indirectly connected to drainage system.
- H. Install tanks for accessible, tank-type water closets with lever handle mounted on wide side of compartment.
- I. Install toilet seats on water closets.
- J. Install faucet-spout fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- K. Install water-supply, flow-control fittings with specified flow rates in fixture supplies at stop valves.
- L. Install faucet, flow-control fittings with specified flow rates and patterns in faucet spouts if faucets are not available with required rates and patterns. Include adapters if required.
- M. Install shower, flow-control fittings with specified maximum flow rates in shower arms.
- N. Install traps on fixture outlets.
 - 1. Exception: Omit trap on fixtures with integral traps.
- O. Install escutcheons at piping wall ceiling penetrations in exposed, finished locations and within cabinets and millwork. Use deep-pattern escutcheons if required to conceal protruding fittings.
- P. Set bathtubs in leveling bed of cement grout.
- Q. Seal joints between fixtures and walls, floors, and counters using sanitary-type, one-part, mildew-resistant, silicone sealant. Match sealant color to fixture color.

3.4 CONNECTIONS

- A. Connect water supplies from water distribution piping to fixtures.
- B. Connect drain piping from fixtures to drainage piping.
- C. Supply and Waste Connections to Plumbing Fixtures: Connect fixtures with water supplies, stops, risers, traps, and waste piping. Use size fittings required to match fixtures. Connect to plumbing piping.

- D. Supply and Waste Connections to Fixtures and Equipment Specified in Other Sections: Connect fixtures and equipment with water supplies, stops, risers, traps, and waste piping specified. Use size fittings required to match fixtures and equipment. Connect to plumbing piping.

3.5 REPAIRS

A. Sewer Line in Yard

- 1. Repair:
 - a. Expose sewer line leak as indicated above.
 - b. Make repairs as necessary.
 - c. Install new cleanout if one does not exist or repair existing to work.
 - d. Use: John Manville PVC, or equal.
 - e. All work, materials and dimensions shall be as per New York City Plumbing Code.
- 2. Install
 - a. Remove defective line as specified above.
 - b. Replace with all new materials
 - c. Use: John Manville PVC, or equal.
 - d. All work, materials and dimensions shall be as per New York City Plumbing Code.

B. Sewer Line under Structure

- 1. Repair:
 - a. Remove defective area through to fixture connection(s)
 - b. Replace with all new materials complete to fixture hook-up.
 - c. Use: John Manville PVC, or equal.
 - d. All work, materials and dimensions shall be as per New York City Plumbing Code.

C. Sewer Line Snake

- 1. Snake out waste lines as indicated in work write-up to ensure clear lines to street sewer.

D. Water Closet

- 1. Install:
 - a. Remove existing and replace with new unit complete with cutoff.
 - b. All work, materials and dimensions shall be as per New York City Plumbing Code.

E. Gas Lines

1. Install:
 - a. Remove specified line and replace with new line
 - b. Test lines for pressure.
 - c. All work, materials and dimensions shall be as per New York City Plumbing Code. Inspection required on all gas line repair or replacement.
2. Repair
 - a. Check all gas piping, replace improper connections, and cap unused lines, and install vent flue cover.

F. Trap and Drains

1. Repair
 - a. Replace any defective parts at the locations.
 - b. Seal openings around pipe at floors.
 - c. All work, materials and dimensions shall be as per New York City Plumbing Code.
2. Install;
 - a. Remove specified unit(s) and replace with new unit.
 - b. All work, materials and dimensions shall be as per New York City Plumbing Code

G. Handicap Bath Accessories

1. Install;
 - a. All bars shall be anchored securely to studs in appropriate locations.
 - b. Dimension and sizes to conform to ADDAG.

H. Toilet

1. Install: Remove existing and replace with new unit complete with cutoff.

I. Bath Tub

1. Install
 - a. Remove the existing tub.
 - b. Box- in exposed plumbing.
 - c. Repair exposed wall and floor surfaces.
 - d. Install new fiberglass tub with tub kit.

- e. Trim and install new hardware (head, mixer valve, faucet, waste, overflow, trap, and pipe).
- f. Grout edges.
- g. All work, materials and dimensions shall be as per New York City Plumbing Code.

J. Sink

1. Install

- a. Remove existing sink and replace with new stainless steel double unit complete with vented drain trap, washer less faucets and cutoffs.
- b. All work, materials and dimensions shall be as per New York City Plumbing Code.

K. Hose Bibs

1. Install: Provide two hose bib, one front and one at rear, frost-proof type with inside cut offs whenever possible and called for. To include back flow preventer on each bib.

L. Water lines

1. Repair

- a. Repair Find leak in line and replace sections as needed
- b. Use: John Manville PVC, or equal
- c. All work, materials and dimensions shall be as per New York City Plumbing Code.

2. Install

- a. Finds leaks under and inside structure and seal.
- b. Replace defective cutoffs and valves.
- c. Install new cutoffs at any location missing cutoff.
- d. Use: Seamless copper tubing.
- e. All work, materials and dimensions shall be as per New York City Plumbing Code.

3.6 INSTALLATION OF WATER SERVICE

- A. Contractor is to install a new water service. Tap is to be made at closest point to residence or at location indicated in work write-up or drawings. PVC of diameter sufficient for the number of fixtures present in the residence is to be installed at a depth determined by the local government.
- B. Contractor is to furnish all permits and pay all fees. All disturbed areas are to be restored to original condition. Installation is to be in accordance with Law.
- C. Water Lines-Under Structure/Install

1. Remove the line(s) specified above (See, Water Lines-Under Structure/Repair)

2. Install new replacement lines complete to include all hardware and cutoffs.
3. Use: Use seamless copper tubing.
4. All work, materials and dimensions shall be as per New York City Plumbing Code.
5. All debris to be removed from job site and all disturbed earth shall be finished graded to provide smooth transition with adjacent areas. Lawn grass seen to be worked into soil by raking or watering.
6. All equipment and plumbing in unheated areas shall be fairly insulated and protected against freezing.

3.7 HEATING SYSTEMS INSTALLATION

A. Hot Water Distribution System

1. The hot water heating system shall be installed to permit drainage by gravity.
2. Supply and return piping in unheated attic spaces, ventilated crawl spaces, and other exposed locations shall be insulated to prevent excessive heat loss. Insulation may be omitted in crawl spaces where closeable vents are used.
3. Radiators, convectors, baseboard radiation, and other terminal heating devices located in bedrooms shall be provided with an accessible shut off valve or damper.
4. Accessible means shall be provided for balancing the distribution of heat to all heated spaces.

3.8 PROTECTION

- A. Provide protective covering for installed fixtures and fittings.
- B. Do not allow use of fixtures for temporary facilities unless approved in Engineer.

END OF SECTION 15410

DIVISION 16 – ELECTRICAL

SECTION 16100 ELECTRICAL

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish materials, accessories, fittings, fixtures, and equipment; perform work required to place the electrical systems in a complete, proper and legal operating condition including:
 - 1. Power Transmission.
 - 2. Electrical Service.
 - 3. Miscellaneous Devices and Switches.
 - 4. Miscellaneous Electrical Fixtures.
 - 5. Heater/Vents.
 - 6. Electronic Safety and Security.
- B. Related Divisions
 - 1. Section 16600 Residential Appliances
 - 2. Section 16511 Lighting
 - 3. Section 09260 Gypsum Board
 - 4. Section 09210 Gypsum Plaster
- C. Electrical work and appliances, fixtures, panels and devices installed in this work shall be in strict conformance with the New York City Electrical Code. All fixtures, devices, panels, and appliances shall bear the Underwriters Label. All conductors shall be copper. The electrical contractor shall coordinate with the Utility Company to provide temporary poles for construction and for the timely hook-up of power to the building and arrange for the same. All breakers in the electrical panel shall be labeled (typewritten). Electrical services shall consist of a minimum 150 amp single phase 110/220 volts, 3 wire overhead service to a weather head and meter can. Service entry will be connected to a minimum 12 circuit 1 phase with a 150 amp MLO and 150 amp feed from line.
- D. Coordination with Utilities: Make any necessary arrangement with the utility service company for service or work required on its equipment or system.
- E. Abandoned Wiring
 - 1. Disconnect and remove existing electrical equipment and exposed wiring not in use.
 - 2. Dispose of equipment and wiring off-site.
- F. Temporary Electric Service

1. The electrical contractor shall make provisions for a temporary service connection for light and power as may be required by the various trades.

G. Cutting and Patching

1. Do not cut structural framing members, piping, or duct work.
2. Restore cut or damaged surfaces to original finish to match surrounding surfaces.

1.2 REPAIR OF ELECTRICAL SERVICE

- A. Remove all illegal, knob and tube, and cloth wiring, and replace as required by the New York City Electrical Code.
- B. At room locations where water inundation was 3-foot , 0-inches or more, all electrical distribution equipment, motor circuits, power equipment, transformers, wire, cable, flexible cords, wiring devices, ground fault circuit interrupters, surge protectors, molded case circuit breakers, low-voltage fuses, luminaries, ballasts, motors and electric control, signaling and communication equipment that have been exposed to salt water shall be replaced in accordance with the provisions of the New York City Building Code.
- C. At room locations where water inundation was less than 3-foot, 0-inches only those electrical components including but not limited to the wiring and wiring devices exposed to water shall be replaced in accordance with the provisions of the New York City Building Code.
- D. Replace any and all knob and tube, and fabric-covered wire. Any aluminum wiring that has been flooded by salt water should be replaced.
- E. At room locations where water inundation was 3-foot , 0-inches or more, all electrical distribution equipment, motor circuits, power equipment, transformers, wire, cable, flexible cords, wiring devices, ground fault circuit interrupters, surge protectors, molded case circuit breakers, low-voltage fuses, luminaries, ballasts, motors and electric control, signaling and communication equipment that have been exposed to water shall be replaced in accordance with the provisions of the New York City Building Code.
- F. At room locations where water inundation was less than 3-foot, 0-inches only those electrical components including but not limited to the wiring and wiring devices exposed to water shall be replaced in accordance with the provisions of the New York City Building Code.
- G. Replace any and all knob and tube, and fabric-covered wire. Any aluminum wiring that has been flooded by salt water should be replaced.
- H. Replace all receptacles and switches. Replace all cracked or damaged outlet cover plates and switch cover plates. Replace any dried and cracked wiring. Install circuit protection device(s) of proper size. GFCI receptacles shall be installed in all wet areas (i.e. kitchen, baths, wash rooms, garages, outside outlets).
- I. Check and seal service mast through a roof or exterior wall. Inspect mast and weather-head and replace where damage has occurred or to meet the requirements of State and amended local government Ordinances.
- J. Replace all push button switches with toggle type.
- K. Floor receptacle boxes listed specifically for this application shall be used for receptacles located in the floor. Install screw in brass outlet covers on all floor receptacle boxes.

- L. Rewire of electrical service.
 - 1. Furnish and install all wiring, cable, phone, devices, panel box, and mast and weather head as required by the New York City Electrical Code. This is to include materials, accessories, housings, and equipment to perform work required to replace the complete electrical system. Electrical service shall be a minimum of 150 amp service. Homes with all electric appliances (i.e furnace, heat pump, stove or cook top) shall be a minimum 200 amp service installed by a licensed electrician.
 - 2. Remove all deficient wiring and panel box and replace as required by the New York City Electrical Code.

1.3 QUALITY ASSURANCE

- A. The Contractor shall obtain all inspections required by the New York City Building Code and the New York City Electrical Code. He shall obtain certificates of such inspections and shall submit same to the Project Manager, pursuant to Article 41 of the Contract, before final payment is made and shall pay all fees, charges, and other expenses in connection therewith.

1.4 WARRANTY

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

PART 2 - PRODUCTS

2.1 PANELS

- A. Panel boxes shall be UL equivalent listed and installed pursuant the New York City Electrical Code.
- B. Furnish and install where indicated a deadfront panelboard incorporating switching and protective devices of the number, rating, and type noted herein or shown on the drawings. Panelboards shall have NEMA 1 general purpose enclosures and shall be surface or recess mounted as noted. All panelboards shall be rated for the intended voltage and shall be in accordance with the Underwriter's Laboratories, Inc., "Standard for Panelboards," and "Standard for Cabinets and Boxes," shall be so labeled where procedures exist. Panelboards shall also comply with NEMA Standard for Panelboards, New York City Electrical Code (Power Distribution Panels) where applicable.

2.2 ELECTRONIC SAFETY AND SECURITY

- A. Basis-of-Design Product: Subject to compliance with requirements, provide comparable product:
- B. Carbon Monoxide Detector: Basis of Design:
 - 1. Kidde 21006407, Hardwire Digital Carbon Monoxide Alarm with DC back-up.
- C. Combination Carbon Monoxide and Smoke Detector: Basis of Design:
 - 1. Kidde KN COSM-B, Hardwire Smoke and Carbon Monoxide Alarm with DC backup.
- D. Smoke Detector: Basis of Design:
 - 1. Kidde 12040 Wire in Smoke Alarm with Battery Back-up and Smart Hush

2.3 WIRE MATERIAL

- A. Wire and Cable shall be in accordance with the latest edition of NEC or the New York City Building Code. 600 volt conductors.
- B. All conductors shall be delivered to the site in their original packages, plainly marked as follows: Underwriter's Label: Size, type, and insulation of the wire every four feet of length: Name of the manufacturing company and the trade name of the wire.
- C. All branch circuit wiring may be 2/C and 3/C Romex with common ground.
- D. Conductors smaller than #8 shall be copper; #6 and larger shall be aluminum stranded; #8 may be either solid or stranded.
- E. Wire sizes shall be American Wire Gauge (AWG). Minimum copper wire sizes shall be #14 unless noted or specified otherwise.

2.4 DEVICES

- A. Outlets and Junction Boxes
 - 1. Switch and receptacle outlet boxes and junction boxes shall be galvanized, or sherardized, or plastic, one piece pressed steel, Knock--out-type, UL or equivalent lab approved. The size of each box shall be determined by the number or wires or conduits, or size of conduits entering the box in accordance with NEC.
- B. One Piece Device Plates shall be provided for all outlets.
 - 1. Plates on unfinished walls or on fittings shall be of zinc-coated sheet metal having rounded or beveled edges.
 - 2. Plates on finished walls shall be provided with beveled edges, and baked ivory enamel finish. Screws shall be of metal with oval heads, colored to match finish of plate.
 - 3. Section type device plates will not be permitted.
 - 4. Plates within reach of bathtub shall be non-conducting type including screws.
 - 5. Plates for weatherproof duplex receptacles shall be cast aluminum.
- C. Switches
 - 1. Toggle switches white handle, totally enclosed switches, rated 125V, 15 amps.
- D. Receptacles
 - 1. 15 ampere, 125 volt, duplex, NEMA, 2-pole, 3-wire, grounding type. White, Tamper Resistant.
 - 2. 20 ampere, 125 volt, duplex, NEMA, 2-pole, 3-wire, grounding type. White, Tamper Resistant.
 - 3. Telephone Company Receptacles 15 amperes, 125 volt, duplex, 2-pole, 3-wire, grounding type, locking device.
 - 4. Washer Receptacle 20 ampere, 125 volt, single, 2-pole, 3-wire, grounding type, White, Tamper resistant.

5. Dryer receptacle - 40 ampere, 125/250 volt, 3-pole, 3-wire, single. White, Tamper resistant.

2.5 EXHAUST FAN

- A. Bathroom Ceiling Exhaust Fan: Nutone #QTXEN080 or approved equal.
- B. Bathroom Ceiling Heater Fan Exhaust: Broan Model #149 or approved equal.

PART 3 - EXECUTION

3.1 INSTALLATION OF PANEL

A. 150 Amp Panel

1. Install a new 150 Amp 110/220 Volt single phase electrical service complete with circuit breaker panel box and circuit breakers. Replace service entry cable caulk entry to Dwelling. Replace all cracked or dried circuit wires. Panel box to have main 150 Amp breaker.

3.2 INSTALLATION OF WIRE AND CONDUCTORS

A. Conductors

1. Comply with the manufacturer's printed instruction except where more stringent requirements are shown or specified and except where manufacturer's technical representative directs otherwise.
 - a. Before installation, units shall be coordinated with all associated trades.
2. Installation of Conductors:
 - a. Conductors shall be continuous between outlets or junction boxes and no splices shall be made except in outlet boxes, panelboard gutters, or handholes.
 - b. Aluminum conductors are not allowed.
 - c. Oil or grease shall not be used when pulling conductors. Appropriate cable lubricants only.
 - d. Arrange conductors neatly in panels, cabinets, and equipment.
 - e. Tighten pressure type lugs on panels and equipment, and then retighten 24 hours or more later.
 - f. Homeruns longer than 75-feet from the panel shall be not less than No. 10 AWG, copper.

B. Wire Mold

1. Exposed raceway devices or equal will be permitted when concealed wiring is not practical as specified by Agency. Raceways shall be of sufficient size to contain wiring required for circuiting. All devices shall be securely attached in a neat level manner. All boxes shall be at least 3-inch off floor. No floor boxes will be permitted. Do not conceal wire-mold.

3.3 INSTALLATION OUTLETS

A. Duplex Convenience Outlets

1. Install new Duplex convenience outlets as indicated. Conceal all wiring in walls, ceiling, or floor.

B. Additional Outlets as Required by the New York City Electrical Code

1. Install 15 amp or 20 amp copper circuit in room with duplex ivory outlets to bring room to electrical code, 18-inch off floor. All work to be fished in existing walls, plaster patch by this Contractor.

C. Ground Fault Outlets

1. All new bathroom, kitchen, and exterior outlets are to have a ground fault interrupter on separate 15-amp circuit to code.

D. Weatherproof Outlets

1. Weatherproof Outlets shall consist of a duplex 15 ampere, 125 volt, 2-pole, 3-wire grounded fault interrupt type receptacle in a cast metal box with a gasketed, weatherproof, nonferrous metal cover plate with cap. The third pole shall be grounded to raceway system or separate ground conductor. Cap shall be permanently attached to cover plate by a short length of bead chain or shall be provided with spring-hinge.

3.4 INSTALLATION OF DEDICATED CIRCUITS

A. Refrigerator Outlet

1. Provide 20 amp refrigerator outlet with cover and box to be connected to individual circuit.

B. Range Outlet

1. Convenience outlet for Gas Range.
2. Provide 40 Amp/240 Volt Circuit with outlet.

C. Washer Outlet

1. Provide 20 Amp clothes washer outlet with cover and box, to be connected to individual circuit.

D. Dryer Outlet

1. Provide 40 Amp/220 Volt Dryer Circuit with outlet, cover, and box.

E. Room AC Outlet/Circuit

1. Wiring for window or wall mounted air conditioners. Interior wiring for 110 volt A.C. units is to be 12/2 Romex with bond using a 20 Amp single pole breaker. Interior wiring for 220 volt A.C. unit is to be 10/3 Romex with bond using a 30 Amp double pole breaker. Use only one A.C. unit for each circuit. Circuit to include box, outlet and cover plate to be brown or ivory per Homeowner request.

F. Water Heater Circuit

1. Provide labor and material for 30 Amp/230 Volt Circuit connection to the electric hot water heater.

3.5 INSTALLATION OF SAFETY AND SECURITY DEVICES

A. Wire in Smoke Alarm

1. Provide and install smoke detector; 120 Volt permanently connected to electric supply contractor to provide electric junction box where detector is to be installed.

B. Carbon Monoxide Detector: Basis of Design

1. Provide and install carbon monoxide detector; 120 Volt permanently connected to electric supply contractor to provide electric junction box where detector is to be installed. Battery back-up is required.

C. Combination Carbon Monoxide and Smoke Detector: Basis of Design:

1. Provide and install combination carbon monoxide and smoke detector; 120 Volt permanently connected to electric supply contractor to provide electric junction box where detector is to be installed. Battery back-up is required.

3.6 INSTALLATION OF ATTIC FANS

A. Gable End Attic Fan

1. Contractor shall furnish and install all necessary equipment for the installation of a gable mounted attic ventilator. The ventilator fan shall contain an adjustable thermostat and self-lubricating bearings. The size fan should be calculated as follows:
 - a. For roofs with pitch of 8/12 or less required CFM can be calculated by multiplying square feet of attic floor area by 0.7.
 - b. For dark colored roofs, add 15% to calculated CFM.
2. All ventilation fans shall be contained on a separate 15 amp circuit with an on/off override switch conveniently located in living space.

B. Roof Mounted Attic Fan

1. Contractor shall furnish and install all necessary equipment for the installation of a roof mounted power attic ventilator, the fan shall be located on the rear center area of the roof and shall be self-lubricating with an adjustable thermostat. The size fan should be calculated as follows:
 - a. For roofs with pitch of 8/12 or less required CFM can be calculated by multiplying square feet of attic floor area by 0.7.
 - b. For dark colored roofs, add 16% to calculated CFM.
2. All ventilation fans shall be contained on a separate 15 Amp circuit with a non/off override switch conveniently located in living space.

3.7 INSTALLATION OF BATHROOM EXHAUST FANS

- A. Install Nutone ceiling exhaust fan with ventilator assembly kit ducted through roof or through wall or approved equal. Include new switch to code. Patch disturbed areas to match existing.

- B. Bathroom Ceiling Heater Fan Exhaust: Install 1430 watt combination heater/fan in bathroom ceiling with switch on bathroom wall; Broan Model #149. Vent exhaust fan to outside. Patch disturbed areas to match existing.

3.8 REPAIR OF ELECTRICAL SERVICE

- A. Remove all illegal wiring and replace as required by code.
- B. Make operable or replace all faulty, cracked, or damaged convenience outlets switches, and cover plates. Replace any dried and cracked wiring. Install circuit protection device of proper size.
- C. Check and seal service riser through roof or exterior wall. Inspect weather cap and replace if cracked.
- D. Replace all push button switches with toggle type. Install screw in brass covers on all floor convenience outlet boxes.

3.9 REPAIR OF LOW VOLTAGE WIRING

- A. Install or Replace Door Bell
 - 1. Install or replace all door bell buttons, chimes, low voltage wire and low voltage transformers as required to have working system.
- B. Install or Replace Thermostat and switching devices
 - 1. Install or replace any low voltage wiring, thermostats and switching devices required to have a working system.

3.10 EXAMINATION

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

3.11 INSTALLATION, GENERAL

- A. General: Comply with manufacturer's written instructions.
- B. Built-in Equipment: Securely anchor units to supporting cabinets or countertops with concealed fasteners. Verify that clearances are adequate for proper functioning and that rough openings are completely concealed.
- C. Utilities: Comply with plumbing and electrical requirements.

END OF SECTION 16100

SECTION 16511
LIGHTING

PART 1 - GENERAL

1.1 SUMMARY

- A. Furnish materials, accessories, fittings, fixtures, and equipment necessary to perform work required to install or replace electrical fixtures in a complete, proper and legal operating condition as designated in the work write-up including:
 - 1. Interior lighting fixtures, and lamping;
 - 2. Exterior lighting fixtures attached to home.
- B. The Contractor shall obtain all inspections required by the New York City Building Code and New York City Electrical Code. He shall obtain certificates of such inspections and shall submit same to Project Manager, pursuant to Article 41 of the Contract, before final payment is made and shall pay all fees, charges, and other expenses in connection therewith.
- C. All work shall be done in conformance with accepted standards and practices and shall be in conformance with the New York City Electrical Code.
- D. Interior Lighting - Follow the guidance appropriate for the project type: install the ENERGY STAR Advanced Lighting Package (ALP); **OR** follow the ENERGY STAR MFHR program guidelines, which require that 80% of installed lighting fixtures within units must be ENERGY STAR-qualified or have ENERGY STAR-qualified lamps installed; **OR** when replacing, new fixtures and ceiling fans must meet or exceed ENERGY STAR efficiency levels.
- E. Exterior Lighting - Follow the guidance appropriate for the project type: install ENERGY STAR-qualified fixtures or LEDs with a minimum efficacy of 45 lumens/watt; **OR** follow the ENERGY STAR MFHR program guidelines, which require that 80% of outdoor lighting fixtures must be ENERGY STAR-qualified or have ENERGY STAR-qualified lamps installed; **OR** when replacing, install ENERGY STAR compact fluorescents or LEDs with a minimum efficacy of 45 lumens/watt.
- F. Incandescent lamps shall be inside frosted except for decorative type lighting, where lamps shall match existing.
- G. Fluorescent lamps shall be cool white.
- H. Exterior exposed lamps shall be PAR type.
- I. Size of lamps: incandescent lamps shall not exceed fixture rating.

1.2 QUALITY ASSURANCE

- A. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
- B. Comply with NFPA 70.

16. Recessed Down lights Sea Gull Lighting 11082LE w/ trim Ring 1162A-14

2.2 LIGHTING FIXTURE SUPPORT COMPONENTS

- A. Wires: ASTM A641/A641M, Class 3, soft temper, zinc-coated steel, 12 gage (2.68-mm).
- B. Wires for Humid Spaces: ASTM A580/A580M, Composition 302 or 304, annealed stainless steel, 12 gage (2.68-mm).
- C. Rod Hangers: 3/16-inches (5-mm) minimum diameter, cadmium-plated, threaded steel rod.
- D. Hook Hangers: Integrated assembly matched to fixture and line voltage and equipped with threaded attachment, cord, and locking-type plug.

PART 3 - EXECUTION

3.1 INSTALLATION

- A. Lighting fixtures:
 - 1. Set level, plumb, and square with ceilings and walls unless otherwise indicated.
- B. NFPA 70 requires minimum support for fixtures.
- C. Suspended Lighting Fixture Support:
 - 1. Pendants and Rods: Where longer than 48-inches (1200-mm), brace to limit swinging.
 - 2. Stem-Mounted, Single-Unit Fixtures: Suspend with twin-stem hangers.
 - 3. Continuous Rows: Use tubing or stem for wiring at one point and tubing or rod for suspension for each unit length of fixture chassis, including one at each end.
 - 4. Do not use grid as support for pendant luminaires. Connect support wires or rods to Dwelling structure.
- D. Furnish and install lamps for all lights at completion of work. Size of lamps shall not exceed fixture rating.

3.2 IDENTIFICATION

- A. Install labels with panel and circuit numbers on concealed junction and outlet boxes. Comply with requirements for identification specified in Section 16100.

END OF SECTION 16511

SECTION 16600
RESIDENTIAL APPLIANCES

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Job Order 1 Specification Sections, apply to this Section.
- B. Install ENERGY STAR-labeled dishwashers, and refrigerators.

1.2 SUMMARY

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

1.3 QUALITY ASSURANCE

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

1.4 WARRANTY

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

PART 2 - PRODUCTS

2.1 RANGES

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product comparable to the following or approved equal:
- B. Electric Range Freestanding range with one oven and complying with AHAM ER-1. Basis-of-Design Product:
 - 1. GE JBS55DMWW (White, Black or Stainless as selected through program)
 - 2. ADA Compliant GE JBS15MWW (White or Black)
- C. Gas Range Freestanding range with one oven. Basis-of-Design Product:
 - 1. GE JGBS18DETTWW (White, Black or Silver)
 - 2. ADA Compliant – GE JGBS07DETTWW

2.2 KITCHEN EXHAUST VENTILATION

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product comparable product to the following:
- B. Overhead Exhaust Hood: Basis-of-Design Product:
 - 1. GE J.V.338H; Color to match range unit. White add suffix WW. Black add suffix BB.
 - a. Type: Wall-mounted exhaust-hood system.
 - b. Width: 30-inches (762-mm).
 - c. Exhaust Fan: Two-speed fan built into hood.
 - d. Venting: Vented to outside through roof with weatherproof roof cap, backdraft damper, and rodent-proof screening or Vented to outside through wall with weatherproof wall cap, backdraft damper, and rodent-proof screening.
 - e. Where venting is not possible provide a Non-vented, re-circulating type with charcoal filter.
 - f. Color: Color to match range unit.
- C. Microwave/Exhaust Over-The Range
 - 1. GE JVM1440DPCC Spacemaker 1.7 Cu. Ft Over-The Range Microwave.
 - a. Venting: Vented to outside through roof with weatherproof roof cap, backdraft damper, and rodent-proof screening or Vented to outside through wall with weatherproof wall cap, backdraft damper, and rodent-proof screening.
 - b. Color: Color to match range unit.

2.3 REFRIGERATOR/FREEZERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product approved by Program:
- B. Refrigerator/Freezer: Basis-of-Design Product:
 - 1. GE GTK18IBDBS (White, Black or Clean Steel)
 - a. Type: Freestanding, ADA Compliant, Two-door refrigerator/freezer; 14-18 c.f., with freezer on top.
 - b. Energy Performance, ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.
 - 2. GE GBSC0HBXWW (White, Black or Clean Steel)
 - a. Type: Freestanding, Two-door refrigerator/freezer; 20.3 c.f., with freezer on bottom.

2.4 DISHWASHERS

- A. Basis-of-Design Product: Subject to compliance with requirements, provide product indicated or comparable product approved by Program:
- B. Dishwasher: Complying with AHAM DW-1 and ASSE 1006. Basis-of-Design Product:
 - 1. Base: GE GDF510PGDWW (White, Black or Clean Steel) and dedicated circuit
 - a. Type: Built-in under counter
 - b. Energy Performance, ENERGY STAR: Provide appliances that qualify for the EPA/DOE ENERGY STAR product labeling program.
 - 2. ADA Compliant: BE GLDA690PWW Tall Tub Built-In Dishwasher

PART 3 - EXECUTION

3.1 EXAMINATION

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

3.2 INSTALLATION, GENERAL

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

E. Utilities: Comply with plumbing and electrical requirements.

END OF SECTION 16600

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