

## *Product Specifications: EnduraMax<sup>™</sup> High Performance Wall System*

This is a sample specification. The actual project specifications must take into account specific requirements for the project and local construction practices. All the information contained in this sample specification is offered as guidance for proper construction of masonry assemblies and is intended to comply with appropriate industry standards and practices. Final selection or use of any or all of this information is the sole responsibility of the Owner and his/her agents.

### PART I - GENERAL

#### SUMMARY

A. Section includes the following applications of [concrete stone] [clay brick] masonry system:

01. Concrete Stone units attached to pre-molded polystyrene backup panels.
02. Clay Brick units attached to pre-molded polystyrene backup panels.
03. Weep materials.
04. Elastomeric flashing.

B. Related Sections:

01. Division 07 Section "Sheet Metal Flashing and Trim" for exposed sheet metal flashing.
02. Division 07 Section "Joint Sealants": Sealants and joint fillers for sealing wall penetrations and around windows and doors.

#### SUBMITTALS

A. Product Data: Manufacturer's data sheets on each product to be used, including:

01. Preparation instructions and recommendations.
02. Storage and handling requirements and recommendations.
03. Color charts.
04. Installation methods.

B. Detail Drawings: Submit detail drawings showing proper installation and flashing techniques. Coordinate locations with those found on the Contract Drawings.

C. Selection Samples: For each product specified, two samples representing manufacturer's product including textures and colors.

D. Verification Samples: For each finish product specified, two samples, minimum size 12 inches (305mm) square that show the specified product, color, and texture. Samples shall exhibit extremes of the full range of color and other visual characteristics expected in completed work.

E. Quality Assurance / Product Control Submittals:

01. Proof of manufacturer qualifications as described in Article - Qualifications.
02. Proof of installer qualifications as described in Article - Qualifications.
03. Test Reports for physical properties upon request.

F. Closeout Submittals: Coordinate with Section Closeout Submittals; submit following items:

01. Maintenance Instructions.
02. Manufacturer's (Oldcastle Architectural) Limited 20 year Warranty.

#### REFERENCES

A. ASTM International:

01. ASTM C67 Standard Test Methods for Sampling and Testing Brick and Structural Clay Tile
02. ASTM C216 Standard Specification for Facing Brick (Solid Masonry Units Made from Clay or Shale)
03. ASTM C270 Standard Specification for Mortar for Unit Masonry
04. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation
05. ASTM C 920 Standard Specification for Elastomeric Joint Sealants
06. ASTM C1088 Standard Specification for Thin Veneer Brick Units Made From Clay or Shale
07. ASTM C1634 Standard Specification for Concrete Facing Brick
08. ASTM E330 Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference
09. ASTM E2265 Standard Terminology for Anchors and Fasteners in Concrete & Masonry

#### B. Building Code Compliance:

01. Building Code Requirements for Masonry Structures (TMS 402-11/ACI 530-11/ASCE 5-11).
02. Specifications for Masonry Structures (TMS 602-11/ACI 530.1-11/ASCE 5-11).
03. Commentary on Building Code Requirements for Masonry Structures (TMS C402-11/ACI 530-11/ASCE 5-11).
04. Commentary on Specifications for Masonry Structures (TMS 602-11/ACI 530.1/ASCE 6-11).

#### QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing products specified in this section with minimum five years documented experience.

B. Installer Qualifications: Installer shall be an Authorized EnduraMax<sup>™</sup> Installer and shall have completed Oldcastle's EnduraMax<sup>™</sup> Installer Program.

C. Mock-Up: Construct sample panel at location indicated or directed, and as follows:

01. Size: No less than 4 feet by 4 feet (1.2 m by 1.2 m) or other size as approved by architect.
02. Include all [concrete masonry stone] [clay brick] unit types and sizes to be used including a typical corner condition, special shapes and mortar joint treatment. Clean the sample panel using the same materials and tools as planned for the actual construction.
03. Obtain Architect's acceptance of sample panel before beginning construction activities of this section.
04. **DO NOT** remove sample panel until construction activities of this section have been accepted by the Architect.
05. Remove sample panel at the completion of the work.

D. Pre-installation Conference: Conduct conference at project site. Product manufacturer's representative, Construction Manager and Mason Contractor to attend.

#### DELIVERY, STORAGE, and HANDLING

A. Store materials on elevated platforms, under cover, and in a dry location. **DO NOT** use materials that have become damp.

B. Store masonry accessories, including metal items, to prevent corrosion and accumulation of dirt and oil.

#### PROJECT CONDITIONS

A. Protection of Masonry: During construction, cover tops of walls, projections, and sills with waterproof sheeting at end of each day's work. Cover partially completed masonry when construction is not in progress to prevent moisture from entering the tops of walls.

01. Extend cover a minimum of 24 inches (600 mm) down the face of the masonry and hold cover securely in place.

B. Stain Prevention: Immediately remove mortar and soil to prevent them from staining the face of masonry.

01. Protect base of walls from rain-splashed mud and mortar splatter by coverings spread on the ground and over the wall surface.
02. Protect sills, ledges, and projections from mortar droppings.
03. Protect surfaces of window and door frames, as well as similar products with painted and integral finishes, from mortar droppings.
04. Turn scaffold boards near the wall on edge at end of each day to prevent rain from splashing mortar and dirt on completed stone masonry.

C. Cold-Weather Requirements: **DO NOT** use frozen materials or materials mixed or coated with ice or frost. **DO NOT** build on frozen substrates. Remove and replace stone masonry damaged by frost or freezing conditions. Comply with cold-weather construction requirements contained in TMS 602-11/ACI 530.1-11/ASCE 6-11.

01. Cold-Weather Cleaning: Use liquid cleaning methods only when air temperature is 40°F (4°C) and above and will remain so until masonry has dried, but not less than 7 days after completing cleaning.

D. Hot-Weather Requirements: Comply with hot-weather construction requirements contained in TMS 602-11/ACI 530.1-11/ASCE 6-11.

E. In order to maintain flowability and tackiness of adhesive it shall only be applied at temperatures of between 40°F to 120°F. Adhesive may be warmed by using a commercial electric heater of type designed for heating sealant grade adhesives. For best adhesion, masonry units receiving adhesive should also be above 40°F at time of installation.

#### COORDINATION

A. Advise installers of other work about specific requirements for flashing, and similar items to be built into masonry.

B. Installer should coordinate installation through the Project Manager/General Contractor in order to ensure safe working conditions. EnduraMax<sup>™</sup> masonry units are held temporarily by the insulation board, therefore vibration caused by nearby building activity could cause units to be displaced or fall.

## PART II- PRODUCTS

### MANUFACTURER:

An Oldcastle Company, contact National Accounts at  
(877) 506-2745

### MASONRY MATERIALS

#### A. Masonry Units as follows:

##### 01. EnduraMax<sup>™</sup> Concrete Masonry Units

All EnduraMax<sup>™</sup> Concrete Masonry Units specified and shown on drawings shall be [Add EnduraMax<sup>™</sup> product name(s) here]

a. Concrete Brick (or stone veneer): ASTM C 1634

##### 02. EnduraMax<sup>™</sup> Clay Brick

All EnduraMax<sup>™</sup> Clay Brick specified and shown on drawings shall be [Add Architect's specified product name(s) here]

a. Thin Brick: ASTM C 1088, Grade Exterior

i. Type: TBS

ii. Size: Engineer Modular: 1 3/4" (44.5 mm) thick 2 3/4" (69.9 mm) high, 7 5/8" (193.7 mm) long

03. Substitutions – Not Permitted

#### B. Mortar as follows:

01. EnduraMax<sup>™</sup> mortar as manufactured by Oldcastle<sup>®</sup> Architectural.

Mortar shall conform to ASTM C 270 Standard Specification for Mortar for Unit Masonry Type N or S

02. Substitutions – Not Permitted

### POLYSTYRENE BACKUP PANELS

#### A. Molded-Polystyrene Board: Meeting ASTM C 578, EPS Type 1

01. EnduraMax<sup>™</sup> Pre-molded insulation panels as manufactured by Polyform.

B. Polystyrene insulation panels shall be molded to fit the shapes of the [concrete stone] [clay brick] selected so that each [concrete stone] [clay brick] can be snapped into the panel allowing the [concrete stone] [clay brick] to be installed flush with the back of the panels.

C. Molded-Polystyrene panels shall be 2" x 48" x 96" in size for concrete stone units and 2" x 48" x 48" for clay brick units.

D. Backs of polystyrene panels shall be fabricated with grooved drainage channels to allow water to travel to flashing system and exterior of building veneer.

E. Ensure polystyrene insulation does not come in direct contact with petroleum based solvents.

### ADHESIVE MATERIALS

A. Loctite<sup>®</sup> PL 300<sup>®</sup> VOC Foamboard Adhesive

B. Gorilla Glue Polyurethane Adhesive by The Gorilla Glue Company

### ANCHORS and SUPPORTS

A. Anchors: EnduraMax<sup>™</sup> anchors shall be fabricated of stainless steel sheet meeting ASTM A 240/A 240M, Type 304. Anchor shall be attached to the structural part of the substrate. Various substrates are allowed. Consult your sales rep for more info. Use one (1) anchor/screw per 2.1 sq. ft. section of wall being covered (16" OC on vertical studs by 19" high).

#### B. Fasteners:

01. Wood Stud Applications: #10 x 3 1/2" (min), Course Thread, 302HQ stainless steel screw with a Type FT 17 cutting tip and a flat (countersunk) or bugle head and a minimum nominal shank diameter of 0.190 in. Screws must be of sufficient length to penetrate a minimum 1' (25 mm) minimum into structural members.

02. Steel Stud Applications: #10 x 3 1/2" (min) carbon steel self-tapping screw with a flat (countersunk) or bugle head and a minimum nominal shank diameter of 0.190". Corrosion protection equal to a minimum protection of 750 Hours with 10% or less red rust when tested according to ASTM B117. Screws must be of sufficient length to penetrate the stud a minimum 1/2", or not less than three exposed threads behind the stud flange.

03. CMU/Concrete Backup: 3/16" x 3 3/4" (min) carbon steel philips flat (countersunk) head screw add the thickness of the material to be fastened and a minimum 1' embedment into the concrete/CMU. Corrosion protection equal to a minimum protection of 750 Hours with 10% or less red rust when tested according to ASTM B117. Tapcon or equal.

C. Polystyrene Spacers or Button Cap Nails: 1" x 3/4" x 1/2" (25.4 mm x 19 mm x 12.7 mm) polystyrene spacers may be used to wedge masonry units into place. Button cap nails may be used to pin masonry units into place. Spacers are included with

the packages of polystyrene panels.

#### FLASHING and WEEP MATERIALS

A. Galvanized metal flashing can be supplied by Oldcastle/EnduraMax<sup>™</sup> : 2.75 mm (12-gauge), 2 1/2" x 3 3/4" (63.5 mm x 95.2 mm) by 10 ft. (3 m). with 1/2" drip edge.

B. Rubberized-Asphalt Flexible Flashing: Composite flashing product consisting of a pliable, adhesive rubberized-asphalt compound, bonded to a high-density, cross-laminated polyethylene film to produce an overall thickness of not less than 0.040" (0.8 mm). Provide W. R. Grace & Co. "Perm-A-Barrier Wall Flashing" or similar approved.

01. Adhesives, Primers, and Seam Tapes for Flexible Flashings: Flashing manufacturer's standard products or products recommended by flashing manufacturer for bonding flashing sheets to each other and to substrates.

C. Weep Hole/Vent Products: Free-draining nylon mesh weephole cubes are supplied with the EnduraMax<sup>™</sup> system. Open head joints are also acceptable weep holes.

#### MASONRY CLEANERS

A. Proprietary Acidic Cleaner: Standard-strength cleaner designed for removing mortar and grout stains, efflorescence, and other new construction stains from concrete stone or clay brick masonry surfaces without discoloring or damaging masonry surfaces; expressly approved for intended use by cleaner manufacturer and stone or brick producer.

B. Approved cleaners include Concrete Brick Cleaner by ProSoCo, Inc. for EnduraMax<sup>™</sup> Stone and Vanatrol by ProSoCo, Inc. for EnduraMax<sup>™</sup> Clay Brick

### PART III - EXECUTION

#### EXAMINATION

A. Examine surfaces indicated to receive [concrete stone] [clay brick] masonry units, with Installer present, for compliance with requirements for installation tolerances and other conditions affecting performance.

B. If installed on a footer or foundation wall, the top of the footer or foundation shall be free of bumps and depressions. If unevenness is present, high spots shall be removed and depressions shall be filled.

01. The footer or foundation bearing support shall not be less than 3 1/4" (82.55 mm).

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

#### INSTALLATION OF FLASHING

A. Install flashing and weep holes in masonry at shelf angles, lintels, ledges, other obstructions to downward flow of water in wall, and where indicated.

B. Prepare masonry surfaces so they are smooth and free from projections that could puncture flashing. Before covering with mortar, seal penetrations in flashing with adhesive, sealant, or tape as recommended by flashing manufacturer.

C. Carry flashing vertically as detailed, but not less than 6" (150 mm) above horizontal plane. When present, flashing must overlap weather resistant barrier (WRB) a minimum of 3", with the flashing lap behind the WRB.

D. Lap flexible flashing a minimum of 6" (152 mm).

E. Seal all flashing laps with compatible lap cement.

F. Extend head and sill flashings not less than 6" (150 mm) beyond edges of openings and turn up to form a watertight pan; seal with mastic.

G. All discontinuous flashing shall be turned up minimum 1" into the head joint at flashing ends to form an end dam.

H. Project flashing from face of wall approximately 1/4" (6 mm) to form a drip. Flexible flashing shall be cut back to the face of the wall after inspection, if the drip is deemed objectionable by Architect or if the flashing is subject to UV degradation.

#### INSTALLATION OF POLYSTYRENE PANELS

A. Follow the printed "EnduraMax<sup>™</sup> Installation Guidelines" (\*\* US VERSION ONLY\*\*) regarding specific procedures for installing the polystyrene panels and installation of the [stone] [brick].

B. Attach the polystyrene panels to back-up wall with stainless steel anchors and screws.

01. Space not more than 16" (406 mm) o.c. vertically and 19" (482 mm) o.c. horizontally with not less than 1 anchor for each 2.1 sq. ft. (0.185 sq. m) of wall area. Install additional anchors within 12" (305 mm) of window openings at intervals not exceeding 8" inches apart, around window perimeter.

02. Attach the anchors near the foam pocket edges so that prongs are visible with the masonry units in place. Prongs shall be embedded in the mortar joint.

D. Place a horizontal caulk bead (using caulking compatible with the polystyrene) about 2" (5cm) below the planned soffit level. Placing caulk here improves thermal performance.

E. Leave a clearance of at least 3/8" (10 mm) between the bottom of the polystyrene panel and the base of the wall, the top of the steel support angle or lintel to allow for the installation of the weep holes and drainage.

#### INSTALLING [CONCRETE STONE] [CLAY BRICK] INTO POLYSTYRENE PANELS

A. At some locations Masonry Units shall be cut to the required size before inserting them in polystyrene pockets. Stone cutters, concrete saws or ceramic tile saws are acceptable. Ensure cut surface is not exposed to finished face of wall.

B. Place the [concrete stone] [clay brick] into the appropriate polystyrene insulation pocket.

01. Ensure the back face of the masonry unit sits flat against the face of the insulation panel. If initial installation of the unit does not sit flush, remove the unit and clear the area to allow proper placement of the unit and reinstall the masonry unit

C. Above openings and at the base of walls allow for a 3/4" (19 mm) mortar joint between the bottom unit and its support..

D. Install flashing and weep holes as needed at shelf angles, lintels, ledges and other obstructions to allow for the unimpeded downward flow of water.

E. Place weep holes in mortar joints where moisture may accumulate, including at base of walls, and above all lintels. The weeps should be located under the first course/row of masonry at the level of the mortar joint, directly at the foundation or the support angle.

01. Use free draining mesh, open head joint or other EnduraMax<sup>™</sup> approved material supplied as part of the EnduraMax<sup>™</sup> system.

02. Space weep holes no more than 32" (800 mm) apart.

#### MOVEMENT JOINTS

A. Build joints as work progresses.

01. Spacing

a. Concrete Units: install Control Joints no more than 20 feet apart

b. Clay Units: install Expansion Joints no more than 30 feet apart.

02. Other Locations

a. Install movement joints

01. Within 4 feet of outside corners

02. At interior corners

03. At changes in wall height

04. Follow all movement joint recommendations provided by NCMA and BIA for, respectively, concrete masonry units and clay brick units.

B. Install Joints with Backer Rod and Joint Sealant when required; in accordance with manufacturer's instructions.

#### MORTAR MIXING AND INSTALLATION

A. Preparing A Batch Of Mortar: Use approximately 3/4 gallons of water for each 50 lb. bag of mortar to achieve proper consistency for selected "injection" equipment (grout bag, Quik Point mechanized caulking gun or Imer Pump). This proportion can be adjusted if the mixture is too thick or too runny or to suit the climatic conditions during installation.

B. Injecting the Mortar:

01. Fill the joints completely by injecting the mortar into the joint cavities thoroughly, embedding the prongs of the anchors in the process.

C. Tool joints, when mortar is thumbprint hard, with a jointing tool (metal, wood dowel, etc.) to produce desired aesthetic.

D. Brushing the Joints:

01. After tooling, brush the surface of the joints using a stiff-bristle fiber brush. This removes loose mortar particles before they harden. **DO NOT** dirty the brush and spread mortar all over the stones.

#### INSULATION CONSTRUCTION TOLERANCES

A. Variation from Plumb: For vertical lines and surfaces, do not exceed 1/4" in 10 feet (6 mm in 3 m), 3/8" in 20 feet (10 mm in 6 m), or 1/2" in 40 feet (13 mm in 12 m) or more. For external corners, expansion joints, control joints, and other conspicuous lines, do not exceed 1/4" in 20 feet (6 mm in 6 m) or 1/2" in 40 feet (13 mm in 12 m) or more.

B. 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 20 feet (6 mm in 6 m) or 1/2" in 40 feet (13 mm in 12 m) or more.

#### ADJUSTING AND CLEANING

A. Remove and replace masonry units that:

01. Are broken, chipped, stained, or otherwise damaged units. Units may be repaired if methods and results are

approved by Architect.

02. Have defective joints.

03. Do not match approved samples and mockups.

B. Replace in a manner that matches approved samples and mockups and complies with other requirements while no evidence of replacement.

C. In-Progress Cleaning: Clean stone masonry as work progresses. Remove mortar fins and smears before tooling joints. Protect the base of the wall from mortar and/or mud splatter.

D. Cleaning Mortar Residue: If any mortar residue remains on the stones once the mortar has dried, use a masonry cleaner according to the manufacturer's instructions. **DO NOT** pressure wash or acid wash the system to clean the surface.

E. Efflorescence: In the weeks and months following installation, efflorescence may occur. This is normal, and disappears with time. However, it can be cleaned by brushing the stone with a softbristle brush dipped in a gentle masonry cleaner. Rinse by spraying gently with a watering hose. **DO NOT** use a pressure washing system.

F. Final Cleaning: After mortar is thoroughly set and cured, clean stone masonry as follows:

01. Remove large mortar particles by hand with wooden paddles and nonmetallic scrape hoes or chisels.

02. Test cleaning methods on mockup; leave one-half of panel uncleaned for comparison purposes. Obtain Architect's approval of sample cleaning before cleaning stone masonry.

03. Protect adjacent stone and non-masonry surfaces from contact with cleaner by covering them with liquid strippable masking agent, polyethylene film, or waterproof masking tape.

04. Clean masonry with proprietary acidic cleaner applied according to manufacturer's written instructions.