

PART ONE - GENERAL

CONFORM to General Conditions and provisions of Division 1.

DESCRIPTION

WORK INCLUDED: Perform all work required to complete the Mortar installation, including but not limited to:

1. CONCRETE BLOCK MORTAR
2. BRICK MASONRY MORTAR

RELATED WORK: Particularly review the following:

1. MASONRY ACCESSORIES: Section 04 150.
2. UNIT MASONRY: Section 04 200.

QUALITY ASSURANCE

ERECTOR QUALIFICATIONS: Mortar work shall be performed by an established firm employing skilled, experienced workers under competent supervision.

SOURCE QUALITY CONTROL: In the Product List required under Section 01 630 name the manufacturers of mortar materials.

REFERENCE STANDARDS

APPLICABLE current requirements of the following publications shall govern the work, and conformance to that is required unless higher standards are specified here.

1. THE BRICK INSTITUTE of America for face brick.
2. THE NATIONAL CONCRETE MASONRY Association for concrete block.
3. THE PORTLAND CEMENT ASSOCIATION.
4. AMERICAN SOCIETY FOR TESTING and Materials (ASTM)
 - a. ASTM C144: Specifications for Aggregate for Masonry Mortar
 - b. ASTM C150: Specification for Portland Cement.
 - c. ASTM C207: Specification of Hydrated Lime
 - d. ASTM C270: Specification for Mortar for Unit Masonry.
5. AMERICAN CONCRETE INSTITUTE (ACI)
 - a. ACI 531-79 Building Code Requirements for Concrete Masonry Structures.

SUBMITTALS

SAMPLES: Submit samples of mortar.

CERTIFICATES: Submit copies of the "Masonry Unit Certificate for Fire Ratings" on forms available from the Michigan Masonry Council (313) 478-6455, for materials used in time design rated assemblies.

DELIVERY, STORAGE, HANDLING

PROPERLY DELIVER, store, and handle the materials to avoid water damage, inclusion of foreign matter, or other damage.

STACK MORTAR materials on wood blocking above ground and keep them continuously covered. At the time of use, the materials shall be clean and free of ice, snow, rust, mud, and other coatings.

STORE CEMENTITIOUS INGREDIENTS in weathertight enclosures and protect them against contamination and setting. Store different types separately.

STOCKPILE and handle aggregates to prevent contamination from foreign material.

JOB CONDITIONS

ENVIRONMENTAL REQUIREMENTS: When temperatures are below 40°F., perform the mortar work in accordance with the "Guide Specifications for Cold Weather Construction" published by the International Masonry Industry All-Weather Council, and applicable manufacturer's recommendations. This Section shall provide cold weather protection as required by Section 1. Notify the Architect in the event that extremely cold weather protection as required by Section 1. Notify the Architect in the event that extremely inclement weather threatens the progress of the work. Cold weather of itself shall not be deemed sufficient cause for delay of the work.

PROTECTION: Protect walls from mortar stain. Cover top of the work throughout the work until permanent covering is properly installed. Remove damaged materials and replace them with new material.

GUARANTEE

ONE YEAR WRITTEN GUARANTEE: In accordance with General Conditions.

PART TWO - PRODUCTS

MATERIALS

PORTLAND CEMENT: Type 1, per ASTM C-150.

MASONRY CEMENT: Type II, per ASTM C91.

1. BRAND of cementitious materials and source of sand supply shall remain the same throughout the entire job. No changes are permitted without the written permission of the Architect.

LIME: Type "S", hydrated per ASTM C207-, for brick.

SAND: Natural sand, per ASTM C144-.

AGGREGATE FOR GROUT: ASTM C404.

WATER: Potable and clean, per ASTM C270-.

COLOR MORTAR: When called for on the drawings, shall be high purity, chemically inert, unfading, alkali fast mineral oxide, finely ground, specially prepared for use in cement and lime mortar. Use per manufacturer's instructions. Color to be as selected by Architect. Equal to Medusa.

GROUT: ASTM C270, 3000 PSI at 28 day compressive strength.

MIXING

GENERAL: Do not add admixtures including color pigments, air-entraining agents, accelerators, retarders, water repellent agents, anti-freeze compounds or other admixtures, unless otherwise indicated.

1. DO NOT USE CALCIUM CHLORIDE in mortar or grout.

MIXING: Combine and thoroughly mix cementitious, water and aggregates in a mechanical bath mixer; comply with referenced ASTM Standards for mixing time and water content.

MORTAR FOR UNIT MASONRY: Comply with ASTM C 270, Proportion Specification, for types of mortar required, unless otherwise indicated.

1. LIMIT CEMENTITIOUS MATERIALS in mortar to portland cement-lime.

2. USE TYPE S MORTAR for all masonry, unless otherwise indicated.

MIXES

MIXES: No chlorides may be present in the mortar.

USE MORTAR in accordance with Masonry Institute Standards and the following unless otherwise noted on the drawings.

1. TYPE N - Exposed masonry above grade. Especially parapet walls, chimneys, walls subject to severe exposure. Interior load-bearing walls. (General Purpose Mortar - 750 psi at 28 days.)

2. TYPE S - Reinforced masonry. Unreinforced masonry where max. flexural strength is required. Where mortar adhesion is sole bond between facing and backup. (Provides maximum

bond - 1800 psi min. at 28 days.)

3. TYPE M - Unreinforced and reinforced masonry below grade. In contact with earth, such as foundations, retaining walls, walks, sewers, and manhole.

4. TYPE O - Interior use in non-load bearing walls. Interior loadbearing walls with loads less than 100 psi (compressive). Do not use where it will be subject to freezing or lateral forces. (350 psi. min. at 28 days)

TUCKPOINTING - Use prehydrated mortars. Duplicate original mortar. When in doubt, use dehydrated Type N.

PART THREE - EXECUTION

GENERAL: Conform to ASTM C270, and C780 and manufacturer's instructions.

DISCARD mortar that has begun to "set" and mortar that is not used within 2 hours after initial mixing.

FIELD QUALITY CONTROL

SLUMP of grout at place of final deposit, measured per ASTM C143 shall be 7"-8" for low absorbency masonry units, and up to 10" for high absorbency units.

CAVITY WALLS - Use Type S, when winds will exceed 80 mph.

Use Type S or N, when winds are less than 80 mph.

TUCKPOINTING - Use prehydrated mortars. Duplicate original mortar. When in doubt, use dehydrated Type N.

GROUT FOR UNIT MASONRY: Comply with ASTM C 476 for grout for use in construction of reinforced and nonreinforced unit masonry. Use grout of consistency indicated or, if not otherwise indicated, of consistency (fine or course) at time of placement which will completely fill all spaces intended to receive grout.

1. USE FINE GROUT in grout spaces less than 2" in horizontal directions, unless otherwise indicated.
2. USE COARSE GROUT in grout spaces 2" or more in least horizontal dimension, unless otherwise indicated.

INSTALL MORTAR: Per Manufacturer's printed instructions and ASTM C270 and C780.

END OF SECTION

PART ONE - GENERAL

DESCRIPTION

SECTIONS INCLUDES: Perform all the work required to furnish Masonry Accessories installation, including, but not limited to:

1. JOINT REINFORCING, reinforcing bars.
2. BRICK TIES
3. WALL FLASHING, and membrane flashing built into masonry at wall beams, lintels, sill, heads, canopies.
4. MISC. ACCESSORIES

RELATED SECTIONS:

1. UNIT MASONRY: Section 04 200
2. MORTAR: Section 04 100.

REFERENCES

REFERENCE STANDARDS: Current requirements of the following publications shall govern, and conformance is required unless higher standards are specified here.

1. NATIONAL CONCRETE MASONRY ASSOCIATION, for laying concrete block.
2. PORTLAND CEMENT ASSOCIATION, for laying concrete block.
3. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)/NBS H74-60.
4. BRICK INSTITUTE OF AMERICA; for brickwork.

SUBMITTALS

PRODUCT DATA: For each type of accessory.

SAMPLES: Submit two (2) samples of wallties, anchors, joint reinforcement, flashing, and other accessories.

CERTIFICATION OF GALVANIZED COATINGS: For Joint Reinforcement and Anchorages, per specs.

QUALITY ASSURANCE

ERECTOR QUALIFICATIONS: Masonry accessories work shall be performed by an established firm employing skilled, experienced workers under competent supervision.

PRODUCT DELIVERY, STORAGE, HANDLING

PROTECT reinforcing, anchors, ties, flashing and other materials against the elements; keep free from rust, soiling or other foreign coating which adversely affect the physical, structural, or aesthetical properties of the wall.

WARRANTY

GUARANTEE: Provide ONE YEAR guarantee in accordance with General Conditions.

PART TWO - PRODUCT

MATERIALS

JOINT REINFORCEMENT: ASTM A82, cold-drawn steel wire side rods and cross rods.

1. **SHAPE:** Width to be not less than 2" less than the wall width. Provide factory formed corner reinforcement, partition intersection reinforcement, and other special shaped reinforcements as required.
 - a. **Size:** 9 gauge
 - b. **Finish (Exterior Wall):** Hot Dipped Galvanized/Zinc coating per ASTM A153 (1.50 oz per sqft)
2. **SINGLE WYTHE:** Truss type with crossrods at 16" o.c. max with drips. Similar to Wire-Bond – Series 300.

3. MULTI-WYTHE: Ladder type with crossrods at 16" o.c. max with drips.
4. TWO PIECE ADJUSTABLE UNITS: Use where horizontal joints of facing wythe does not align with backup.
5. APPROVED MANUFACTURERS are AA Wire Products, Dur-O-Wall, Hohmann & Barnard, Wal-lok., Wire Bond.
6. EXTERIOR BRICK/BLOCK CAVITY WALL: Equal to AA Wire Products: AA 525, Wire Bond Co.; product – Series 800

REINFORCING BARS: Deformed billet steel bars, ASTM A615, Grade 40.

PLASTIC CEMENT: Fibrated steep asphalt cement, Fed. Spec. SS-C-153.

FLEXIBLE ANCHORS: Galvanized steel wire, to suit conditions. AA Products, or approved substitute.

SHEET FLASHING MATERIALS: Rubber & Plastics Compound Co., Inc., "Nervastral Seal-Pruf-H-D"; or York Manufacturing Inc. "Wascoseal", AFCO "Vi-Seal", "Epra-Max" EPDM; Firestone Co., product – Flash Guard, Grace Products; Product, Perm-a-Barrier.

1. WALL FLASHING: For use above grade, to conduct infiltrated water toward weep holes. 40 mil. thickness.
2. EMBEDDING AND SPLICE CEMENT: Nerva-Plast Cold-Setting Cement. Wascoseal Cement Type K.
3. WINDOW FLASHING: 40 mil.

TERMINATION BAR for sheet flashing. Stainless steel, type 304.

1. USE: At top of flashing to secure it to back up, where no reglet is provided.
2. SIZE: 1/8" x 1-1/4" with fastener 16"o.c.
3. MANUFACTURER: Hohmann & Barnard, or approved substitute.

METAL SILL FLASHING: Under sheet flashing, at exposed drip edge, 28 ga., stainless steel, type 304. Approximately 1-1/2" deep with hemmed edge (1/2")

1. USE: Above window, door opening and similar sill, above exterior openings, at shelf angles.
2. SIZE: Size and profile, ga to suit job and opening conditions.

REBAR POSITIONERS: 9 ga, hot dip, galvanized. To suit application.

1. DUR-O-WAL Co., Product – D/A 815, D/A 816.

WEEP HOLE VENT: Preformed butyrate clear rectangular vent.

1. SIZE: 3/8" x 1-1/2"D x 3-1/2"L.

SINGLE WYTHE PAN FLASHING: System of CMU flashing pans and interlocking CMU web bridges made from high-density polyethylene incorporating chemical stabilizers that resist ultra-violet degradation. Flashing pans laid in CMU bed joints shall have integral weep spouts extending from the center of each pan to the outside face of the CMU. Comply with ASTM E514. Provide 7"x16" drainage mat to accompany each flashing pan to be placed in each open cell directly above the pan to prevent mortar droppings from impeding flow of moisture to the pans. Polyester mesh

1. MANUFACTURER: MortarNet
2. PRODUCT: Blok-Flash

MASONRY CLEANER: Sure Klean No 600 Detergent; ProSo Co. Inc.

STONEMWORK ACCESSORIES

ANCHORS, DOWELS, TIES and stainless steel to ASTM A167, Type 304 of sizes and configurations required for support of stone and applicable superimposed loads.

1. SIZE, SPACING by Contractors design engineer to securely anchor stonework.
2. WINDOW SILLS: L shape anchor rod.
3. ACCEPTABLE MANUFACTURERS: Heckmann Building Products, or approved substitute.

PART THREE - EXECUTION

DELIVER masonry accessories to Section 04 200 - Unit Masonry for installation.

END OF SECTION

PART ONE - GENERAL

DESCRIPTION

SECTIONS INCLUDES: Perform all work required to complete the entire unit masonry work, including but not limit to:

1. FACE BRICK
2. GLAZED CONCRETE BLOCK
3. ANCHOR BOLTS: Set in masonry.
4. ACCESSORIES.

PRODUCTS INSTALLED UNDER THIS SECTION but furnished under another section.

1. MASONRY ACCESSORIES: Section 04 150
2. MORTAR: Section 04 100.

RELATED SECTIONS:

1. MASONRY ACCESSORIES: Section 04 150
2. MORTAR: Section 04 100
3. LIMESTONE: Section 04 423

REFERENCES

REFERENCE STANDARDS: Conform to the following standards:

1. AMERICAN NATIONAL STANDARDS INSTITUTE (ANSI)
 - a. ANSI/NBS 211-70 (A41.1) Building Code Requirements for Masonry.
2. NATIONAL CONCRETE MASONRY ASSOCIATION (NCMA).
 - a. TR75-B-79 Design and Construction of Load Bearing Concrete Masonry.
3. BRICK INSTITUTE OF AMERICA RECOMMENDATIONS.
4. NATIONAL CONCRETE MASONRY ASSOCIATION.

SUBMITTALS

SAMPLES: Submit samples for brick, concrete block. Samples of brick shall show the range of variations in size, color, and texture of materials to be delivered.

PRODUCT DATA: Submit Product Data. Include test results for concrete block of the same type and manufacturer as proposed for use on the Work, showing conformance to the specified standards.

CERTIFICATES:

1. FIRE RESISTANCE: Submit copies of the "Masonry Unit Certificate for Fire Ratings" on forms available from the Michigan Masonry Council, 24155 Drake Road S-202, Farmington, Michigan 48024, 313/478-6455, for materials used in time design rated assemblies.

QUALITY ASSURANCE

ERECTOR QUALIFICATIONS: Masonry work shall be performed by an established firm employing skilled, experienced workers under competent supervision.

REQUIREMENTS OF REGULATORY AGENCIES:

FIRE RESISTANCE APPROVALS: Systems designated as time-design rated assemblies (1 Hr, etc.) shall meet the approval of the local governing agencies, based on Underwriter's Laboratory listing, Factory Mutual approval, or other certified laboratory test results.

SOURCE QUALITY CONTROL: In the Product List required under Section 01 630, name the manufacturers of face brick, concrete block, precast lintels. Obtain masonry units from one manufacturer. Obtain mortar materials from one manufacturer.

DELIVERY, STORAGE AND HANDLING

PROPERLY DELIVER, store and handle the materials, to avoid water damage, breakage and chipping, staining, inclusion of foreign matter, or other damage.

1. STACK MASONRY UNITS on wood blocking above ground and keep them continuously covered. At the time of use, the materials shall be clean and free from ice, snow, rust, mud and other coatings.
2. STORE cementitious materials off the ground, under cover, and in dry location.
3. STORE aggregates where grading and other required characteristics can be maintained.

PROJECT CONDITIONS

EXISTING CONDITIONS: Inspect framing and substrates and other preceding work for improper conditions which may prevent a proper installation. Erection of the work of this Section constitutes acceptance of such work.

ENVIRONMENTAL REQUIREMENTS: When temperatures are below 40 degrees F., conform to the "Guide Specifications for Cold Weather Masonry Construction" International Masonry Industry All-Weather Council.

PROTECTION OF WORK: During erection, cover top of walls with heavy waterproof sheeting at end of each day's work. Cover partially completed structures when work is not in progress.

1. **EXTEND COVER** a minimum of 24 inches down both sides and hold cover securely in place.

STAINING: Prevent grout, mortar or soil from staining the face of masonry to be left exposed or painted. Remove immediately grout or mortar in contact with such masonry.

1. **PROTECT BASE OF WALLS** from rain-splashed mud and mortar splatter by means of coverings spread on ground and over wall surface.
2. **PROTECT SILLS, LEDGES** and projections from droppings of mortar.

GUARANTEE

ONE YEAR WRITTEN GUARANTEE in accordance with General Conditions.

PART TWO - PRODUCTS

BRICK

GENERAL: Comply with referenced standards and other requirements indicated below applicable to each form of brick required.

1. **PROVIDE SPECIAL MOLDED SHAPES** where indicated and for application requiring brick of form, size and finish on exposed surfaces which cannot be produced from standard brick sizes by sawing.
2. **FOR SILLS, CAPS AND SIMILAR APPLICATIONS** resulting in exposure of brick surfaces which otherwise would be concealed from view, provide uncured or unfogged units with all exposed surfaces finished.

FACING BRICK: ASTM C 216 and as follows:

1. **GRADE:** SW.
2. **TYPE:** FBS (standard)
3. **TEXTURE:** Matt
4. **COMPRESSIVE STRENGTH:** 8,000 psi, average, per ASTM C 67.
5. **SIZE:** Modular
6. **COLOR:** Garden Blend with Nevada Blend, blended in at 5%.
7. **MANUFACTURER:** Beldon Brick

APPROVED SUBSTITUTE: Per 01 640.

CONCRETE MASONRY UNITS

GENERAL: Comply with referenced standards and other requirements indicated below applicable to each form of concrete masonry unit required.

1. **PROVIDE SPECIAL SHAPES** where required for lintels, corners, jambs, sash control joints, headers, bonding and other special conditions.
2. **PROVIDE BULLNOSE UNITS** for outside corners, unless otherwise indicated.

HOLLOW LOAD BEARING: ASTM C90, normal weight.

SOLID CONCRETE MASONRY ASTM C145, Grade N, Type 1.

LOAD BEARING UNITS: ASTM C 90, Type 1.

1. **NORMAL WEIGHT:** For below grade applications.
2. **MEDIUM WEIGHT:** For above grade applications.

NON-LOAD BEARING UNITS: ASTM C129, Type 1

1. **NORMAL WEIGHT:** For above grade interior applications.

PRECAST MASONRY LINTELS: Include precast lintels in the sizes and configuration required, with reinforcing bars arranged as required to support the loadings at each location. 3,000 psi concrete.

HOLLOW LOAD BEARING: ASTM C90, normal weight.

SOLID LOAD BEARING: ASTM C145, normal weight

EXPOSED FACES: Manufacturer's standard color and fine texture.

1. REGULAR CONCRETE BLOCK: Manufacturer's standard color and fine texture.

SILL BLOCK: Solid, with bullnose. Locate at window stools, and where shown.

INTERIOR EXPOSED FACES: Manufacturers standard color and fine texture.

1. REGULAR CONCRETE BLOCK: ASTM C90

2. GLAZED CONCRETE BLOCK: ASTM C744 with smooth satin gloss, eat polymerized cast-on-facing.

a. Score: None

b. Color: As selected from standard range

c. Manufacturer: Trenwyth or approved substitute.

PART THREE - EXECUTION

EXAMINATION:

MASONRY INSTALLER must examine the areas and conditions under which masonry is to be installed and notify the General Contractor in writing of conditions detrimental to the proper and timely completion of the work. Do not proceed with the work until unsatisfactory conditions have been corrected in a manner acceptable to masonry Installer.

INSTALLATION

GENERAL: Lay up all masonry with corners plumb, with courses level, accurately spaced and true to plane, and with pattern and joints aligned. Keep the masonry clean and free of excess mortar.

1. MASONRY BLOCK: Conform to installation standards of NCMA. "National Concrete Masonry Association".

2. BRICK: Conform to installation standards of BIA "Brick Institution of America".

3. BOND: Running

4. JOINTS: Concave

5. CHASES AND OPENINGS: Build chases for the work of other Sections, such as piping, conduit and fittings.

6. BONDING TO PRECEDING MASONRY: Where the work is to join masonry that is partially or totally set.

7. INTERSECTIONS: Except where control joints are located at intersections, bond together intersecting walls or partitions.

JOINT REINFORCEMENT: Provide continuous joint reinforcement in all masonry walls and partitions.

1. LOCATE the reinforcement as follows:

a. Every other course, typically sixteen (16) inches on center.

b. One course below structural members bearing on walls or partitions.

c. One and two courses above lintels and below sills, extending at least 24 inches beyond each edge of the opening, but stopping at any expansion or control joints.

d. Every course at the top third of walls not anchored to the structure above.

e. Corners and intersections: Prefab shape units to suit conditions.

ANCHORAGE: Secure wall ties to stud framed back up and embed into masonry veneer at maximum 16" o.c. vertically and 24" o.c. horizontally. Place at maximum of 3" o.c. each way around openings within 12" of opening.

BEARING AND REINFORCEMENT: Grout in reinforcing bars, and provide bearing courses as indicated on the drawings or otherwise required.

1. BEARING COURSES: Provide one or more bearing courses under concentrated loads. Fill the cores with grout, or use solid masonry units.

FLASHINGS AND WEEP HOLES: Flashings and weepholes shall direct any water out of the walls.

1. **THROUGH-WALL FLASHINGS:** Build in flashing items furnished under other Sections.
2. **WEEP HOLES:** Provide weep holes in the vertical joints immediately above through-wall flashings, counterflashings and similar flashings which lead water out of the wall, except at membrane flashing below grade.

EMBEDDED ITEMS: Build into masonry all steel lintels, bearing plates and other loose structural members as well as masonry anchors, anchor bolts, inserts, hangers, sleeves, door frames, plugs for grounds, and all other items shown or required.

CONSTRUCTION TOLERANCES

VARIATION FROM PLUMB: For vertical lines and surfaces of columns, walls and arises do not exceed 1/4" in 10', or 3/8" in a story height not to exceed 20', nor 1/2" in 40' or more. For external corners, expansion joints, control joints and other conspicuous lines, do not exceed 1/4" in any story or 20' maximum, nor 1/2" in 40' or more. For vertical alignment of head joints do not exceed plus or minus 1/4" in 10', 1/2" maximum.

VARIATION FROM LEVEL: For bed joints and lines of exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines, do not exceed 1/4" in any bay or 20' maximum, nor 1/2" in 40' or more. For top surface of bearing walls do not exceed 1/8" between adjacent floor elements in 10' or 1/16" within width of a single unit.

VARIATION FOR LINEAR BUILDING LINE: For position shown in plan and related portion of columns, walls and partitions, do not exceed 1/2" in any bay or 20' maximum, nor 3/4" in 40' or more.

VARIATION IN CROSS-SECTIONAL DIMENSIONS: For columns and thickness of walls, from dimensions shown, do not exceed minus 1/4" nor plus 1/2".

VARIATION IN MORTAR JOINT THICKNESS: Do not exceed bed joint thickness indicated by more than plus or minus 1/8", with a maximum thickness limited to 1/2". Do not exceed head joint thickness indicated by more than plus or minus 1/8".

LAYING MASONRY WALLS

LAYOUT WALLS IN ADVANCE for accurate spacing of surface bond patterns with uniform joint widths and to accurately locate openings, movement type joints, returns and offsets. Avoid the use of less-than-half size units at corners, jambs and wherever possible at other locations.

LAY-UP WALLS to comply with specified construction tolerances, with courses accurately spaced and coordinated with other work.

PATTERN BOND: Lay exposed masonry in the bond pattern shown, or, if not shown, lay in running bond with vertical joint in each course centered on units in courses above and below. Lay concealed masonry with all units in a wythe in running bond or bonded by lapping not less than 2". Bond and interlock each course of each wythe at corners. Do not use units with less than nominal 4" horizontal face dimensions at corners or jambs.

STOPPING AND RESUMING WORK: Rack back 1/2-unit length in each course; do not tooth. Clean exposed surfaces of set masonry, wet units lightly (if required) and remove loose masonry units and mortar prior to laying fresh masonry.

BUILT IN WORK: As the work progresses, build-in items specified under this and other Sections of these specifications. Fill in solidly with masonry around built-in items.

1. **FILL SPACE** between hollow metal frames and masonry solidly with mortar, unless otherwise indicated.
2. **WHERE BUILT-IN ITEMS** are to be embedded in cores of hollow masonry units, place a layer of metal lath in the joint below and rod mortar or grout into core.
3. **FILL CORES** in hollow concrete masonry units with grout 3 courses (24") under bearing plates, beams, lintels, posts and similar items, unless otherwise indicated.

MORTAR BEDDING AND JOINTING:

LAY SOLID BRICK SIZE MASONRY units with completely filled bed and head joint; butter ends with sufficient mortar to fill head joints and shove into place. Do not slush head joints.

LAY HOLLOW CONCRETE MASONRY UNITS with full mortar coverage on horizontal and vertical face shells. Bed webs in mortar in starting course on footings and in all courses of piers, columns and pilasters and where adjacent to cells or cavities to be reinforced or filled with concrete or grout. For starting course on footings where cells are not grouted, spread out fill mortar bed including areas under cells.

MAINTAIN JOINT WIDTHS SHOWN, except for minor variations required to maintain bond alignment. If not shown, lay walls with 3/8" joints.

CONCEALED JOINTS and walls to be covered by other materials. Tool slightly concave, unless otherwise indicated.

EXPOSED JOINTS tool slightly concave using a joiner larger than joint thickness, unless raking indicated.

REMOVE MASONRY UNITS DISTURBED after laying, clean and reset in fresh mortar. Do not pound corners or jambs to shift adjacent stretcher units which have been set in position. If adjustments are required, remove units, clean off mortar and reset in fresh mortar.

STRUCTURAL BONDING OF MULTI-WYTHE MASONRY:

USE CONTINUOUS HORIZONTAL JOINT REINFORCEMENT installed in horizontal mortar joints for bond tie between wythes. Install at not more than 16" o.c. vertically.

CORNERS: Provide interlocking masonry unit bond in each course at corners, unless otherwise shown.

1. FOR HORIZONTALLY REINFORCED MASONRY, provide continuity at corners with prefabricated "L" units, in addition to masonry bonding.

INTERSECTING AND ABUTTING WALLS: Unless vertical expansion or control joints are shown at juncture, provide same type of bonding specified for structural bonding between wythes as follows:

1. PROVIDE CONTINUITY with horizontal joint reinforcement using prefabricated "T" units.

INTERSECTING LOAD-BEARING WALLS: If carried up separately, block or tooth vertical joint with 8" maximum offsets and provide rigid steel anchors spaced not more than 4'-0" o.c. vertically, or omit blocking and provide rigid steel anchors at not more than 2'-0" o.c. vertically. Form anchors of galvanized steel not less than 1-1/2" x 1/4" x 2'-0" long with ends turned up not less than 2" or with cross - pins. If used with hollow masonry units, embed ends in mortar filled cores.

NON-BEARING INTERIOR PARTITIONS: Build full height of story to underside of floor or roof structure above; unless noted otherwise

CAVITY WALLS

INSTALL RIGID BOARD INSULATION: See Section 07 200.

1. INSTALL according to manufacturer's instruction and Section 07 200.

2. PROVIDE FULL COMPLETE coverage. No joints to exceed 1/8" or openings to exceed 3/4".

3. MECHANICALLY FASTEN to substrate space fasteners per manufacturer's recommendations.

KEEP CAVITY CLEAN OF MORTAR droppings and other materials during construction. Strike joints facing cavity flush.

TIE EXTERIOR WYTHE TO BACK-UP with continuous horizontal joint reinforcing installed in mortar joints at not more than 16" o.c. vertically.

PROVIDE WEEPHOLES IN EXTERIOR WYTHE of cavity wall located immediately above ledges and flashing, spaced 24" o.c., unless otherwise indicated.

HORIZONTAL JOINT REINFORCEMENT

GENERAL: Provide continuous horizontal joint reinforcement as indicated. Install longitudinal side rods in mortar for their entire length with a minimum cover of 5/8" on exterior side of walls, 1/2" elsewhere. Lap reinforcing a minimum of 6".

CUT OR INTERRUPT JOINT REINFORCEMENT at control and expansion joints, unless otherwise indicated.

REINFORCE WALLS WITH CONTINUOUS horizontal joint reinforcement, unless specifically noted to be omitted.

PROVIDE CONTINUITY AT CORNERS AND WALL INTERSECTIONS by use of prefabricated "L" and "T" sections. Cut and bend reinforcement units as directed by manufacturer for continuity at returns, offsets, column fireproofing, pipe enclosures and other special conditions.

SPACE CONTINUOUS HORIZONTAL REINFORCEMENT as follows:

1. FOR MULTI-WYTHE WALLS (solid or cavity) where continuous horizontal reinforcement acts as structural bond or tie between wythes, space reinforcement as required by Code but not more than 16" o.c. vertically.
2. FOR SINGLE-WYTHE WALLS, space reinforcement at 16" o.c. vertically, unless otherwise indicated.
3. FOR PARAPETS, space reinforcement at 8" o.c. vertically, unless otherwise indicated.

REINFORCE MASONRY OPENINGS greater than 1'-0" wide, with horizontal joint reinforcement placed in 2 horizontal joints approximately 8" apart, immediately above the lintel and immediately below the sill. Extend reinforcement a minimum of 2'-0" beyond jambs of the opening except at control joints.

1. IN ADDITION TO WALL REINFORCEMENT, provide additional reinforcement at openings as required to comply with the above.

ANCHORING MASONRY WORK

GENERAL: Provide anchor devices of type indicated.

ANCHOR MASONRY TO STRUCTURAL MEMBERS where masonry abuts or faces structural members to comply with the following:

1. PROVIDE AN OPEN SPACE NOT LESS THAN 1" in width between masonry and structural member, unless otherwise indicated. Keep open space free of mortar or other rigid materials.
2. ANCHOR MASONRY TO STRUCTURAL MEMBERS with flexible anchors embedded in masonry joints and attached to structure.
3. SPACE ANCHORS AS INDICATED, but not more than 24" o.c. vertically and 36" horizontally.

ANCHOR SINGLE WYTHE MASONRY VENEER to backup construction with masonry veneer anchors to comply with the following requirements:

1. ANCHOR VENEER to substrates, as indicated, and to suit conditions.
2. EMBED TIE SECTION in masonry joints. Provide not less than 1" air space between back of masonry veneer wythe and face of backing.
3. LOCATE ANCHOR SECTION relative to course in which tie section is embedded to allow maximum vertical differential movement of tie up and down.
4. SPACE ANCHORS AS INDICATED but not more than 16" o.c. vertically and 16" o.c. horizontally. Install additional anchors within 1'-0" of openings and at intervals around perimeter not exceeding 3'-0".

CONTROL AND EXPANSION JOINTS

GENERAL: Provide vertical expansion, control and isolation joints in masonry where shown. Build-in related items as the masonry work progresses.

1. PROVIDE CONTINUOUS joint with an unbroken separation through the entire thickness of the wall including any facing material or rigid finishes applied to the masonry.
2. CONTROL BLOCK: Form a grouted key (Michigan Control Joint) by laying up the block with half cores at the joint, lining one face with one ply of bond-beaker, and grouting the core solid.

EMBEDDED ITEMS

GENERAL: Build into masonry all steel lintels, bearing plates and other loose structural members as well as masonry anchors, anchor bolts, inserts, hangers, sleeves, door frames, plugs for grounds, and all other items shown or required. Follow the locations established by other Sections.

ANCHOR BOLTS FOR ROOF NAILERS: Set in coordination with other Sections. Locate in one row for nailers up to 6 inches wide, and two rows staggered for nailers wider than 6 inches, no farther apart than 2'-8" o.c. in each row typically, and no farther apart than 16" o.c. in each row within 8'-0" of each corner.

1. REGLET: For metal flashing at roofing, expansion joints, etc.

FLASHING OF MASONRY WORK

GENERAL: Provide concealed flashing in masonry work at, or above, shelf angles, lintels, ledges and other obstructions to the downward flow of water in the wall so as to divert such water to the exterior.

1. PREPARE MASONRY SURFACES smooth and free from projections which could puncture flashing.

2. PLACE THROUGH-WALL FLASHING on sloping bed of mortar and cover with mortar.
 3. SEAL PENETRATIONS in flashing with mastic before covering with mortar.
 4. EXTEND FLASHINGS through exterior face of masonry and turn down to form drip.
- PLACING FLASHING: Extend flexible flashing the full length of lintels and shelf angles and minimum of 4" into masonry each end. Extend flashing from exterior face or outer wythe of masonry, through the outer wythe, turned up a minimum of 16" and secured to masonry back-up wall with termination.

1. AT HEADS AND SILLS turn up ends not less than 2" to form a pan.
2. AT SHEATHING: Carry flashing up 12" and cover upper edge with flashing applied shingle fashion.
3. LAP JOINTS: 4" minimum and seal with flashing cement.
4. AT STAINLESS STEEL DRIP: Stop metal at edge of masonry opening.

INTERLOCK END JOINTS of deformed metal flashings by over-lapping deformations not less than 1-1/2" and seal lap with elastic sealant.

INSTALL FLASHING to comply with manufacturer's instructions.

PROVIDE WEEPHOLES in the head joints of the first course of masonry immediately above concealed flashings to direct water out of the wall, except at flashing below grade. Space 32" o.c., unless otherwise indicated.

1. AT FLASHING BELOW GRADE: Install weepholes 4-8" above grade. Fill the space between wythes with mortar up to weepholes. Do not plug holes.

FIELD QUALITY CONTROL

TESTING: Owner may employ separate testing laboratory to perform field quality control testing.

UNIT TEST METHOD

1. BRICK TESTS: For each type and grade of brick indicated, test units by methods of sampling and testing of ASTM C 67 except select 5 bricks at random for each 100,000 units or fraction thereof installed.
2. CONCRETE MASONRY UNIT TESTS: For special modular concrete masonry unit indicated, test units by method of sampling and testing of ASTM C 140.
3. MORTAR TESTS: For each type indicated, test mortar by methods of sampling and testing of ASTM C 780. Conduct tests no less frequently than that required to evaluate mortar used to install each increment of masonry units indicated above from which samples are taken for testing.

PRISM TEST METHOD

1. COMPRESSION TEST: For each type of wall construction indicated for testing, test masonry prisms by methods of sampling and testing of ASTM E 447, Method B, and as follows:
 - a. Prepare one set of prisms for testing at 7 days and one set for testing at 28 days.
 - b. For brick masonry prisms provide same height-to-thickness ratio (h/t) as specified under preconstruction testing.
 - c. Conduct tests no less frequently than that required to provide sets of prisms from each 5000 sq. ft. of wall area installed.

REPORT TEST RESULTS in writing and in form specified under each test method, to Architect and Contractor, on same day tests are made.

REPAIR, POINTING AND CLEANING

REMOVE AND REPLACE MASONRY UNITS which are loose, chipped, broken, stained or otherwise damaged, or if units do not match adjoining units as intended. Provide new units to match adjoining units and install in fresh mortar or grout, pointed to eliminate evidence of replacement.

1. EDGE CHIPS IN SCORED MASONRY LARGER THAN 1/4" x 1/4": Patch with mortar, before units are painted, or remove and replace.

POINTING: During the tooling of joints, enlarge any voids or holes, except weepholes, and completely fill with mortar. Point-up all joints including corners, openings and adjacent work to provide a neat, uniform appearance, prepared for application of sealants.

FINAL CLEANING: After mortar is thoroughly set and cured, clean masonry as follows:

1. REMOVE LARGE MORTAR PARTICLES by hand with wooden paddles and non-metallic scrape hoes or chisels.

2. TEST CLEANING METHODS on sample wall panel; leave 1/2 panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before proceeding with cleaning of masonry.
3. PROTECT ADJACENT NON-MASONRY SURFACES from contact with cleaner by covering them with liquid strippable masking agency, polyethylene film or waterproof masking tape.
4. SATURATE WALL SURFACES WITH WATER prior to application of cleaners, remove cleaners promptly by rinsing thoroughly with clear water.
 - a. Use bucket and brush hand cleaning method described in BIA "Technical Note No. 20 Revised" using specified masonry cleaners for brick.
5. CLEAN CONCRETE UNIT MASONRY to comply with masonry manufacturer's directions and applicable NCMA "Tek" bulletins.
6. RECLEAN all surfaces showing efflorescence after cleaning.

PROTECTION

PROVIDE FINAL PROTECTION and maintain conditions in a manner acceptable to Installer, which ensures unit masonry work being without damage and deterioration at time of substantial completion.

CLEANING AND ADJUSTMENT

LOOSE, CHIPPED, BROKEN, DAMAGED UNITS: Remove and replace.

CLEAN MASONRY: Remove large particles by hand. Protect non-masonry surfaces from contact with cleaner.

1. CLEAN BRICK per BIA Bulletin 20.
2. CLEAN CONCRETE masonry per NCMA "TEC" Bulletin.
3. RECLEAN ALL SURFACES showing efflorescence after cleaning.
4. ACID WASH integrally color concrete brick units prior to sealing.

END OF SECTION

PART ONE - GENERAL

DESCRIPTION

WORK INCLUDED: Extent of limestone work is shown on drawings. This includes:

1. CUT LIMESTONE SILL at greenhouse base wall.
2. METAL ANCHORS, MORTAR, JOINT POINTING
3. JOINT SEALANT.
4. FLASHING: Section 04 150

RELATED WORK

1. GENERAL REQUIREMENTS and Provisions of Division 1.
2. JOINT SEALANT: Section 07 900.
3. UNIT MASONRY: Section 04 200.
4. MASONRY ACCESSORIES: Section 04 150.

QUALITY ASSURANCE

SOURCE QUALITY CONTROL: Provide stone which complies with recommendations of the Indiana Limestone Institute (ILI).

1. OBTAIN LIMESTONE FROM ONE QUARRY with consistent color range and texture throughout the work.
2. QUARRYING, fabrication and installation of stone firm which has successfully performed stonework for not less than 5 years.

DESIGN ANCHORS and supports under direct supervision of a Structural Engineer licensed in State of Michigan.

COORDINATION OF FABRICATION: Wherever possible, check dimensions of supporting structure at site by accurate field measurements before final submittal of shop drawings and fabrication of stone. However, coordinate fabrication schedule with construction progress as directed by Contractor to avoid delay of work. Where necessary, proceed without field measurements and coordinate installation tolerances to ensure proper fit of stonework.

REFERENCES: Conform to following standards, unless higher is specified.

1. ASTM C568 Limestone Building Stone.
2. ILI, Indiana Limestone Institute of America "Handbook", and "Contractor's Handbook", current editions.

SUBMITTALS

PRODUCT DATA: Submit for each type of limestone, mortar, and anchorage, flashing, sealants.

SAMPLES: Submit two (2) sets of samples 8" x 8" in size of color, grade and finish of limestone required. Include in each set, full range of exposed color and texture to be expected in completed work.

SHOP DRAWINGS: Submit cutting and setting drawings showing layout sizes, dimensions, sections and profile of limestone units, arrangement and provisions for control and expansions jointing, anchoring, and fastening, supports and other head, jamb, sill details. Show location of inserts (for stone anchors and supporting) which are to be built into masonry or concrete.

1. SEALED ANCHOR DESIGN DRAWINGS; by licensed structural engineer.

STONE FABRICATORS INSTALLATION INSTRUCTIONS, and field erection or setting drawings.

DELIVERY, STORAGE AND HANDLING

PROTECT limestone during storage and construction against moisture, soiling, staining and physical damage.

HANDLE LIMESTONE to prevent chipping, breakage, soiling or other damage. Do not use pinch or wrecking bars without protecting edges of limestone with wood or other rigid materials.

STORE LIMESTONE on wood skids or pallets, covered with non-staining waterproof membrane. Place and stack skids and stones to distribute weight evenly and to prevent breakage or cracking of stones. Protect stored limestone from weather with waterproof, non-staining covers or enclosures, but allow air to circulate around stones.

PROTECT mortar materials and stonework accessories from weather, moisture and contamination with earth and other foreign materials, before and during installation.

PART TWO - PRODUCTS

MATERIAL

LIMESTONE Indiana Oolitic limestone complying with requirements of ASTM C 568, Category II (medium density), and as herein specified.

1. COLOR: Color range, to match existing building.
2. GRADE: Select (fine to average-grained stone to closely matched color). Match existing building.
3. SURFACE TEXTURE: Smooth (machine-planed with tool marks removed by hand). Match existing building.
4. SEASON STONE as required to match and as recommended by ILLI.

MORTAR

1. CEMENT: Provide cement of one of the following types:
 - a. Portland Cement: ASTM C 150, except complying with the staining requirements of ASTM C 91 for not more than 0.03% water soluble alkali. Provide type I, except type III may be used for setting stonework during cold weather.
 - b. Masonry cement ASTM C91 and complying with the non-staining requirements.
 - c. Gray or white cement as needed to produce matching mortar color.
2. HYDRATED LIME: ASTM C 207, Type S.
3. SAND: ASTM C 144.
4. WATER: Clean and free of deleterious materials which would impair the work.

FABRICATE: As shown on detail and as required to suit conditions.

STONWORK ACCESSORIES

ANCHORS, DOWELS, TIES and stainless steel to ASTM A167, Type 304 of sizes and Configurations required for support of stone and applicable superimposed loads.

1. SIZE, SPACING, by Contractors design engineer to securely anchor stone work.
2. ACCEPTABLE MANUFACTURER: Heckmann Building Products, Wire-Bond, or approved substitute.

SUPPORTS LIFTING DEVICES: Stainless steel type 304 steel, galvanized after fabrication to ASTM A123 1.25 oz/sq.ft. removable type for panels in excess of 75 lbs.

BOLTS, WASHERS and NUTS: Stainless steel type 304 where in contact with stone. Galvanized elsewhere. Hot dip ASTM A307.

SETTING SHIMS: Plastic type.

STEEL SHAPES AND PLATES: AISI Type 302/304 stainless steel if in contact with stone; otherwise ASTM A 36 steel hot-dip galvanized after fabrication, ASTM A 123.

PRESSURE RELIEVING JOINTS: Lead envelope wrapped around a corrugated lead filler, similar to Hohmann & Barnard Pressure Relieving Lead Joint.

WALL FLASHING: Provide concealed flashing, shown to be built into stonework, as follows:

1. STAINLESS STEEL: AISI Type 302/304, 2D finish, fully annealed or dead-soft temper, 0.012" thick, unless otherwise indicated.
2. CONTRACTOR'S OPTION: In lieu of stainless steel, use lead coated copper. ASTM B101. 20 oz. Min 12 lbs lead per 100 sf, hot dip to copper ASTM B370 cold rolled temper.
3. WEEPHOLES: 3/8" X 1-1/2" plastic slots.

CLEANING SOLUTION: Type which will not harm stone, joint materials, or adjacent surfaces.

MORTAR MIXES

SETTING MORTAR: Type M, S, N using the Property Method.

POINTING MORTAR: Type N, O using the Property Method.

1. COMPRESSIVE STRENGTH to be less than setting mortar.

ADD MORTAR COLOR and ADMIXTURES in accordance with manufacturer's instructions. Ensure uniformity of mix and coloration.

DO NOT USE anti-freeze compounds to lower the freezing point of mortar.

USE MORTAR within two (2) hours after mixing at temperatures of 80 degrees F (26 degrees C), or two-and-one-half hours at temperatures under 50 degrees F (10 degrees C).

STONE FABRICATION

GENERAL: Fabricate as shown and as detailed on final shop drawings and in compliance with recommendations of The Indiana Limestone Association. Provide holes and sinkages cut or drilled for anchors, fasteners, supports and lifting devices, as shown and as necessary to secure stonework in place. Cut and back-check as required for proper fit and clearance. Shape beds to fit.

CONTIGUOUS WORK: Provide chases, reveals, openings and similar spaces and features as required for contiguous work. Coordinate with drawings and final shop drawings showing contiguous work.

CUT ACCURATELY to shape and dimensions shown on final shop drawings. Comply with the fabrication tolerances of the Indiana Limestone Institute for specified finishes.

1. DRESS JOINTS (bed and vertical) straight and at 90 degree angle to face, unless otherwise indicated.
2. PROVIDE QUIRK-MITERED CORNERS, unless otherwise shown. Provide for cramp anchorage in top and bottom bed joints of corner units unless otherwise shown.
3. JOINT WIDTH: Cut to provide joint widths as shown or, if not shown, cut to allow for uniform 3/8" wide joints.

THICKNESS: Provide stone of thickness shown but not less than shown in Indiana Limestone Handbook. Saw-cut back surfaces which will be concealed in finished work.

1. COORDINATE REQUIRED CLEARANCE between back face of units and structural framing.

GRAIN: Vertical, unless horizontal is noted.

SELECT UNITS for uniform color with adjacent units and over the full area of the installation.

SLOPE EXPOSED TOP SURFACE of stone and horizontal sill surfaces for natural wash.

FABRICATE TEXTURED WORK to profiles shown, with arises sharp and true and matched at joints between units.

PART THREE - EXECUTION

CONFORM

CONFORM TO Limestone Institute Installation recommendations.

GENERAL

DO NOT USE limestone with chips, cracks, voids, stains or other defects.

CLEAN limestone before setting.

ERECTION

PLUMB AND TRUE to lines and levels. Provide weepholes

CUT, INSTALL, JOINT: per recommendations of the Limestone Institute.

EXAMINATION

VERIFY THAT SUPPORT WORK and site conditions are ready to receive work or this section.

PREPARATION

ESTABLISH LINES, LEVELS, and COURSE. Protect from disturbance.

VERIFY THAT ITEMS BUILT-IN under other sections are properly located and sized.

CLEAN STONE PRIOR TO ERECTION. Do not use wire brushes or implements which will mark or damage exposed surfaces.

INSTALLATION

PERFORM WORK in accordance with ILI.

GENERAL: Do not use limestone units with chips, cracks, voids, stains, or other defects which will be visible in the finished work.

INSTALL FLASHINGS of longest practical length and seal water tight to back-up with termination bar. Lap end joint minimum six (6) inches and seal watertight.

1. METAL EXPOSED SILL EDGE.

FLASHING INSTALLATION

INSTALL FLASHINGS of longest practical length and seal water tight to back up with termination bar. Lap end joint minimum six (6") inches and seal watertight.

1. METAL EXPOSED SILL EDGE

LIMESTONE INSTALLATION

SET LIMESTONE in accordance with stone suppliers instructions and erection drawings.

1. INSTALL ANCHORS, SUPPORTS, FASTENERS, and other attachments shown, or necessary to secure stonework in place. Shim and adjust accessories as required.

INSTALL SETTING BED and POINTING MORTAR in accordance with ASTM C780.

PLACE SETTING BUTTONS and set stone in full mortar setting bed to support stone over full bearing surface and to establish joint dimensions.

1. JOINT WIDTH: ¼"

SHORE UP UNITS until setting bed will maintain panel in position without movement for seven (7) days after setting.

FILL DOWEL and LIFTING HOLES with mortar.

TO ACCOMMODATE POINTING MORTAR, rake out joints 5/8 to ¾ inch. Brush mortar joints clean. Fill joints with pointing mortar. Pack and work into voids. Neatly tool surface to concave raked joint.

CAVITY CONSTRUCTION: Where open space between back of stone units and back-up masonry is shown, keep cavity open; do not fill with mortar grout.

1. BACK-PAINT STONE WALL 1'- 0" above all flashing units with non-staining asphalt emulsion dampproofing, or cement-base masonry dampproofing compound. Additionally apply to all bearing pockets. Wherever possible, apply a compound to back of stone units and joints after setting.

GROUTED CONSTRUCTION: Where space between back of stone wall units and back-up masonry is shown to be grouted, fill open space solidly with non-staining grout. Pour grout in lifts and rod to eliminate voids, allowing each pour to set enough to carry weight of next pour. Exercise care to prevent displacement of stone units during grouting operation.

JOINTS: Butter vertical joints for full width before setting and set units in full bed of mortar, unless otherwise indicated.

1. RAKE OUT JOINTS ¾" DEEP before mortar sets to allow for mortar pointing. Clean face of stone after raking. After mortar is set, wet raked joints thoroughly and force pointing mortar into joints. Tool to profile shown, or if not shown tool slightly concave. Provide pointing mortar using specified materials.

ACCESSORIES INSTALLATION

INSTALL CAVITY VENTS at top of each cavity space, below shelf angles, and at spacing 24 inches on center, horizontally, 20' vertically.

INSTALL WEEP IN VERTICAL STONE JOINTS at 24 inches on center, horizontally; immediately above horizontal flashing, above shelf angles and supports, at bottom of walls, and where shown. Do not permit mortar accumulation in cavity space.

FERROUS METAL: Where stonework will contact ferrous metal surfaces which will be concealed in back-up construction (anchors, supports, structural framing and similar surfaces), apply a heavy coat of bituminous paint on metal surfaces, prior to setting limestone. Do not extend coating onto portions of ferrous metal which will be exposed in the finished work, if any. Do not apply coating to stainless steel or nonferrous metals.

PROVIDE EXPANSION JOINTS where shown. Do not fill with mortar. Install continuous strips of preformed joint filler. Set joint filler to allow for installation of backer rod and sealant.

POSITIONING OF ELEMENTS: Maximum ¼ inch from true position.

MAXIMUM VARIATION FROM PLANE OF WALL: ¼ inch in 10 feet, ½" in 50 feet.

MAXIMUM VARIATION BETWEEN FACE PLANE OF ADJACENT PANELS: 1/16 inch.

MAXIMUM VARIATION FROM PLUMB: ¼ inch, 6mm per story non-cumulative.

MAXIMUM VARIATION FROM LEVEL COURSING: 1/8 inch in 3 feet, ¼ inch in 10 feet

MAXIMUM VARIATION OF JOINT THICKNESS: 1/8 inch in 3 feet.

CUTTING AND FITTING

OBTAIN APPROVAL prior to cutting or fitting any item not so indicated on Drawings.
DO NOT IMPAIR APPEARANCE or strength of stone work by cutting.

CLEANING

REMOVE EXCESS MORTAR and sealant upon completion of work.
CLEAN SOILE SURFACES with cleaning solution.
USE NON-METALLIC TOOLS in cleaning operations.

REPAIR AND CLEANING

REMOVE AND REPLACE: Limestone units which are broken, chipped stained or otherwise damaged.
Where directed, remove and replace units which do not match adjoining limestone. Provide new matching units, install as specified and point-up joints to eliminate evidence of replacement. Repair defective and unsatisfactory joints to provide a neat, uniform appearance.
REMOVE EXCESS MORTAR and sealant upon completion.
CLEAN LIMESTONE not less than 6 days after completion of work, using clean water and stiff bristle brushes.
Do not use wire brushes, acid type cleaning agents or other cleaning compounds with caustic or harsh fillers.

PROTECTION

PROVIDE FINAL PROTECTION and maintain conditions, in a manner acceptable to fabricator and installer, which ensures limestone being without damage or deterioration at time of substantial completion.

END OF SECTION