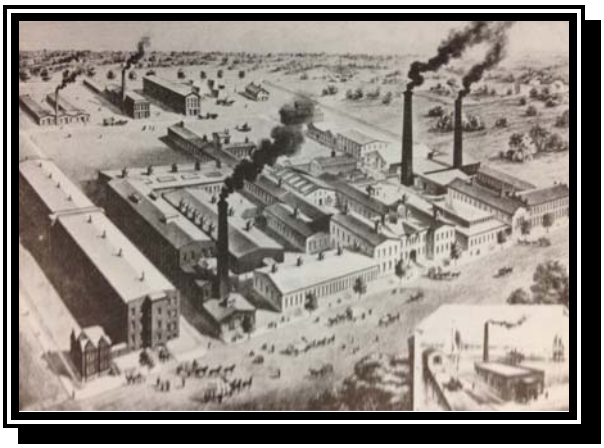
Project Manual



UNITY PARK LLC
UNITS 318 & 328

500 Wood Street
Bristol, Rhode Island 02809

Architect:
JOHN H. LUSK
J.H.L. TECTURE, AE, PC
190 HIGH STREET
BRISTOL RHODE, ISLAND 02809
(401) 396-9603

JHL Tecture Project # 7469
April 8, 2024

THE SIGNATURE ABOVE CERTIFIES THAT TO THE BEST OF KNOWLEDGE, INFORMATION AND BELIEF, THE PLANS AND SPECIFICATIONS ARE IN ACCORDANCE WITH APPLICABLE REQUIREMENTS OF THE BUILDING CODE OF STATE OF RHODE ISLAND, 2021 AND ALL STATE AND LOCAL GOVERNING BODIES HAVING JURISDICTION.

SECTION 00010 - INDEX TO SPECIFICATIONS

DIVISION 10 – SPECIALTIES
Not Used

DIVISION 11 – EQUIPMENT
Not Used

DIVISION 12 – FURNISHINGS
Not Used

DIVISION 14 – CONVEYING SYSTEMS
Not Used

END OF SECTION 00010

SECTION 00900 - INDEX TO DRAWINGS

GENERAL

ARCHITECTURAL

END OF SECTION 00900

SECTION 01045 - CUTTING AND PATCHING

PART 1– GENERAL

1.01 SECTION INCLUDES:

- Summary
- Submittals
- Quality Assurance
- Materials
- Payment for Credit
- Surface Conditions
- Performance Prior to Cutting
- Performance

1.02 SUMMARY

A. This Section establishes general requirements pertaining to cutting, fitting, and patching of the work required to:

1. Make the several parts fit properly;

2. Uncover work to provide for installing or inspecting of ill-timed work;

3. Remove and replace work not conforming to requirements of the Contract Documents; and

4. Remove and replace defective work.

B. Related work:

1. Documents affecting work of this Section include, but are not necessarily limited to, General Conditions, Supplementary Conditions, and Sections in Division 1 of these Specifications.

2. In addition to other requirements specified, upon the Architect's request uncover work to provide for inspection by the Architect of covered work, and remove samples of installed materials for testing.

3. Do not cut or alter work performed under separate contracts without the Architect's written permission.

1.03 SUBMITTALS

A. Request for Architect's consent:

1. Prior to cutting which effects structural safety, submit written request to the Architect for permission to proceed with cutting.

2. Should conditions of the work, or schedule, indicate a required change of materials or methods for cutting and patching, so notify the Architect and secure his written permission and the required Change Order prior to proceeding.

B. Notices to the Architect:

1. Prior to cutting and patching performed pursuant to the Architect's instructions, submit cost estimate to the Architect. Secure the Architect's approval of cost estimates and type of reimbursement before proceeding with cutting and patching.

2. Submit written notice to the Architect designating the time and date the work will be uncovered, to provide for the Architect's observation.

1.04 QUALITY ASSURANCE

A. Use adequate numbers of skilled workmen who are thoroughly trained and experienced in the necessary crafts and who are completely familiar with the specified requirements and the methods needed for proper performance of the work of this Section.

PART 2 – PRODUCTS

2.01 MATERIALS

A. For replacement of items removed, use materials complying with pertinent Sections of these Specifications.

2.02 PAYMENT FOR COSTS

A. The Owner will reimburse the Contractor for cutting and patching performed pursuant to a written Change Order after the Contractor has submitted a claim for such reimbursement. The Contractor will perform other cutting and patching needed to comply with the Contract Documents at no additional cost to the Owner.

PART 3 – EXECUTION

3.01 SURFACE CONDITIONS

A. Inspection:

1. Inspect existing conditions, including elements subject to movement or damage during cutting and patching.

2. After uncovering the work, inspect conditions affecting installation of new work.

B. Discrepancies:

1. If conditions uncovered differ from what was anticipated, immediately notify the Architect and secure needed directions.

2. Do not proceed until unsatisfactory conditions are corrected.

3.02 PERFORMANCE PRIOR TO CUTTING

A. Provide required protection including, but not necessarily limited to, shoring, bracing, and support to maintain structural integrity of the work.

3.03 PERFORMANCE

A. Perform cutting and demolition using methods that will prevent damage to other portions of the work and provide proper surfaces to receive installation of repair and new work.

B. Perform fitting and adjustment of products to provide finished installation complying with the specified tolerance and finishes.

END OF SECTION 01045

SECTION 01070 - SELECTIVE DEMOLITION

PART 1 – GENERAL

1.01 SECTION INCLUDES:

- Related Documents
- Description of Work
- Owners Salvage Rights
- Existing Conditions
- Protection and Shoring
- Demolition Procedures

1.01 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General Requirements, General Conditions, and Division 1 Specification Sections, apply to work

1.03 DESCRIPTION OF WORK

A. Refer to construction drawings for all items marked for selective removal and subsequent salvage for reuse and salvage for future customer use:

1.04 OWNER'S SALVAGE RIGHTS

A. The Owner reserves the right to salvage any materials or elements marked for demolition or removal. The Owner shall identify all items to be salvaged prior to demolition and shall arrange with the Contractor a schedule for removal. The Contractor shall remove any unwanted items, demolition, or construction debris related to the Work and dispose of off-site.

1.05 EXISTING CONDITIONS

A. The Contractor shall carefully review field conditions, drawings, and specifications to identify each item intended to:

1. Remain in place and be protected throughout construction and restoration;

2. Be removed, stored by the Contractor and reinstalled;

3. Be removed and given to the Customer for storage and possible future reuse; and

4. Be removed and legally disposed of by the Contractor.

The Contractor shall request clarification from the Owner prior to the start of any selective demolition where there are items, materials, or architectural elements in question.

1.06 PROTECTION AND SHORING

A. Provide, erect, and maintain temporary safety barriers and security devices.

B. Erect and maintain temporary partitions to minimize the spread of dust, fumes, noise, and smoke.

C. Protect all existing items not marked for removal.

D. The Contractor shall be solely responsible for the design and execution of all shoring and bracing required to protect and retain building elements, surfaces, or structural systems that are intended to remain. Sequence all selective demolition work to avoid any unstable structural conditions.

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 DEMOLITION PROCEDURES

A. Comply with all applicable regulations, laws, and ordinances concerning removal, handling, and protection against exposure or environmental pollution.

B. Disposal of all demolition materials off site is Contractor's responsibility. No burying of demolition materials on site will be permitted.

B. Before any demolition or dismantling is to begin, Contractor shall disconnect all active utilities within affected work area. Disconnection of services shall be performed by qualified trades.

C. Demolition or dismantling shall not be undertaken without weather protective systems in place.

D. All assemblies in the Contract shall be photographed before, during, and after dismantling and throughout any reconstruction thereafter. All photographs should include a reference scale and date.

E. Prevent accumulation of debris on site. Provide for a timely removal of debris scheduled for removal and off site disposal.

F. Contractor shall repair any damage to existing surfaces to Owner's satisfaction as directed by the Architect.

G. Before leaving the site each day, Contractor shall ensure that the job site is neat, orderly, and free from hazards.

END OF SECTION 01070

SECTION 01355 - RESTORATION PROJECT PROCEDURES

PART 1 – GENERAL

1.01 SECTION INCLUDES:

- Definitions
- Historic Significance
- Restoration Procedures
- Historic Artifacts
- Salvaged Materials
- Alterations
- Hazardous Material Procedures

1.02 DEFINITIONS

A. The Secretary of the Interior's Standards for the Treatment of Historic Properties, 1995, will be the guiding principle for the Work. The following are partial definitions of the four treatment options outlined in the Standards. A complete reprint of these Standard's is available on line at: **(http://www.nps.gov/history/local-law/arch_stnds_8_2.htm)**.

1. **Preservation:** *The act or process of applying measures necessary to sustain the existing form, integrity, and materials of an historic property.*
2. **Rehabilitation:** *The act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features which convey its historical, cultural, or architectural values.*
3. **Restoration:** *The act or process of accurately depicting the form, features, and character of a property as it appeared at a particular period of time by means of the removal of features from other periods in its history and reconstruction of missing features from the restoration period.*
4. **Reconstruction:** *The act or process of depicting, by means of new construction, the form, features, and detailing of a non-surviving site, landscape, building, structure, or object for the purpose of replicating its appearance at a specific period of time and in its historic location.*

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

C. **Materials-in-Kind:** Where this is specified, any features replaced must be of the same materials as the original features. It is not enough to simply replace, for instance, a section of wood railings with a new wood railing of a different species. If the original railing was

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milled from redwood, the replacement railing must also be of redwood, unless otherwise specified.

1.03 PRESERVATION BRIEFS

A. The National Parks Service, U.S. Department of Interior, provides technical preservation services in the form of "*Preservation Briefs"*. Preservation Briefs provide guidance on preserving, rehabilitating and restoring historic buildings. The briefs referenced below, but not limited to those listed below, shall be used as a guide for the preservation Work and can be accessed at the National Parks Service website at:
(https://www.nps.gov/orgs/1739/preservation-briefs.htm)

1. Preservation Brief # 02 - Repointing Mortar Joints in Historic Masonry Buildings
2. Preservation Brief # 03 - Improving Energy Efficiency in Historic Buildings.
3. Preservation Brief # 09 - The Repair of Historic Wooden Windows

1.04 QUALITY ASSURANCE

A. Historic Significance:

1. Due to the unique historical significance of National Rubber Company, now Unity Park, special procedures and precautions must be used in any selective demolition preservation and restoration.
2. The building will continue its current use as adaptive re-use property.
3. All previous alterations to the building will remain unless otherwise noted on the drawings.

B. Restoration Procedures

1. Preserve all existing and original materials, finishes, and profiles.
2. Blend new and existing or original work to provide smooth transitions and uniform appearance.
3. Cease work, notify Architect, and await instruction of materials or conditions encountered are not as indicated by the Contract Documents or if the structure is in danger of movement or collapse.

C. Historic Artifacts: If artifacts of a historic nature are encountered during the Work:

1. Cease work in the affected area immediately.
2. Protect artifacts from damage.
3. Notify Owner and Architect and await instructions.
4. Salvage or dispose of artifacts as directed by the Owner.

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PART 2 – PRODUCTS

2.01 MATERIALS

A. New Materials

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

B. Reused Materials

1. Clean and prepare salvaged materials for reuse.
2. Do not use materials with objectionable chips, cracks, splits, dents, scratches, or other defects.
3. Repair all operable items to ensure proper working function.

PART 3 – EXECUTION

3.01 PREPARTION

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

B. Cut, move, or remove items to provide access for alterations and restoration work. Replace and restore upon completion.

C. Protect existing and original materials and surfaces from damage by any construction, demolition, or renovation work.

3.02 ALTERATIONS

A. Coordinate alterations and renovations to expedite completion.

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

C. Remove unsuitable materials not marked for salvage

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

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

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

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

H. Rework finished surfaces to smooth plane, without breaks, steps, or bulkheads:

1. Where new work abuts of aligns with existing, provide smooth and even transitions.
2. Where a change in plane of ± 1/4" occurs, submit recommendation to Architect for transition, unless variations in the plane are part of the original design intent.

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

3.02 HAZARDOUS MATERIAL PROCEDURES

A. If hazardous or suspected hazardous materials are encountered;

1. Stop work in affected area immediately.
2. Notify Owner and Architect and await instructions.
3. Prevent damage to surrounding materials or surfaces.
4. Prevent human contact.

B. Owner will arrange for abatement or removal of hazardous materials under a separate contract.

END OF SECTION 01355

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SECTION 02072 – HAZARDOUS MATERIALS PROCEDURES

PART 1 – GENERAL – (Not Used)

PART 2 – PRODUCTS (Not Used)

PART 3 – EXECUTION

3.01 PROCEDURES

A. All work regarding hazardous materials shall be provided in conformance with Federal, State and Local Laws, Rules and Regulations.

END OF SECTION 02072

SECTION 04069 - RESTORATION MORTAR

PART 1 – GENERAL

1.01 SECTION INCLUDES:

- Summary
- References
- Delivery, Storage, and Handling
- Materials
- Equipment
- Mixes
- Erection, Installation, and Application

1.02 SUMMARY

A. This standard includes guidance on preparing lime mortars for repointing masonry.

B. Lime mortars are preferable to Portland cement mortars for repointing historic masonry:

1. Lime mortars are more permeable by water. Water passing through lime mortar will dissolve a small portion of the lime and then will deposit it in hairline cracks as the water evaporates.

2. Lime mortars expand slightly during setting, and resist shrinkage, which causes cracking.

3. Lime mortars are more durable than generally recognized.

1.03 REFERENCES

A. American Society for Testing and Materials (ASTM),
1. C 144 - Aggregate for Masonry Mortar.
2. C 150 - Portland Cement.
3. C 207 - Hydrated Lime for Masonry Purposes.
4. C 1324 - Examination and Analysis of Hardened Masonry Mortar

1.04 DELIVERY, STORAGE AND HANDLING

A. Storage and Protection: Lime and cement must be protected from rainwater and ground moisture, as water vapor in the air can begin the setting process. Sand and any other materials used for mortars should also be protected from moisture and contamination.

1.05 SUBMITTALS

A. Comply with pertinent provisions of Section 01010 - Basic Requirements.
B. Samples: Submit cured mortar samples, <<6 x 1/2 x 1/2 inches>> in size. Samples will be compared to existing unweathered sample to determine acceptability of match.
C. Test Reports: Existing mortar analysis.

1.06 QUALITY ASSURANCE

A. Preconstruction Testing Laboratory Services:
   1. Remove four unweathered samples of existing mortar from different locations.
   2. Retain one sample for later comparison.
   3. Test mortar to ASTM C 1324; report the following:
      a. Volumetric proportions of aggregate, cement, lime, and other ingredients.
      b. Type, colour, and gradation of aggregate.
      c. Presence of pigments or additives

[OR]

B. Analysis of Existing Mortar:
   1. Remove four unweathered samples of existing mortar from different locations.
   2. Retain one sample for later comparison.
   3. Break up remaining samples individually with mallet until constituent parts remain. Examine under microscope to determine:
      a. Approximate proportions of aggregate, cement, and lime.
      b. Type, size, and colour of aggregate.
      c. Presence of fillers and additives.

PART 2 – PRODUCTS

2.01 MATERIALS

NOTE: The use of standard specifications for materials, such as those developed by the ASTM, provides an easily referenced level of quality.

A. Lime: Should conform to ASTM C207, Type S, high plasticity, Hydrated Lime for Masonry Purposes.

   1. Lime which meets this standard will “work” well, resists drying during curing, and is sufficiently strong for the purpose of repointing.

   2. Lime expands as it hydrates, making high lime mortars more resistant to crack formation.

B. Cement: Should conform to ASTM C150, Type II, White. It should have no more than 0.60% alkali nor more than .15% water soluble alkali.

1. Cement meeting this standard should increase the workability of the mortar, accelerate the setting time and slightly increase the strength of the mortar.

2. The low alkali content will help prevent efflorescence.

C. Sand: Free of impurities and conforming to ASTM C144.

1. Sand color, size, and texture should match the original as provided for in mortar analysis as closely as possible. Provide a sample of the sand for comparison to the original, and have it approved by the Architect before beginning repointing work.

2. When possible and when not conflicting with mortar analysis, use bar sand or beach sand rather than crushed sand for the repointing mortar.

Note: Bar sand or beach sand should be washed to remove salts before using.

a. Crushed sand has sharp edges; a characteristic that tends to makes it “sticky” and difficult to work into the joints.

b. Bar sand, has rounded edges, which helps it to flow more easily during the mortar application.

c. The working characteristics of mortar made with crushed sand may be improved by adding a slight amount of Portland cement. The amount of cement should be determined by experimentation, but should not exceed 20% of the total lime/cement binder. 20% or less of cement has minimal effect on the hardness of the mortar. Cement above that percent or ratio will make the mortar too hard.

D. Clean, potable water: If the water must be transported or stored in a container, the container must be free from contaminants and must not impart any chemicals to the water.

E. Stone dust finely ground from the same stone as that to be repointed if called for in mortar analysis.

F. Additives: NO antifreeze compounds or other admixture shall be used.

Note: Do not use anti-freeze compounds. These compounds are designed for use with cement mortars, and their effectiveness with high lime mortars is questionable. Furthermore, the compounds contain salts that can lead to serious problems in the masonry at a later time.

Note: Air entraining agents are not recommended. These are designed for use with cement rather than lime, and they result in decreased bonding of the mortar and the masonry. Air

entraining is not necessary with high lime mortars because of the natural ability of these to flex with temperature changes.

2.02 EQUIPMENT

A. Surface temperature thermometer – can be either mechanical (less expensive but must be calibrated often) or digital electronic

B. Wooden mortar boxes

C. Hoe

D. Mesh screen

E. Hawks: Plywood or steel hawk (mortar board)

2.03 MIXES

A. Among factors to consider when mixing lime mortar are durability, color, texture, and workability.

1. Durability: Repointing mortar should be softer than the masonry units and the original mortar to reduce stresses at the edge of the masonry and, in the case of lime mortar, to reduce shrinkage which can cause cracks in the mortar. The mortar should be the sacrificial element, not the masonry units.

a. If the new mortar is harder than the masonry or the original mortar, it can cause serious stresses within the wall during thermal expansion and contraction, which can lead to deterioration of the masonry units rather than the mortar.

b. If the mortar is softer, any deterioration that occurs will take place in the mortar, which is easier to replace than the units themselves.

2. Mortar should allow the passage of water, both liquid and vapor. If the mortar lacks permeability, water can become trapped inside the wall, possibly freezing and causing serious deterioration to the masonry.

3. Color and texture: The repointing mortar should match the original mortar in color, texture and physical characteristics.

a. Obtaining an accurate color match is best achieved by selecting an appropriate sand.
b. Color appears to be Dark Gray.

1. Use sand similar to the original in color and gradation. Sand from more than one source may be required.

2. For repointing of natural stones, use finely ground stone “dust” in the mortar to match the joints as closely as possible to the stone if called for in mortar analysis.

   b. If the original mortar was tinted, or if it is impossible to obtain a color match through the use of sand, it may be necessary to use a special mortar pigment.

      Caution: Pigment may react with other ingredients in the mortar to form efflorescence. They may also weather at a different rate than natural coloring and cause a color variation in the mortar.

      Note: If pigments must be used, pure mineral oxides should be used because they do not fade or leach out of the mortar. Amount of pigment should not exceed 2% of the mortar mix by weight.

4. Workability: The workability or plasticity of the mortar is a direct result of the selection of materials.

B. Mortar Mix:

1. Carefully follow mortar analysis to insure that the repointing mortar will not be less permeable/harder than the masonry units or the original mortar. A more permeable mortar is preferred to one that is less permeable.

2. Measure all ingredients by cubic volume using a pre-established and uniform unit of measure, such as a small bucket, rather than an arbitrary unit of measure such as a shovel. Use the same unit for measure and ratios throughout, and catalog any adjustments made in the field.

3. For historic masonry set in lime mortar, use the following ratio for mortar mix:

   1 part Portland cement
   3 parts lime
   8-12 parts sand (To match existing mortar as closely as possible.)

   Note: The exact mix required will relate to the grain size and sharpness of the sand and will vary depending on the supply.

   – OR –

   For historic masonry set in standard mortar, use the following mortar mix (ASTM C270 Type "0") as a starting point:

1 part Portland cement
2 parts lime or lime putty
6 to 9 parts sand and stone dust (To match existing mortar as closely as possible.)

4. Mix a final "job-size" batch once the correct sand color, cement content, etc. have been determined through small tests to ensure the on-site mix conditions will result in the same final product.

PART 3 – EXECUTION

3.01 ERECTION, INSTALLATION, APPLICATION

A. Mix Hydrated Lime:
   1. Add dry bagged hydrated lime to water. Stir and hoe the mass to form a thick cream.

   2. Allow to stand at least 24 hours before use.

B. Prepare Roughage Premix (for later use):

   1. Accurately proportion the sand and lime using measuring boxes constructed to contain the exact volume of each ingredient required to make on batch.

   2. Mix sand and lime thoroughly for about ten minutes. Store in plastic-lined drums and seal until required.

   Note: This compound may be stored indefinitely if kept sealed from air and kept from freezing.

   3. When required for use, add and mix the correct portion of gauging cement as specified and use immediately. Accurate portioning is very important.

C. Add cements to lime and aggregate mixes immediately before the use of the mortar.

   1. Perform all batching with wooden boxes or plastic pails of known volume to ensure standardization and conformity of measurement; Shovel measurement of materials is not permitted.

   2. Use box sizes that are sufficient for producing a batch size equal to one mixer load.

   Note: Mix dry ingredients thoroughly before adding any water (approximately five minutes).

D. Add a small amount of water so that the mortar is just wet enough to hang on a trowel.

Note: Excess water will cause shrinkage. Too little water will retard carbonation. Record the amount of water added to be used as a guide for future batches.

E. Mix mortars at least 10 minutes before using to improve workability and ensure thorough mixing.

Note: Automatic mixers shall have rubber blades. Clean mixing boards and mixing machines thoroughly after each use to prevent hardened lumps of mortar from contaminating next batch.

1. Repointing mortars may sit 1-2 hours after initial mixing and may be remixed to a workable consistency. This is done to reduce shrinkage.

2. Test the mix by holding a trowel with mortar on it upside down and shaking it once.
   a. If the mortar falls off without shaking, it too much sand is present.

   b. If more than one shake is required, the mortar is too sticky or “plastic” and the lime content must be decreased.

F. Coloring Mortars:

1. Take samples of freshly-broken mortar from the original masonry pointing. Note color of aggregate for color-matching.

   Note: Use unweathered, unsoiled samples only.

2. Prepare test patties of mortar approximating the inner color of the sample and set aside to dry for at least 72 hours. Drying time may be accelerated by placing the patty sample in an oven or over a hot-plate.

3. Break the sample test patties and compare the inner portions to the original.

4. See Section 2.03 above for additional information on coloring mortars.

G. Use repointing mortar within approximately 1-2 hours of final mixing. Retemper the mortar as necessary to maintain workability.

Note: Retempering is permitted to maintain workabliity. Remixing is not permitted. Add water at the mortar-board using a spray bottle to replace only the water lost through evaporation.

Note: use all mortar within two hours of gauging; throw out remaining mortar; to not re-temper or remix mortars after this time has elapsed.

Note: This time limit may vary depending on the outside temperature (longer on cooler days and shorter on warmer days)

END OF SECTION 04069

SECTION 04932 – WATER CLEANING OF MASONRY

PART 1 -GENERAL

1.1 SUMMARY

A. Section Includes:

1. Low pressure water soaking of existing exterior masonry.
2. High pressure water cleaning of existing exterior masonry.

1.2 DEFINITIONS

A. Low Pressure: Less than 60 psi.

B. High Pressure: 300 to 2250 psi.

1.3 SUBMITTALS

A. Qualification Statement: Applicator qualifications, including previous projects.

1.4 QUALITY ASSURANCE

A. Applicator Qualifications:

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

B. Mockups:

1. Clean 100 square feet of existing brick and 100 square feet of stone.
   a. Perform operations in presence of Architect.
   b. Determine effectiveness of methods.
   c. Ensure that procedures will not discolour or damage existing surfaces.
2. Locate where directed by Architect.

1.5 PROJECT CONDITIONS

A. Do not perform work when ambient or surface temperature is below 40 degrees F, during precipitation, or if these conditions are anticipated within 24 hours after completion of work.

B. Do not perform work when wind could carry materials to adjacent or underlying materials, or to adjacent property.

PART 2 PRODUCTS

2.1 MATERIALS

A. Water: Potable, clean, and free from acids, alkalies, and detrimental matter.

2.2 EQUIPMENT

A. Spray Equipment: Capable of producing and maintaining required velocity and water pressure at nozzle at consistent rates.

PART 3 EXECUTION

3.1 PREPARATION

A. Close off areas in which work is being performed to pedestrian and vehicular traffic.

B. Protect adjacent and underlying surfaces from damage.

C. Install temporary dams and containment devices to collect runoff water.

3.2 PROCEDURES

A. Clean existing brick and stone surfaces.

B. Remove dirt, hydrocarbons, grease, oil, environmental pollutants, and residues.

C. Sandblasting and the use of cleaning solutions is prohibited.

D. Follow procedures established during preparation of mockup.

E. Do not damage existing surfaces. Leave surfaces uniform in appearance.

3.3 LOW PRESSURE WATER SOAKING

A. Apply water intermittently using soaker hoses, spray racks, or other approved low pressure methods for a period of from 2 days.

B. After soaking, remove remaining dirt by lightly brushing and low pressure washing.

C. Repeat process if required until masonry is clean.

3.4 HIGH PRESSURE WATER CLEANING

A. Remove loose and peeling paint by scraping and wire brushing.

B. Clean surfaces with high pressure water. Hold nozzle perpendicular to surface; work at uniform rate and uniform distance from surface.

C. Work from bottom of wall up.

D. Repeat process if required until masonry is clean.

END OF SECTION 04932

SECTION 06100 - ROUGH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Rough carpentry required for this work includes, but is not necessarily limited to:

- Studs, joists, rafters, and roof trusser;
- Particleboard and/ or plywood, including sub-flooring;
- Sheathing;
- Exterior siding; and
- Wood deck and exterior wood railings.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Framing lumber: Douglas Fir - Hemlock or Southern Pine, 1500 f or better.

B. Exterior exposed lumber: Preservative-treated lumber or redwood, select grade.

C. Lag bolts: Federal specification FF-B-561.

D. Nails and spikes: Common (except as noted), Federal Specification FF-N-105, galvanized at exterior locations.

E. Particleboard (flakeboard): Wood flakes and water resistant adhesive, sanded faces, of thickness shown.

F. Plywood: Department of Commerce Product Standard PS-1, factory grade.

G. Sheathing: Douglas Fir plywood, sheathing grade, of thickness shown.

H. Exterior siding: Match original or Select Grade, clear and free of knots.

I. Building paper: 15-pound asphalt saturated felt.

PRESERVATIVE TREATMENT:

A. Lumber indicated or required to be preservative treated, shall comply with applicable requirements of American Wood Preservers Bureau (AWBP) LP-22 for below-grade use and LP-2 elsewhere.
   1. Preservative: Chromated Copper Arsenate (CCA) complying with Federal Specification TT-W-571.
   2. Moisture content: Kiln-dried to 15 percent maximum.

B. Mark each piece of treated lumber to comply with AWPB Quality Mark for specified requirements.

PART 3 - EXECUTION

3.1 GENERAL:

A. Cut and fit rough carpentry as shown and as required by other trades.

B. Provide tight, well-nailed joints, with members assembled in accordance with applicable codes and regulations.

C. Coat cut surfaces of preservative treated wood with same preservative used in [plant.

3.2 JOIST AND RAFTER FRAMING:

A. Select pieces so that knots and obvious defects will not interfere with placing bolts or nails or making proper connections. Cut out and discard defects which render a piece unable to serve its intended function.

B. Cutting of floor joists to a depth of 1/6 joist depth will be permitted except in the middle third of the span.

C. Size joists to width and frame ends with material of same size as joists.

D. Provide double joists headers and trimmers around chimneys, stairways, fireplace openings, etc. Allow 1" clearance around chimney masonry.

E. Provide double joists or ladder joist construction under partitions parallel to joists.

F. Provide 1 x 3 white pine bridging or better, or manufactured metal bridging, as follows:

1. One row at joists 12 feet or less.
2. Two rows at joists over 12 feet.
3. Double nail at each end of bridging.

3.3 STUD FRAMING:

A. Frame exterior wall openings and interior load-bearing partition openings with headers to carry imposed loading condition.

B. Cutting of studs to ½ stud depth will be permitted to receive piping and duct work.

C. Use double studs at sides of load bearing wall openings, single studs at sides of non-load bearing partition openings.

D. Form outside and inside corners with three studs spiked together.

E. Let 1 x 4 diagonal corner braces into face of studs, extending from sill to plate where possible.

F. Provide plates consisting of 2 x 4 doubles at top of load-bearing partitions, tied into intersecting partitions. Where roof trusses are used, partitions may have single top plates.

3.4 ROOF TRUSSES:

A. Provide specific structural truss details for roof construction. Roof trusses shown are diagrammatic.

B. Trusses shall be of an approved design and fabrication for the specific geographical area.

3.5 GROUND AND NAILERS:

A. Provide grounds and nailers of sufficient size if not specifically shown.

3.6 SUBFLOORS AND UNDERLAYMENT:

A. Provide ¾” tongue and grove subfloors.

B. Break subfloor joints over joists.

1. Plywood subfloors shall be 3/4” thick, laid with outer ply surface grain at right angle to joists, 1/8" between panels, end joints staggered 4'-0"
2. Nail with 8d or 10d commons at 6-8" o.c., at least twice at each bearing for lumber.

C. Let-down subfloors where required for slate or tile floors.

D. Provide building paper over subfloors, laid loose with edges lapper 4".

E. Provide ¼” plywood underlayment.

1. Install just before finish floor and protect against damage.
2. Stagger end joints with respect to each other and offset all joints with respect to subfloor joints.
3. Butt panel ends and edges,, allowing 1/32".
4. Nail 6" o.c. along edges and 8" o.c. each way throughout remainder of panel.
5. Lightly sand surface roughness, particularly at joints and nails.

3.7 SHEATHING:

A. Cover exterior framing with sheathing.

B. Cover roof framing with tongue and grove plywood and nailed at 6" o.c. at each rafter. Panel end joints shall occur over framing.

C. Cover sheathing with one layer 15 pound saturated roofing felt, weather lapped 6" minimum, and stapled in place.

3.8 EXTERIOR SIDING:

A. Install siding plumb and level, in accordance with manufacturer's instruction.

B. Conceal fasteners; cut to ensure burred, chipped, or rough edges do not remain exposed.

3.9 DECK AND RAILINGS:

A. Install deck and exterior wood railings as detailed, securely fastened together so as to support required live loads (200 pounds horizontally at any point on railing).

END OF SECTION 06100

SECTION 06200 - FINISH CARPENTRY

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Finish carpentry required for this work includes, but is not necessarily limited to:

Moldings and Trim

PART 2 – PRODUCTS

2.1 MATERIALS:

A. Finish lumber: Accoya
1. Moisture content: 6 percent maximum.

PART 3 - EXECUTION

3.1 EXAMINATION AND PREPARATION

A. Prime paint surfaces of items or assemblies in contact with cementitious materials, before installation.

3.2 INSTALLATION:

A. Install work in accordance with AWI Premium quality standard.

B. Set and secure materials and components in place, plumb and level.

C. Install trim and edge bands with nails.

3.3 PREPARATION FOR FINISH

A. Sand work smooth and set exposed fasteners. Apply wood filler in exposed fastener indentations.

B. Site Finishing: Refer to Section 09900.

END OF SECTION 06200

SECTION 07200 - INSULATION

PART 1 - GENERAL

1.1 DESCRIPTION:

A. Insulation required for this work includes, but is not necessarily limited to:

- Wall insulation.
- Attic insulation.
- Roof insulation.

PART 2 - PRODUCTS

2.1 MATERIALS:

A. Rigid insulation:
1. Roof: 4 " (R 25 Minimum) Polyisocyanurate.

B. Nail Base Insulating Sheathing:
1. Roof: 4 " (R 25 Minimum) Polyisocyanurate.
2. Plywood Nominal Thickness, Exposure 1: 1/2 inch.

C. Rigid Insulation (Extruded Polystyrene (XPS):
1. Manufacturer: None Selected
2. Location: Stud walls
3. Thickness: Varies, see drawings.
4. R-Value: R-5 per inch of thickness minimum.

D. Blanket Insulation (Mineral wool):
1. Manufacturer: Rockwool - Comfortbatt
2. Location: Ceiling, Walls
3. Thickness: Varies, see drawings.
4. R-Value: R-4 per inch of thickness minimum.

E. Blanket Insulation (Mineral wool):
1. Manufacturer: Rockwool - Safe'n'Sound
2. Location: Ceiling, Walls
3. Thickness: Varies, see drawings.
4. Acoustical Performance: ASTM C423.

F. Nails and staples: Electroplated or galvanized steel wire.

G. Tape: Self-adhering polyethylene-faced.

PART 3 - EXECUTION

3.1 PREPARATION:

A. Ensure that surfaces to receive insulation are clean, free of deleterious matter, and sufficiently true and level to allow continuous and complete thermal protection.

3.2.1 INSTALLATION

A. Install insulation in accordance with manufacturer's written recommendations.

B. Install insulation to maintain continuity of thermal protection to building elements and spaces.

C. Do not compress insulation to fit into spaces.

D. Coordinate installation of firestopping.

E. Fit insulation closely around electrical boxes, pipes, ducts, frames and other objects in or passing through insulation.

F. Keep insulation minimum [3] inches from heat emitting devices such as recessed light fixtures, and minimum [2] inches from sidewalls of chimneys and vents.

G. Seal joints with acoustical joint sealant.

H. Do not enclose insulation until inspection and receipt of Architect's written approval.

END OF SECTION 07200

SECTION 07620 - SHEET METAL FLASHING AND TRIM

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes the following sheet metal flashing and trim:

1. Formed wall flashing and trim.

2. Formed equipment support flashing.

1.3 PERFORMANCE REQUIREMENTS

A. General: Install sheet metal flashing and trim to withstand wind loads, structural movement, thermally induced movement, and exposure to weather without failing, rattling, leaking, and fastener disengagement.

B. Thermal Movements: Provide sheet metal flashing and trim that allow for thermal movements resulting from the following maximum change (range) in ambient and surface temperatures by preventing buckling, opening of joints, hole elongation, overstressing of components, failure of joint sealants, failure of connections, and other detrimental effects. Provide clips that resist rotation and avoid shear stress as a result of sheet metal and trim thermal movements. Base engineering calculation on surface temperatures of materials due to both solar heat gain and nighttime-sky heat loss.

1. Temperature Change (Range): 120 deg F (67 deg C), ambient; 180 deg F (100 deg C), material surfaces.

C. Water Infiltration: Provide sheet metal flashing and trim that do not allow water infiltration to building interior.

1.4 SUBMITTALS

A. Product Data: For each type of product indicated. Include construction details, material descriptions, dimensions of individual components and profiles, and finishes.

1.5 QUALITY ASSURANCE

A. Sheet Metal Flashing and Trim Standard: Comply with SMACNA's "Architectural Sheet Metal Manual." Conform to dimensions and profiles shown unless more stringent requirements are indicated.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver sheet metal flashing materials and fabrications undamaged. Protect sheet metal flashing and trim materials and fabrications during transportation and handling.

B. Unload, store, and install sheet metal flashing materials and fabrications in a manner to prevent bending, warping, twisting, and surface damage.

C. Stack materials on platforms or pallets, covered with suitable weathertight and ventilated covering. Do not store sheet metal flashing and trim materials in contact with other materials that might cause staining, denting, or other surface damage.

1.7 COORDINATION

A. Coordinate installation of sheet metal flashing and trim with interfacing and adjoining construction to provide a leakproof, secure, and noncorrosive installation.

PART 2 - PRODUCTS

2.1 SHEET METALS

A. Prepainted, Metallic-Coated Steel Sheet: Steel sheet metallic coated by the hot-dip process and prepainted by the coil-coating process to comply with ASTM A 755/A 755M.

1. Zinc-Coated (Galvanized) Steel Sheet: ASTM A 653/A 653M, G90 (Z275) coating designation; structural quality.

2. Exposed Finishes: Apply the following coil coating:

a. Factory Prime Coating: Where painting after installation is indicated, provide pretreatment and white or light-colored, factory-applied, baked-on epoxy primer coat; with a minimum dry film thickness of 0.2 mil (0.005 mm).

b. Siliconized-Polyester Coating: Epoxy primer and silicone-modified, polyester-enamel topcoat; with a dry film thickness of not less than 0.2 mil (0.005 mm) for primer and 0.8 mil (0.02 mm) for topcoat.

1) Color: As selected by Architect from manufacturer's full range.

2.2 UNDERLAYMENT MATERIALS

A. Polyethylene Sheet: 6-mil thick polyethylene sheet complying with ASTM D 4397.

2.3 MISCELLANEOUS MATERIALS

A. General: Provide materials and types of fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required for complete sheet metal flashing and trim installation.

B. Fasteners: Wood screws, annular threaded nails, self-tapping screws, self-locking rivets and bolts, and other suitable fasteners designed to withstand design loads.

1. Fasteners for Flashing and Trim: Blind fasteners or self-drilling screws, gasketed, with hex washer head.

C. Elastomeric Sealant: ASTM C 920, elastomeric silicone polymer sealant; of type, grade, class, and use classifications required to seal joints in sheet metal flashing and trim and remain watertight.

2.4 FABRICATION, GENERAL

A. General: Custom 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 indicated. Shop fabricate items where practicable. Obtain field measurements for accurate fit before shop fabrication.

B. Fabricate sheet metal flashing and trim in thickness or weight needed to comply with performance requirements, but not less than that specified for each application and metal.

C. Fabricate sheet metal flashing and trim without excessive oil canning, buckling, and tool marks and true to line and levels indicated, with exposed edges folded back to form hems.

1. Seams for Aluminum: Fabricate nonmoving seams with flat-lock seams. Form seams and seal with epoxy seam sealer. Rivet joints for additional strength.

2. Seams for Other Than Aluminum: Fabricate nonmoving seams in accessories with flat-lock seams. Tin edges to be seamed, form seams, and solder.

D. Sealed Joints: Form nonexpansion but movable joints in metal to accommodate elastomeric sealant to comply with SMACNA recommendations.

E. Expansion Provisions: Where lapped or bayonet-type expansion provisions in the Work cannot be used, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with elastomeric sealant concealed within joints.

F. Conceal fasteners and expansion provisions where possible on exposed-to-view sheet metal flashing and trim, unless otherwise indicated.

2.5 MISCELLANEOUS SHEET METAL FABRICATIONS

A. Equipment Support Flashing: Fabricate from the following material:

1. Prepainted, Metallic-Coated Steel: 0.0276 inch thick.

2.6 FINISHES

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

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

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable if they are within one-half of the range of approved Samples. Noticeable variations in the same piece are not acceptable. Variations in appearance of other components are acceptable if they are within the range of approved Samples and are assembled or installed to minimize contrast.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, to verify actual locations, dimensions and other conditions affecting performance of work.

1. Verify that substrate is sound, dry, smooth, clean, sloped for drainage, and securely anchored.

2. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION, GENERAL

A. General: Anchor sheet metal flashing and trim and other components of the Work securely in place, with provisions for thermal and structural movement. Use fasteners, solder, welding rods, protective coatings, separators, sealants, and other miscellaneous items as required to complete sheet metal flashing and trim system.

1. Torch cutting of sheet metal flashing and trim is not permitted.

B. Metal Protection: Where dissimilar metals will contact each other or corrosive substrates, protect against galvanic action by painting contact surfaces with bituminous coating or by other permanent separation as recommended by fabricator or manufacturers of dissimilar metals.

1. Coat side of sheet metal flashing and trim with bituminous coating where flashing and trim will contact wood, ferrous metal, or cementitious construction.

2. Underlayment: Where installing metal flashing directly on cementitious or wood substrates, install a course of felt underlayment and cover with a slip sheet or install a course of polyethylene underlayment.

3. Bed flanges in thick coat of asphalt roofing cement where required for waterproof performance.

C. Install exposed sheet metal flashing and trim without excessive oil canning, buckling, and tool marks.

D. Install sheet metal flashing and trim true to line and levels indicated. Provide uniform, neat seams with minimum exposure of solder, welds, and elastomeric sealant.

E. Install sheet metal flashing and trim to fit substrates and to result in watertight performance. Verify shapes and dimensions of surfaces to be covered before fabricating sheet metal.

1. Space cleats not more than 12 inches (300 mm) apart. Anchor each cleat with two fasteners. Bend tabs over fasteners.

F. Expansion Provisions: Provide for thermal expansion of exposed flashing and trim. Space movement joints at a maximum of 10 feet (3 m) with no joints allowed within 24 inches (600 mm) of corner or intersection. Where lapped or bayonet-type expansion provisions cannot be used or would not be sufficiently watertight, form expansion joints of intermeshing hooked flanges, not less than 1 inch (25 mm) deep, filled with elastomeric sealant concealed within joints.

G. Fasteners: Use fasteners of sizes that will penetrate substrate not less than 1-1/4 inches (32 mm) for nails and not less than 3/4 inch (19 mm) for wood screws.

1. Galvanized or Prepainted, Metallic-Coated Steel: Use stainless-steel fasteners.

2. Aluminum: Use aluminum or stainless-steel fasteners.

H. Seal joints with elastomeric sealant as required for watertight construction.

1. Where sealant-filled joints are used, embed hooked flanges of joint members not less than 1 inch (25 mm) into sealant. Form joints to completely conceal sealant. When ambient temperature at time of installation is moderate, between 40 and 70 deg F (4 and 21 deg C), set joint members for 50 percent movement either way. Adjust setting proportionately for installation at higher ambient temperatures. Do not install sealant-type joints at temperatures below 40 deg F (4 deg C).

2. Prepare joints and apply sealants to comply with requirements in Division 7 Section "Joint Sealants."

3.3 ROOF FLASHING INSTALLATION

A. General: Install sheet metal roof flashing and trim to comply with performance requirements, sheet metal manufacturer's written installation instructions, and SMACNA's "Architectural Sheet Metal Manual." Provide concealed fasteners where possible, set units true to line, and level as indicated. Install work with laps, joints, and seams that will be permanently watertight.

B. Roof Edge Flashing: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Interlock bottom edge of roof edge flashing with continuous cleats anchored to substrate at 12-inch centers.

C. Copings: Anchor to resist uplift and outward forces according to recommendations in FMG Loss Prevention Data Sheet 1-49 for specified wind zone and as indicated.

1. Interlock exterior bottom edge of coping with continuous cleats anchored to substrate at 12-inch centers.

D. Pipe or Post Counterflashing: Install counterflashing umbrella with close-fitting collar with top edge flared for elastomeric sealant, extending a minimum of 4 inches (100 mm) over base flashing. Install stainless-steel draw band and tighten.

E. Roof-Penetration Flashing: Coordinate installation of roof-penetration flashing with installation of roofing and other items penetrating roof. Install flashing as follows:

1. Turn lead flashing down inside vent piping, being careful not to block vent piping with flashing.

2. Seal with elastomeric sealant and clamp flashing to pipes penetrating roof except for lead flashing on vent piping.

3.4 WALL FLASHING INSTALLATION

A. General: Install sheet metal wall flashing to intercept and exclude penetrating moisture according to SMACNA recommendations and as indicated. Coordinate installation of wall flashing with installation of wall-opening components such as windows, doors, and louvers.

3.5 MISCELLANEOUS FLASHING INSTALLATION

A. Equipment Support Flashing: Coordinate installation of equipment support flashing with installation of roofing and equipment. Weld or seal flashing with elastomeric sealant to equipment support member.

3.6 CLEANING AND PROTECTION

A. Clean exposed metal surfaces of substances that interfere with uniform oxidation and weathering.

B. Clean and neutralize flux materials. Clean off excess solder and sealants.

C. Remove temporary protective coverings and strippable films as sheet metal flashing and trim are installed. On completion of installation, clean finished surfaces, including removing unused fasteners, metal filings, pop rivet stems, and pieces of flashing. Maintain in a clean condition during construction.

D. Replace sheet metal flashing and trim that have been damaged or that have deteriorated beyond successful repair by finish touchup or similar minor repair procedures.

END OF SECTION 07620

SECTION 07920 - SEALANTS AND CAULKING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. The work of this section concludes the furnishing and installing of caulking and sealing materials and the sealing of joints as shown on the drawings and as specified herein.

B. Cooperation with other sections and separate contracts is required and the work hereunder shall be coordinated as required to fulfill the intent of the contract.

1.3 SUBMITTALS

A. Submit samples in accordance with the General Conditions; include two each of the following:

1. Caulk or sealant - pint or tube of each type to be used. Color chips will not be acceptable.
2. Back-up material - 12" strip.
3. Primers - pint bottle for each proposed caulk.
4. Bond breakers - 12" strip for each proposed caulk.

B. Submit copies of the manufacturer's installation instructions prior to the application of any materials.

1.4 WARRANTY

A. Provide warranty under the provisions of the General Conditions, except that guarantee period shall be five (5) years instead of one (1) year from date of substantial completion and shall guarantee that the work provided hereunder shall remain wind, weather, and dust tight, that materials or workmanship employed are without defects and the Contractor and the Applicator jointly shall remedy without expense to the Owner any caulking or sealing defects appearing within the period guaranteed.

B. The following types of failure shall be adjudged defective work:

1. Loss of adhesion or cohesion.
2. Loss of elasticity.
3. Staining or bleeding.
4. Melting, running or sagging.
5. Shrinkage or opening of joints.

1.5 DELIVERY AND STORAGE

A. Materials shall be delivered to the site in original factory packaging bearing manufacturer's name, brand name and/or identification code and description and shall be stored in a dry place until used.

1.6 QUALITY ASSURANCE

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

B. Applicator: Company specializing in applying the work of this Section with minimum three years documented experience and approved by sealant manufacturer.

C. Conform to Sealant and Waterproofers Institute requirements for materials and installation.

1.7 ENVIRONMENTAL REQUIREMENTS

A. Do not install solvent curing sealants in enclosed building spaces.

B. Maintain temperature and humidity recommended by the sealant manufacturer during and after installation.

1.8 DESIGN AND USE

A. The depth of joints and spaces which are to receive sealant should not exceed 1/2 the width or be less than 1/4 inch; nor shall they be less than 1/4" wide nor more than 1" wide. Where these requirements are not met, no sealing or caulking shall be done without the written approval of the Architect.

B. Where joint is less than 1/2" wide, depth of sealant shall be not less than 1/4" nor greater than width of joint. Where joint is between 1/2" and 1" wide, depth of sealant shall be one-half the width.

C. Joints which are deeper than required shall be backfilled solidly to the required depth with specified filler.

D. Type I sealant shall be used for exterior sealing where shown.

E. Sealant colors to match adjacent materials. Provide samples for approval prior to installing.

1.9 TEST AND INSPECTION

A. A representative of the manufacturer of the approved sealant shall be present at the start of the work to instruct applicator in the proper methods and procedures. Said representative shall also be present during the progress of the work as necessary to assure a satisfactory and guaranteed installation.

B. Caulking and sealing materials shall be field tested in the presence of the Architect for compatibility with materials to which application is specified or noted. Installation shall not proceed until approval has been received from the Architect.

C. Specifically, the following conditions shall be treated:

1. Vertical concrete surfaces and cast-in-place, which could have residues left from form release agents.
2. Horizontal concrete surfaces to which curing and/or hardening compounds have been applied.
3. Mortar wherein admixtures have been incorporated.

PART 2 - PRODUCTS

2.1 MATERIALS

A. Type I Sealant: silicone sealant, FS TT-S-01543, Class A, low modulus type.

B. Where necessary, or when directed, metal, concrete and masonry surfaces shall be masked or otherwise protected against smearing or other defacements. The tape shall be placed before preparation of joints and removed immediately after application. Where unavoidable, such surfaces shall be cleaned with proper solvents which will not deface the finish of the metal, concrete or masonry surfaces.

2.2 APPLICATION

A. After joints have been prepared and compatibility of compound has been ascertained, proceed with sealing in accordance with material manufacturer's approved printed specifications.

B. Measure joint dimensions and size material to achieve required width/depth ratios.

C. Primers: Follow the manufacturer's printed instructions on the use of primers on various substrates. Apply primer only to sides of working joints and not to back surfaces. Do not spill on adjacent surfaces before insertion of backup fillers.

D. When placing the inside face of sealant against a rigid material, lay strips of bond breaker over rigid material to prevent sealant from bonding. Run breaker full length and width of joint. Sealant shall be allowed to bond only to two opposing surfaces. Install bond breaker where joint backing is not used.

E. Install sealant free of air pockets, foreign embedded matter, ridges, and sags.

2.3 CLEAN-UP

A. Adjacent materials which are soiled by the work under this Section shall be cleaned immediately and work left in a neat, clean condition.

B. Repair or replace defaced or disfigured finishes caused by work of this section.

C. Primer: Non-staining type, recommended by the manufacturer of the sealant and shall be compatible to the sealant and to the substrate.

D. Bond breaker: Pressure sensitive tape recommended by sealant manufacturer to suit application.

E. Backing materials: Premolded or extruded fillers of closed cell polyethylene, neoprene (neoprene not compatible with silicone), urethane, or butyl rod stock, oversized 30 to 50 percent larger than joint width, capable of being compressed to 25% of their original size.

PART 3 - EXECUTION

3.1 PREPARATION

A. Do not apply caulk or sealants when the temperature is below 40 degrees F. Perform preparation in accordance with ASTM C804 for solvent release and ASTM C790 for latex base sealants.

B. Before the application of any materials, carefully inspect the surfaces to which materials are to be applied and report to the Architect any conditions that would preclude proper application and guaranteeing of sealants.

C. The application of materials will be held to evidence acceptance of the surfaces and Contractor and Applicator shall be held responsible for the results as executed and shall make good defects occurring in the work at no additional cost to the Contract.

D. Before application of the caulk or sealant, joints shall be made free of dust, oil, grease, water, frost or loose mortar or other foreign materials.

1. Verify that joint backing and release tapes are compatible with sealant.
2. Remove dust or other loose debris with a stiff brush or compressed air.
3. Wire brush to remove rust, mill scale or corrosion from metals. Eliminate traces of oil, grease or lacquers with a solvent wash, using toluene, xylene or methylethyl ketone (MEK) applied with a clean brush and wiped dry with frequently changed rags.
4. Soap, detergent or any water-based cleaner shall not be used.

END OF SECTION 07920

SECTION 08520 - ALUMINUM WINDOWS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 Specification Sections, apply to this Section.

1.2 SUMMARY

A. This Section includes heavy commercial-grade aluminum window units of the performance class indicated. Window types required include:

1. Single-hung windows.
3. Fixed windows.

1.3 SYSTEM PERFORMANCE REQUIREMENTS

A. General: Provide aluminum window units that comply with performance requirements specified, as demonstrated by testing manufacturer's corresponding stock systems according to test methods indicated.

B. Design Requirements: Comply with structural performance, air infiltration, and water penetration requirements indicated in AAMA 101 for type, grade, and performance class of window units required.

1. Optional Performance Class Requirements: Where the required design pressure exceeds the minimum for the specified window grade, comply with requirements of AAMA 101, Section 3, "Optional Performance Classes" for higher than minimum performance class.
2. Heights of window units above grade at the window centerline are indicated or can be determined from the drawings. Consult with the Architect for clarification needed to confirm required loading and test pressures.
3. Design wind velocity at the project site is 70 mph.

C. Testing: Test each type and size of required window unit through a recognized independent testing laboratory or agency, in accordance with ASTM E 330 for structural performance, with ASTM E 283 for air infiltration, and with ASTM E 547 for water penetration. Provide certified test results.

D. Testing: Test each type and size of required window unit through a recognized independent testing laboratory or agency, in accordance with ASTM E 330 for structural performance, with ASTM E 283 for air infiltration, and with both ASTM E 331 and ASTM E 547 for water penetration. Provide certified test results.

1. Structural Performance: Provide window units with no failure or permanent deflection in excess of 0.4 percent of any member's span after removal of the imposed load, for a positive (inward) and negative (outward) test pressure of 30 lbf/sq. ft.
2. Air Infiltration: Provide units with air infiltration rate of not more than 0.37 cfm/ft. of operable sash joint for an inward test pressure of 1.57 lbf/sq. ft. and/or maximum 0.01 cfm/sq. ft when tested per ASTM E 283 at a static air pressure difference of 6.24 psf.
3. Air Infiltration: Provide units with air infiltration rate of not more than 0.37 cfm/ft. of operable sash joint for an inward test pressure of 6.24 lbf/sq. ft.
4. Water Penetration: Provide units with no water penetration as defined in the test method at an inward test pressure of 15 percent of the design pressure and/or no water leakage when tested per ASTM E 547 at a static air pressure difference of 13.50 psf.
5. Condensation Resistance: Where window units are indicated to be of "thermal-break construction," provide units that have been tested for thermal performance in accordance with AAMA 1503.1 showing a condensation resistance factor (CRF) of 45.
6. Thermal Transmittance: Provide window units that have a U-value maximum of 0.38 BTU/hour/sq. ft./deg F at 15-mph exterior wind velocity, when tested in accordance with AAMA 1503.1.
7. Forced-Entry Resistance: Provide window units that comply with requirements for Performance Level 10 when tested in accordance with ASTM F 588.

E. Sound Insulation Construction: Fabricate aluminum window units that have been certified to provide a sound transmission class (STC) rating of at least 40 when tested in accordance with ASTM E 90 and classified according to ASTM E 413.

1.4 SUBMITTALS

A. General: Submit the following in accordance with Conditions of the Contract and Division 1 Specification Sections.

1. Product data for each type of window required, including:

a. Construction details and fabrication methods.
b. Profiles and dimensions of individual components.
c. Data on hardware, accessories, and finishes.
d. Recommendations for maintenance and cleaning of exterior surfaces.

2. Samples for Initial Color Selection: Submit samples of each specified finish on 12-inch-long sections of window members. Where finishes involve normal color variations, include sample sets showing the full range of variations expected.
3. Samples for Verification Purposes: The Architect reserves the right to require additional samples, that show fabrication techniques and workmanship, and design of hardware and accessories.
4. Certification: Provide certification by a recognized independent testing laboratory or agency showing that each type, grade, and size of window unit complies with performance requirements indicated.
5. Material Test Reports: Engage a recognized independent testing laboratory or agency to perform tests specified. Provide certified test results showing that each type, grade, and size of window unit complies with performance requirements indicated.

1.5 QUALITY ASSURANCE

A. Installer Qualifications: Engage an experienced Installer who has completed installation of aluminum windows similar in design and extent to those required for the project and whose work has resulted in construction with a record of successful in-service performance.

B. Standards: Requirements for aluminum windows, terminology and standards of performance, and fabrication workmanship are those specified and recommended in AAMA 101 and applicable general recommendations published by AAMA.

C. Single-Source Responsibility: Provide aluminum window units from one source and produced by a single manufacturer.

D. Design Concept: The drawings indicate the size, profiles, and dimensional requirements of the aluminum window types required and are based on the specific type and model indicated. Aluminum windows by other manufacturers may be considered provided deviations in dimensions and profiles are minor and do not change the design concept as judged by the Architect. The burden of proof of equality is on the proposer.

1.6 PROJECT CONDITIONS

A. Field Measurements: Check actual window openings by accurate field measurement before fabrication. Show recorded measurements on final shop drawings. Coordinate fabrication schedule with construction progress to avoid delay of work.

1. Where necessary, proceed with fabrication without field measurements, and coordinate fabrication tolerances to ensure proper fit of window units.

1.7 WARRANTY

A. Aluminum Window Warranty: Submit a written warranty, executed by the window manufacturer, agreeing to repair or replace window units that fail in materials or workmanship within the specified warranty period. Failures include but are not necessarily limited to:

1. Structural failures including excessive deflection, excessive leakage, or air infiltration.
2. Faulty operation of sash and hardware.
3. Deterioration of metals, metal finishes, and other materials beyond normal weathering.

B. Warranty Period: 3 years after the date of Substantial Completion.

C. The warranty shall not deprive the Owner of other rights or remedies that the Owner may have under other provisions of the Contract Documents and is in addition to and runs concurrent with other warranties made by the Contractor under requirements of the Contract Documents.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products that may be incorporated in the work include, but are not limited to, the following:

B. Available Manufacturers: Subject to requirements, manufacturers offering products which may be incorporated in the work but not limited to include:

1. Anderson Windows & Doors – Anderson Corporation
2. Stergis Windows & Doors Inc.
3. Universal Window and Door LLC
4. Marvin Lumber and Cedar Co., LLC
5. Pella Corporation
6. Or approved equal.

2.2 MATERIALS

A. Aluminum Extrusions: Provide alloy and temper recommended by the window manufacturer for the strength, corrosion resistance, and application of required finish, but

not less than 22,000-psi ultimate tensile strength and not less than 0.062 inch thick at any location for main frame and sash members.

B. Fasteners: Provide aluminum, nonmagnetic stainless steel, epoxy adhesive, or other materials warranted by the manufacturer to be noncorrosive and compatible with aluminum window members, trim, hardware, anchors, and other components of window units.

1. Reinforcement: Where fasteners screw-anchor into aluminum less than 0.125 inch thick, reinforce the interior with aluminum or nonmagnetic stainless steel to receive screw threads or provide standard noncorrosive pressed-in splined grommet nuts.
2. Exposed Fasteners: Except where unavoidable for application of hardware, do not use exposed fasteners. For application of hardware, use fasteners that match the finish of the member or hardware being fastened, as appropriate.

C. Anchors, Clips, and Window Accessories: Fabricate anchors, clips, and window accessories of aluminum, nonmagnetic stainless steel, or hot-dip zinc-coated steel or iron complying with the requirements of ASTM B 633; provide sufficient strength to withstand design pressure indicated.

D. Compression-Type Glazing Strips and Weatherstripping: Unless otherwise indicated, and at the manufacturer's option, provide compressible stripping for glazing and weatherstripping such as molded EPDM or neoprene gaskets complying with AAMA SG-1 or with ASTM D 2000 Designation 2BC415 to 3BC620, or molded PVC gaskets complying with ASTM D 2287, or molded expanded EPDM or neoprene gaskets complying with ASTM C 509, Grade 4.

E. Sealant: For sealants required within fabricated window units, provide type recommended by the manufacturer for joint size and movement. Sealant shall remain permanently elastic, nonshrinking, and nonmigrating. Comply with Division 7 Section "Joint Sealants" of these specifications for selection and installation of sealants.

F. Wire Fabric Insect Screen: Provide 18 by 18, 18 by 16, or 18 by 14 mesh of 0.009-inch-diameter stainless steel wire, complying with FS RR-W-365, Type VI.

2.3 HARDWARE

A. General: Provide the manufacturer's standard hardware fabricated from aluminum, stainless steel, or other corrosion-resistant material compatible with aluminum and of sufficient strength to perform the function for which it is intended.

B. Provide hardware as recommended by manufacturer, submit product literature as part of submittal.

2.4 ACCESSORIES

A. General: Provide the manufacturer's standard accessories that comply with indicated standards.

B. Window Cleaner's Bolts: Provide window cleaner's bolts of standard design, complying with governing regulations and ANSI A 39.1. Fabricate bolts of nonmagnetic stainless steel.

1. Reinforce window units or mullions to receive bolts, and provide additional anchorage of units at locations of bolts.

C. Insect Screens: Provide insect screens for each operable exterior sash or ventilator. Locate screens on the inside or outside of the window sash or ventilator, depending upon window type. Design windows and hardware to accommodate screens in a tight-fitting removable arrangement, with a minimum of exposed fasteners and latches.

1. Wickets: Provide sliding or hinged-type wickets, framed and trimmed for a tight fit and durability during handling.
2. Screen Frames: Fabricate frames of tubular-shaped extruded or formed aluminum members of 0.040-inch minimum wall thickness, with mitered or coped joints and concealed mechanical fasteners. Finish frames to match window units.
3. Screen Frames: Fabricate frames of nonmagnetic stainless steel members of 0.020-inch minimum wall thickness, with mitered or coped joints and concealed mechanical fasteners. Finish frames with No. 2B bright mill finish.

    a. Provide removable PVC spline-anchor concealing the edge of the screen frame.

D. Weatherstripping: Provide sliding-type weatherstripping where sash rails slide horizontally or vertically along the unit frame. Provide compression-type weatherstripping at the perimeter of each operating sash where sliding type is not appropriate.

1. Provide weatherstripping locked in to extruded grooves in the sash.

2.5 GLAZING

A. Glazing: At frames and vents all glazing legs shall be 7/8” high with serrations on inside surface. Glazing bead shall be extruded snap-in type no less than 0.050” and shall accommodate up to and including 1” glass, panels, or louvers.

2.6 SINGLE-HUNG WINDOWS

A. Window Grade and Class: Provide window units that comply with requirements of AAMA Grade and Performance Class HC40, including operating force and deglazing test requirements specified in AAMA 101.

1. Provide window units that have tilt-in feature permitting both sides of the sash to be cleaned from the interior.

B. Hardware: Provide the following equipment and operating hardware:

1. Sash Balances: Manufacturer's standard type (2 per sash).
2. Lock: Cam action sweep lock and keeper on the meeting rail.
3. Lock: Spring-loaded snap-type lock on bottom rail of lower sash (2 per sash).
4. Lock: Spring-loaded plunger lock on meeting rail of lower sash (2 per sash).
5. Lock: Pole-operated cam action locking device on meeting rail of windows with meeting rail more than 6 feet above the floor.
6. Lift Handle: Applied sash lifts on bottom rail of lower sash (2 per sash).
7. Lift Handle: Continuous integral sash lift bar on bottom rail of lower sash.
8. Pull-Down Handles: Applied handles on bottom rail of upper sash (2 per sash).
9. Pull-Down Handles: Continuous integral handle on bottom rail of lower sash.
10. Pole Socket: Provide a pole socket or groove on the inside face of top rail of the upper sash on window units with meeting rails more than 6 feet above the floor.

2.7 FABRICATION

A. General: Fabricate aluminum window units to comply with indicated standards. Include a complete system for assembly of components and anchorage of window units.

11. Provide units that are reglazable without dismantling sash or ventilator framing.
12. Prepare window sash or ventilators for glazing except where preglazing at the factory is indicated.

B. Thermal-Break Construction: Fabricate window units with an integral concealed low-conductance thermal barrier, located between exterior materials and window members exposed on the interior, in a manner that eliminates direct metal-to-metal contact.

1. Provide thermal-break construction that has been in use for not less than 3 years, has been tested to demonstrate resistance to thermal conductance and condensation, and has been tested to show adequate strength and security of glass retention.
2. Provide hardware with low conductivity or nonmetallic material for hardware bridging thermal breaks at frame or vent sash.

3. Weepholes: Provide weepholes and internal passages to conduct infiltrating water to the exterior.
4. Provide water-shed members above side-hinged ventilators and similar lines of natural water penetration.
5. Subframes: Provide subframes with anchors for window units, where shown, of profile and dimensions indicated but not less than 0.062-inch-thick extruded aluminum. Miter or cope corners, and weld and dress smooth with concealed mechanical joint fasteners. Finish to match window units.
6. 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, in the manner indicated.
7. Glazing Stops: Provide screw-applied or snap-on glazing stops, coordinated with glass selection and glazing system indicated. Finish glazing stops to match window units.

C. Frame: Corners of frame shall closely fitted, butt-jointed and tightly joined by mechanical means. Corners factory-sealed with sealant conforming to AAMA 803.3-85.

D. Ventilator: Corners of ventilators shall be mitered and reinforced with extruded keys that are crimped into place. All joints shall be factory-sealed weathertight with a sealant conforming to AAMA 803.3-85.

E. Preglazed Fabrication: Preglaze window units at the factory where possible and practical for applications indicated. Comply with glass and glazing requirements of the "Glass and Glazing" sections of these specifications and AAMA 101.

2.10 FINISHES

A. High Performance Organic Coating on Aluminum Extrusions

1. High Performance Liquid Fluoropolymer Aluminum Extrusion Coatings, AAMA 2604: Minimum 70 percent Kynar® PVDF resin, by weight, in color coat.

    a. Product: AAMA 2405 - Kynar
    b. Pencil Hardness, ASTM D3363: F minimum.
    c. Dry Film Thickness, ASTM D1400: 0.20 mil primer coat plus 1.0 mil color coat, 1.20 mil total, minimum thickness.
    d. Color: As selected by Atchitect from manufacturer’s standard colors and gloss.

PART 3 - EXECUTION

3.1 INSPECTION

A. Inspect openings before beginning installation. Verify that rough or masonry opening is correct, and the sill plate is level.

1. Masonry surfaces shall be visibly dry and free of excess mortar, sand, and other construction debris.
2. Wood frame walls shall be dry, clean, sound, and well-nailed, free of voids and without offsets at joints. Ensure that nail heads are driven flush with surfaces in the opening and within 3 inches of the opening.
3. Metal surfaces shall be dry; clean; free of grease, oil, dirt, rust and corrosion, and welding slag; without sharp edges or offsets at joints.

3.2 INSTALLATION

A. Refer to the "Glazed Aluminum Curtain Wall" section for requirements for installation of aluminum window units in glazed curtain walls.

B. Comply with manufacturer's specifications and recommendations for installation of window units, hardware, operators, and other components of the work.

C. Set window units plumb, level, and true to line, without warp or rack of frames or sash. Provide proper support and anchor securely in place.

1. Separate aluminum and other corrodible surfaces from sources of corrosion or electrolytic action at points of contact with other materials by complying with the requirements specified under paragraph "Dissimilar Materials" in the Appendix to AAMA 101.

D. Set sill members and other members in a bed of compound or with joint fillers or gaskets, as shown, to provide weathertight construction. Refer to the "Joint Sealer" sections of Division 7 for compounds, fillers, and gaskets to be installed concurrently with window units. Coordinate installation with wall flashings and other components of the work.

1. Compounds, joint fillers, and gaskets to be installed after installation of window units are specified as work in another section in Division 7.

3.3 FIELD QUALITY CONTROL

A. Conduct on-site tests for air and water infiltration with the window manufacturer's representative present. The Architect will select units to be tested. Tests not meeting specified requirements and units having similar deficiencies shall be corrected at no cost to the Owner. Testing shall be performed by an accredited testing agency selected by the Architect.

1. Air Infiltration Tests: Conduct tests in accordance with the requirements of ASTM E 783. Allowable infiltration shall not exceed 1.5 times the amount indicated.
2. Water Resistance Tests: Conduct tests in accordance with the requirements of ASTM E 1105. No water leakage is permitted.

3.4 ADJUSTING

A. Adjust operating sash and hardware to provide a tight fit at contact points and at weatherstripping for smooth operation and a weathertight closure.

3.5 CLEANING

A. Clean aluminum surfaces promptly after installation of windows. Exercise care to avoid damage to protective coatings and finishes. Remove excess glazing and sealant compounds, dirt, and other substances. Lubricate hardware and other moving parts.

B. Clean glass of preglazed units promptly after installation of windows. Comply with requirements of the "Glass and Glazing" section for cleaning and maintenance.

3.6 PROTECTION

A. Initiate and maintain protection and other precautions required through the remainder of the construction period, to ensure that, except for normal weathering, window units will be free of damage or deterioration at the time of Substantial Completion.

END OF SECTION 08520

SECTION 08800 – GLASS AND GLAZING

PART 1 - GENERAL

1.1 RELATED DOCUMENTS:

A. Drawings and general provisions of Contract, including General and Supplementary Conditions and Division-1 Specification sections, apply to work of this section.

1.2 SUMMARY:

A. General:

1. Glass thickness and type shall be in accordance with manufacturer's recommendations for prescribed design pressure. Factory glazing shall be in accordance with manufacturer's standard requirements.

a. Material Compatibility: Glazing materials shall be of material compatible with aluminum and those sealants and sealing materials used in the composite structure. Interior glazing tape shall be a foam-type tape installed per the manufacturer's instructions.

b. Manufacturer's Standards: The structural seal and weather seal shall be silicone applied and cured per the silicone manufacturer's instructions.

c. For insulating glass, secondary seal shall be silicone sealant and be designed for 4-sided silicone applications.

B. Glazing required for the following:

1. Aluminum Windows.

1.3 SUBMITTALS:

A. Product Data: Submit manufacturer's technical data for each glazing material and fabricated glass product required, including installation and maintenance instructions.

B. Samples: Submit, for verification purposes, 12" square samples of each type of glass indicated except for clear single pane units, and 12" long samples of each color required (except black) for each type of sealant or gasket exposed to view. Install sealant or gasket sample between two strips of material representative of adjoining framing system in color.

1.4 QUALITY ASSURANCE:

A. Glass Materials Performance:

1. Annealed Glass: ASTM C1036.

2. Insulating Glass: ASTM E774, NAMI Dual-Seal or Single-Seal as selected.

3. Safety Glazing: ANSI Z97.1 or CPSC 16 CRF 1201.

4. Tempered Glass: ASTM C1043.

1.5 DELIVERY, STORAGE, AND HANDLING:

A. Protect glass and glazing materials during delivery, storage and handling to comply with manufacturer's directions and as required to prevent edge damage to glass, and damage to glass and glazing materials from effects of moisture including condensation, of temperature changes, of direct exposure to sun, and from other causes.

1. Where insulating glass units will be exposed to substantial altitude changes, avoid hermetic seal ruptures by complying with insulating glass fabricator's recommendations for venting and sealing.

1.6 PROJECT CONDITIONS:

A. Environmental Conditions: Do not proceed with glazing when ambient and substrate temperature conditions are outside the limits permitted by glazing material manufacturer or when joint substrates are wet due to rain, frost, condensation or other causes.

1. Install liquid sealants at ambient and substrate temperatures above 40 deg. F (4.4 deg. C).

PART 2 - PRODUCTS

2.1 MANUFACTURERS:

A. Available Manufacturers: Subject to compliance with requirements, manufacturers offering products which may be incorporated in the work include; but are not limited to, the following:

a. AFG Industries, Inc.
b. Cardinal IG.
c. Environmental Glass Products.
d. Falconer Glass Industries.
e. Ford Glass Division.
f. Guardian Industries Corp.
g. Hordis Brothers, Inc.
h. LOF Glass, Inc.
i. PPG Industries, Inc.
j. Saint-Gobain/Euroglass.
k. Spectrum Glass Prod. Div., H. H. Robertson Co.
l. Viracon, Inc.
m. Or approved Equal.

2.2 GLASS PRODUCTS, GENERAL:

A. Primary Glass Standard: Provide primary glass which complies with ASTM C 1036 requirements, including those indicated by reference to type, class, quality, and, if applicable, form, finish, mesh and pattern.

B. Heat-Treated Glass Standard: Provide heat-treated glass which complies with ASTM C 1048 requirements, including those indicated by reference to kind, condition, type, quality, class, and, if applicable, form, finish, and pattern.

C. Sizes: Fabricate glass to sizes required for glazing openings indicated, with edge clearances and tolerances complying with recommendations of glass manufacturer. Provide thicknesses indicated or, if not otherwise indicated, as recommended by glass manufacturer for application indicated.

D. Glass Products:

1. Annealed Float Glass: Clear.

2. Heat-Treated Float Glass: Heat strengthened and fully tempered.

3. Laminated Glass: With polyvinyl-butyral sheet interlayer.

4. Insulating Glass: Manufacturer's standard dual-seal units.

E. Silicone Glazing Sealants: Neutral curing, Class 50

F. Glazing Tapes: Back-bedding-mastic type.

G. Glazing Gaskets: Dense compression.

2.3 GLASS UNITS

A. Glass - Exterior:
1. Three Quarts (3/4”) thick, laminated, tempered, insulated glass, designed to meet local wind loading requirements and with the following performance requirements:
a. Light transmittance: 70% minimum
b. U Value: 0.55 maximum
c. Solar Heat Gain Coefficient: (PF<0.25) 0.40 maximum

C. Permanently etch each tempered glass light with manufacturer's name and his compliance with ANSI Z-97.1.

PART 3 - EXECUTION

3.1 EXAMINATION:

A. Require Glazier to inspect work of glass framing erector for compliance with manufacturing and installation tolerances, including those for size, squareness, offsets at corners; for presence and

functioning of weep system; for existence of minimum required face or edge clearances; and for effective sealing of joinery. Obtain Glazier's written report listing conditions detrimental to performance of glazing work. Do not allow glazing work to proceed until unsatisfactory conditions have been corrected.

3.2 GLAZING, GENERAL:

A. Comply with combined printed recommendations of glass manufacturers, of manufacturers of sealants, gaskets and other glazing materials, except where more stringent requirements are indicated, including those of referenced glazing standards.

B. Glazing channel dimensions as indicated in details are intended to provide for necessary bite on glass, minimum edge and face clearances, and adequate sealant thicknesses, with reasonable tolerances. Adjust as required by job conditions at time of installation.

C. Protect glass from edge damage during handling and installation; use a rolling block in rotating glass units to prevent damage to glass corners. Do not impact glass with metal framing. Use suction cups to shift glass units within openings; do not raise or drift glass with a pry bar. Rotate glass with flares or bevels along one horizontal edge which would occur in vicinity of setting blocks so that these are located at top of opening. Remove from project and dispose of glass units with edge damage or other imperfections of kind that, when installed, weakens glass and impairs performance and appearance.

3.3 GLAZING:

A. Install setting blocks of proper size in sill rabbet, located one quarter of glass width from each corner, but with edge nearest corner not closer than 6" from corner, unless otherwise required. Set blocks in thin course of sealant which is acceptable for heel bead use.

B. Provide spacers inside and out, of correct size and spacing to preserve required face clearances, for glass sizes larger than 50 united inches (length plus height), except where gaskets or glazing tapes with continuous spacer rods are used for glazing. Provide 1/8" minimum bite of spacers on glass and use thickness equal to sealant width, except with sealant tape use thickness slightly less than final compressed thickness of tape.

C. Provide edge blocking to comply with requirements of referenced glazing standard, except where otherwise required by glass unit manufacturer.

D. Set units of glass in each series with uniformity of pattern, draw, bow and similar characteristics.

E. Provide compressible filler rods or equivalent back-up material, as recommended by sealant and glass manufacturers, to prevent sealant from extruding into glass channel weep systems and from adhering to joints back surface as well as to control depth of sealant for optimum performance, unless otherwise indicated.

F. Force sealants into glazing channels to eliminate voids and to ensure complete "wetting" or bond of sealant to glass and channel surfaces.

G. Tool exposed surfaces of sealants to provide a substantial "wash" away from glass. Install pressurized tapes and gaskets to protrude slightly out of channel, so as to eliminate dirt and moisture pockets.

H. Where wedge-shaped gaskets are driven into one side of channel to pressurize sealant or gasket on opposite side, provide adequate anchorage to ensure that gasket will not "walk" out when installation is subjected to movement.

I. Miter cut wedge-shaped gaskets at corners and install gaskets in manner recommended by gasket manufacturer to prevent pull away at corners; seal corner joints and butt joints with sealant recommended by gasket manufacturer.

3.4 PROTECTION AND CLEANING:

A. Protect exterior glass from breakage immediately upon installation by use of crossed streamers attached to framing and held away from glass. Do not apply markers to surfaces of glass. Remove nonpermanent labels and clean surfaces.

B. Protect glass from contact with contaminating substances resulting from construction operations. If, despite such protection, contaminating substances do come into contact with glass, remove immediately by method recommended by glass manufacturer.

C. Examine glass surfaces adjacent to or below exterior concrete and other masonry surfaces at frequent intervals during construction, but not less often than once a month, for build-up of dirt, scum, alkali deposits or staining. When examination reveals presence of these forms of residue, remove by method recommended by glass manufacturer.

D. Remove and replace glass which is broken, chipped, cracked, abraded or damaged in other ways during construction period, including natural causes, accidents and vandalism.

E. Wash glass on both faces not more than 4 days prior to date scheduled for inspections intended to establish date of substantial completion in each area of project. Wash glass by method recommended by glass manufacturer.

END OF SECTION 08800