Owens Corning® Enclosure Solutions
FOAMGLAS® PERINSUL® SIB
Cellular Glass Structural Insulating Block
For Masonry Veneer Walls Specification

GUIDE SPECIFICATIONS

Owens Corning® FOAMGLAS® PERINSUL® SIB Structural Insulating Block for Masonry Veneer Continuously Insulated Walls Specification Guide

This specification guide presents in 3-part format cellular glass insulation for a masonry veneer continuously insulated wall assembly. The components are presented in MasterFormat Division: **Division 07 Thermal and Moisture Protection**.

System performance requirements are presented in **Division 01 Exterior Enclosure Performance Requirements** where all components are specified as a single system.

The major section headings provided are outlined below. Sections that require editing by the specifier are marked in **[highlighted bold with brackets].** Notes to the specifier are marked in [PINK with brackets.] Please note that edits to all Divisions are required to ensure complete performance of the system.

Division 01 General Requirements:
Divisions 07 provided in this document outline complete 3-part MasterFormat sections for all components of a masonry veneer continuously insulated wall system.

Each of those sections cross reference back to the Division 01 Exterior Enclosure Performance Requirements to ensure that complete system performance requirements for building code compliance are concisely stated in the construction documents.

Include this section in your Project Manual to establish code compliance and complete system performance requirements.

SECTION 01 83 16 EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS

Division 07 Insulation Components:
This section includes Owens Corning® Pittsburgh Corning® PERINSUL® SIB Cellular Glass Structural Insulating Block and Owens Corning® (OC) FOAMULAR® NGX™ Extruded Polystyrene (XPS) ci. This section outlines those products where they are commonly placed in the thermal insulation MasterFormat section:

SECTION 07 21 13.13 FOAM BOARD INSULATION

Alternatively, the text for each product may be cut & pasted into their general MasterFormat Sections if desired:

SECTION 07 21 00 THERMAL INSULATION

PROJECT ARCHITECT RESPONSIBILITY: This is a general specification guide, intended to be used by experienced construction professionals, in conjunction with good construction practice and professional judgment. This guide is to aid in the creation of a complete wall system specification that is to be fully reviewed and edited by the Architect of Record. Sections of this guide should be included, or edited, or omitted based on the requirements of a specific project. It is the responsibility of both the specifier and the purchaser to determine if a product or system is suitable for its intended use. Neither Owens Corning®, Thermafiber®, Pittsburgh Corning®, nor any of their subsidiary or affiliated companies, assume any responsibility for the content of this specification guide relative to actual projects, and specifically disclaim any and all liability for any errors or omissions in design, detail, structural capability, attachment details, shop drawings or other construction related details, whether based upon the information provided by the aforementioned companies or otherwise.

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SECTION 01 83 16 EXTERIOR ENCLOSURE PERFORMANCE REQUIRMENTS

PART 1 – GENERAL

1.1 SUMMARY

Tested Wall System Description: Furnish and install specified products that have been tested to meet specified performance requirements for thermal, air, water, and fire resistance.

A. SECTION INCLUDES:

1. The complete wall system shall include the following:
   a. Masonry Veneer over **[steel frame, wood frame, concrete masonry]** cavity wall by contractors.
   b. Masonry veneer ties.
   c. Cellular Glass Structural Insulating Block secured in mortar to prevent thermal bridging between below grade and above grade continuous insulation.
   d. [Cold-formed metal framing independently braced to resist vertical and transverse structural loading, Wood framing independently braced to resist vertical and transverse structural loading, Concrete masonry unit (CMU) reinforced structural wall.]
   e. [Hook and ladder joint reinforcement] (CMU structural wall only.)
   f. [Interior gypsum wallboard.] (Interior gypsum wallboard not required where CMU structural wall will be interior finished surface.)
   g. **[Faced, Unfaced] [Fiberglass, Mineral Wool, None]** Insulation batts in the framing cavity**.**
   h. [Exterior gypsum sheathing with sealed joints, Exterior sheathing with sealed joints]. (Exterior gypsum sheathing not required where XPS will be used as sheathing. See separate FOAMULAR® NGX™ sheathing Data Sheet & XPS Sheathing Guide Specification.)
   i. Continuous air and water resistive barrier system applied to the exterior face of the **[sheathing, CMU]** wall installed in an airtight and flexible manner, allowing for the relative movement of systems due to thermal and moisture variations and capable of withstanding positive and negative combined wind, stack, and HVAC pressures on the envelope without damage or displacement.
   j. Extruded polystyrene continuous insulation preliminarily secured to **[exterior sheathing, laterally reinforced stud framing, CMU]** with **[screws and air and water sealing washers, impaling pins attached with screws, impaling pins adhesively attached, adhesive, compression fit between masonry ties]** and permanently secured with masonry veneer assembly. (Screws required if insulation is it act as sheathing- see separate FOAMULAR® NGX™ sheathing Data Sheet & Guide Specification.)
   k. **[Safing to firestop the perimeter of door and window penetrations through wall.]**
   l. **[Safing and sealant for sealing gaps between exterior wall and floor edge, perimeter fire containment system.]**

2. All joints, penetrations, and gaps of the air barrier wall system shall be made water and air tight.

1.2 RELATED SECTIONS

Refer to the following Sections for additional requirements for each component in the assembly: [Delete section from the list below that are not required by the project.]

1. **Section 03 45 00 [Project Specific],** Precast Architectural Concrete
2. **Section 04 20 00 [Project Specific],** Unit Masonry
3. **Section 04 42 00 [Project Specific],** Exterior Stone Cladding
4. **Section 04 43 00 [Project Specific],** Stone Masonry
5. **Section 05 41 00 [Project Specific],** Structural Metal Stud Framing
6. **Section 05 50 00 [Project Specific],** Metal Fabrication (lintels, shelf angles, and masonry support)
7. **Section 06 11 00 [Project Specific],** Wood Framing
8. **Section 06 16 33 [Project Specific],** Wood Board Sheathing
9. **Section 06 16 43 [Project Specific],** Gypsum Sheathing
10. **Section 07 10 00 [Project Specific],** Dampproofing and Waterproofing
11. **Section 07 21 00 [Project Specific],** Thermal Insulation
12. **Section 07 21 13 [Project Specific],** Board Insulation
13. **Section 07 21 13.13 [Project Specific],** Foam Board Insulation
14. **Section 07 21 16 [Project Specific],** Blanket Insulation

15. **Section 07 27 00 [Project Specific],** Air Barriers
16. **Section 07 50 00 [Project Specific],** Membrane Roofing
17. **Section 07 62 00 [Project Specific],** Sheet Metal Flashing and Trim
18. **Section 07 65 00 [Project Specific],** Flexible Flashings
19. **Section 07 84 00 [Project Specific],** Firestopping
20. **Section 07 92 00 [Project Specific],** Joint Sealants
21. **Section 09 29 00 [Project Specific],** Gypsum Board
22. **Section xx xx xx [Project Specific],** LEED Requirements

1.3 ADMINISTRATIVE REQUIREMENTS

A. COORDINATION

Coordinate installation of masonry veneer, masonry ties, insulation, firestopping, and accessories with air barrier membrane, roofing, fenestration, and other moisture protection work.

B. PREINSTALLATION MEETINGS

Convene a meeting of involved sub-contractors a minimum of two weeks prior to commencing Work described in this Section.

1. Attendance is required by representatives of related trades including Owner's Representative, Contractor, Architect, Installer, Air Barrier Membrane System Manufacturer, Roofing and Foundation Waterproofing Subcontractor, masonry subcontractor, mechanical subcontractor, electrical contractor, and all subcontractors who have materials penetrating the air barrier membrane system or finishes covering the membrane system. Manufacturer's Representative is available upon request with minimum two-week notice.
2. Contractor shall notify **[Architect, Engineer, Consultant]** at least 14 days prior to time for meeting.
3. Contractor shall record minutes of meeting and distribute to attending parties.
4. The agenda shall include at a minimum:
   a. Materials proposed for use.
   b. [Verification of eligibility for any warranty].
   c. Sequence of construction.
   d. Coordination with substrate preparation, condition, and pretreatment.
   e. Compatibility of materials.
   f. Air barrier requirements and installation.
   g. Mechanical and electrical requirements and installation.
   h. Minimum curing period.
   i. Special details.
   j. Mockups.
   k. Air leakage and adhesion testing and inspection.
   l. Air barrier protection and repair.
   m. Work scheduling that covers air barrier coordination with installation of adjacent and covering materials.
   n. Review and approval of all glazing applications.
   o. Roofing installation.

1.4 SUBMITTALS

Provide the following information in accordance with **Section 01 33 00 [Project Specific]** Submittal Procedures.

A. PRODUCT DATA:

Submit product data of each component in tested wall assembly as required in **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

B. SHOP DRAWINGS (project-specific to air barrier assembly and Firestopping)

Submit shop drawings demonstrating tested wall assembly components as specified in **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

C. SAMPLES:

Submit product minimum **[three]** samples of each component of the tested wall assembly system as required by this Section.

D. CERTIFICATES:
Submit documentation, signed by manufacturers, that products in tested wall assembly meet Quality Assurance Requirements as required in this Section.

E. TEST AND EVALUATION REPORTS:
Submit manufacturer's verification, test reports, or third-party engineering analysis that the proposed materials assembled as a tested wall system comply with the specified PERFORMANCE/ DESIGN CRITERIA of this Section.

F. MANUFACTURER'S INSTRUCTIONS
Provide installation instructions for all products in tested wall assembly as required in this Section.

G. SUSTAINABLE DESIGN SUBMITTALS:
Provide documentation of required Quality Assurance Sustainability Standards Certifications for all products in tested wall assembly as required in this Section.

H. SPECIAL PROCEDURE SUBMITTALS
[None.]

I. QUALIFICATION STATEMENTS
Provide documentation of required Quality Assurance Qualifications for Manufacturers and Installers for all products in tested wall assembly as required in this Section.

J. WARRANTY DOCUMENTATION
Submit sample warranties as required by this Section.

1.5 QUALITY ASSURANCE

A. QUALIFICATIONS
Manufacturers and Installers of specified products in the tested wall assembly shall meet Quality Assurance Qualifications requirements per **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

B. CERTIFICATIONS
1. Provide Manufacturer's written certification that tested wall assembly components are compatible **[and provided as a single-source from the manufacturer].**
2. Provide Manufacturer's written certification that components are compatible with all adjacent materials that come into contact with the materials during construction and throughout the life of the building including insulation and attached membranes.
3. Provide Manufacturer's written certification that products are for the intended purpose as described in this Section.

C. SUSTAINABILITY STANDARDS CERTIFICATIONS
Provide documentation that specified products of the tested assembly meet Product Design/ Performance Criteria and Product Materials requirements of this Section and Quality Assurance Sustainability Standards Certifications of **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, 07 42 00 Wall Panels, 07 44 00 Faced Panels, 07 46 00 Siding, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

D. MOCK-UPS
Construct a wall system sample panel minimum 8 feet long x 8 feet high that includes **[steel stud framing, wood stud framing, CMU structural wall], [sheathing],** air and water barrier, extruded polystyrene (XPS) continuous insulation, cellular glass structural insulating block, insulation fastening methods, through-wall flashing, weeps/ venting, termination bars, drip edges, sealants, masonry ties, **[perimeter fire rated joint],** and masonry veneer. The mock-up shall also include a window, storefront, or door frame, and sill opening transition assembly detailed with lintel, head, and sill flashings, and end dams to demonstrate surface

preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.

1. Coordinate construction of mockups to permit inspection by Owner's testing agency of air barrier before external insulation and cladding are installed.
2. Include transitions to roofing membrane, building corner condition, and foundation wall.
3. **[Architect, Engineer, Consultant]** approval of mockup is required. If it is determined that mockup does not comply with requirements, affected details must be reconstructed until mockups are approved.
4. Locate as directed and remove upon review and approval.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless **[Architect, Engineer, Consultant]** specifically approves such deviations in writing. **[Indicate portion of wall represented by mockup on Drawings or draw mockup as separate element.]**
   [Add note to indicate if ABAA's Quality Assurance Program is required.]
6. **[Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.]**
7. **[Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups.]**

E. DELIVERY, STORAGE, AND HANDLING
For specified products in the tested wall assembly, follow Delivery, Storage, and Handling requirements per **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

F. FIELD CONDITIONS
For specified products in the tested wall assembly, follow Field Conditions requirements per **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

G. WARRANTY

1. PRODUCT WARRANTY
Provide product warranties as required by **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

2. SYSTEM WARRANTY
Provide system warranty as required by **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

3. INSTALLATION WARRANTY
Provide installation warranty as required by **[Sections 04 20 00 Unit Masonry, 07 21 00 Thermal Insulation, 07 27 00 Air Barriers, and 07 84 13 Window/ Door/ Opening Penetration Firestopping].** [Insert all that apply from 1.2 RELATED SECTIONS.]

PART 2 – PRODUCTS

2.1 TESTED EXTERIOR WALL ASSEMBLY

A. MANUFACTURERS
BASIS-OF-DESIGN: **[Steel Stud, Wood Stud, CMU]** Wall System.

1. Substitution Limitations
   The “Basis of Design” tested wall assembly listed in this Section is tested as a system. The Contractor shall provide the products of the named manufacturers without substitution, unless a written request for an “or equal complete system substitution” has been approved in writing by the **[Architect, Engineer, Consultant]**. Substitution requests must be accompanied by the following to be considered:
   a. Verification that proposed products meet published product performance criteria.
   b. Verification from the proposed manufacturers of independent third-party listings or engineering judgments

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that the proposed system substitution meets the **[NFPA 285 (fire propagation)]**, the **[ASTM E119 (fire resistance)], [ASTM E2357 (air leakage)],** and **[ASTM E331 (water penetration)]** requirements.

c. Verification from proposed manufacturers that the proposed substitution is tested with the other assembly components to meet Division 01, EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS, **Section 01 83 16 [Project Specific].**

B. DESCRIPTION

Provide and install **[cold formed steel stud framed, wood stud framed, CMU]** exterior wall **[load-bearing, non-load bearing], [fire resistance rated, non-rated]** system, with air and water resistive barrier over the **[exterior sheathing, CMU surface]**, with cellular glass structural insulating block, extruded polystyrene (xps) continuous insulation in the wall cavity and **[faced, unfaced] [fiberglass, mineral wool]** batt insulation in any interior stud cavity that effectively controls thermal, air, and water performance and provides continuous insulation and continuity of the building envelope.

C. PERFORMANCE/ DESIGN CRITERIA

1. FIRE CONTAINMENT AND RESISTANCE

a. **NFPA 285 Limited Fire Propagation:**
Provide products that as a complete wall system pass NFPA 285, Standard Fire Test Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.] (If needed, refer to applicable building code for requirements. Refer to Owens Corning NFPA 285 Design Guide for assemblies using FOAMULAR® NGX™ XPS Insulation.)

b. **[ASTM E119 Fire Resistance:**
Provide products that as a system passes ASTM E119, Test Methods for Fire Tests of Building Construction and Materials.] (If needed, refer to applicable building code for requirements. Refer to Owens Corning Structural Fire Resistance Tech Bulletin ES-SS-03 for assemblies using FOAMULAR® NGX™ XPS Insulation.)

c. [ASTM E2307 Perimeter Fire Containment
Provide products that as a system passes ASTM E2307, Standard Test Method for Determining Fire Resistance of Perimeter Fire Barrier Systems Using Intermediate-Scale, Multistory Test Apparatus] [If needed, refer to applicable building code for requirements. Refer to Owens Corning Fire Resistant Joints Tech Bulletin ES-SS-04 for assemblies using FOAMULAR® NGX™ XPS Insulation. Contact ThermafiberInsolutions@OwensCorning.com for assembly options.]

2. ASTM E2357 AIR LEAKAGE RESISTANCE

Provide a continuous air barrier as part of the tested wall system that has an air leakage not exceeding 0.004 cubic feet per square foot per minute under a pressure differential of 0.3 in. water (1.57 pounds per square foot) [0.20 liters per second per square meter at a pressure difference of 75 Pascals (0.20 L/(s·m²) @ 75 Pa)] when tested in accordance with ASTM E2357. Assembly shall accommodate movements of building materials by providing expansion and control joints as required. (Refer to Technical Bulletin ES-SS-02A for example of air leakage testing requirements Steel Stud Construction Additional possible weather barrier options are listed in the Owens Corning NFPA 285 Design Guide. Alternative test methods may be acceptable per AHJ.)

3. ASTM E331 WATER PENETRATION

Provide a tested wall system tested in accordance with ICC-ES AC 212, Section 4.5, Acceptance Criteria for Water Resistive Coatings Used as Water Resistive Barriers over Exterior Sheathing, demonstrating that the system, tested in accordance with ASTM E331, shows no visible water penetration for 15 minutes at an air-pressure differential across the wall assembly of 2.86 psf (137 Pa), and 45 minutes at 6.27 psf (300 Pa). (Refer to Technical Bulletin ES-SS-02A for example of water penetration testing requirements for Steel Stud Construction. Additional possible weather barrier options are listed in the Owens Corning NFPA 285 Design Guide. Alternative test methods may be acceptable per AHJ.)

4. THERMAL RESISTANCE

Provide a tested or modeled wall system that meets or exceeds code required R-value for exterior wall assemblies in the jurisdiction of the project. Submit manufacturer product data sheets and test reports prepared by a qualified testing agency to verify properties for insulation including R-value and other physical properties. (Refer to Technical Bulletin ES-SS-01, ES-WS-01, ES-CMU-01 for IBC Prescriptive Requirements for Steel Stud Construction).

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5. SOUND TRANSMISSION
   Provide a tested wall system that meets or exceeds a Sound Transmission Class (STC) >55, and Outdoor Indoor Transmission Class (OITC) of >45 to >50 depending on wall design. Submit wall system engineering analysis or test reports for the wall assembly performed by qualified acoustical engineer or testing agency documenting STC and OITC classifications. [Include if STC and OITC are important to project performance. Refer to IBC 2015 Section 1207.]

6. INDOOR AIR QUALITY
   a. Provide **[mineral wool, fiberglass]** insulation products that are formaldehyde free.
   b. Provide **[extruded polystyrene (XPS), fiberglass]** insulation products that are formaldehyde free.

7. RECYCLED CONTENT
   Provide insulation products **[cellular glass, extruded polystyrene, fiberglass, and/or mineral wool]** whose recycled content is verified via third party certification.

8. THIRD PARTY LISTING, CERTIFICATION, AND ENGINEERING JUDGEMENTS
   Provide independent third-party verification listings or engineering judgements for the primary code requirements of **[NFPA 285 (fire propagation)]**, **[ASTM E119 (fire resistance)]**, **[ASTM E2357 (air leakage)]**, and **[ASTM E331 (water penetration)]** requirements.

D. MATERIALS
1. Masonry Veneer over **[steel frame, wood frame, concrete masonry]** cavity wall by contractors.
2. Masonry ties.
3. Cellular Glass Structural Insulating Block secured in mortar to prevent thermal bridging between below grade and above grade continuous insulation.
4. **[Cold-formed metal framing independently braced to resist vertical and transverse structural loading, Wood framing independently braced to resist vertical and transverse structural loading, Concrete masonry unit (CMU) reinforced structural wall.]**
5. **[Hook and ladder joint reinforcement]** (CMU structural wall only.)
6. **[Interior gypsum wallboard.]** (Interior gypsum wallboard not required where CMU structural wall will be interior finished surface.)
7. **[Faced, Unfaced] [Fiberglass, Mineral Wool]** Insulation batts in the framing cavity
8. **[Exterior gypsum sheathing with sealed joints, Exterior sheathing with sealed joints].** (Exterior gypsum sheathing not required where XPS will be used as sheathing. See separate FOAMULAR® NGX™ sheathing Data Sheet & XPS Sheathing Guide Specification.)
9. Continuous air and water resistive barrier system applied to the exterior face of the **[sheathing, CMU]** wall installed in an airtight and flexible manner, allowing for the relative movement of systems due to thermal and moisture variations and capable of withstanding positive and negative combined wind, stack, and HVAC pressures on the envelope without damage or displacement.
10. Extruded polystyrene continuous insulation preliminarily secured to **exterior sheathing, laterally reinforced stud framing, CMU]** with **[screws and air and water sealing washers, impaling pins attached with screws, impaling pins adhesively attached, adhesive, compression fit between masonry ties]** and permanently secured with masonry veneer assembly. (Screws required if insulation is it act as sheathing- see separate FOAMULAR® NGX™ sheathing Data Sheet & Guide Specification.)
11. **[Safing to firestop the perimeter of door and window penetrations through wall.]**
12. **[Safing and sealant for sealing gaps between exterior wall and floor edge, perimeter fire containment system.]**

PART 3 – EXECUTION- NOT USED

END OF SECTION 01 83 16

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SECTION 07 21 13.13 FOAM BOARD INSULATION

PART 1 – GENERAL

1.1 SUMMARY

See Division 01, EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS, Section 01 83 16, **[including mandatory wall system compliance with NFPA 285 (fire spread)] and/ or [ASTM E119 (fire resistance)].**
All proposed product substitutions must comply to be considered.

A. SECTION INCLUDES

1. Provide and install **[cold formed steel stud framed, wood stud framed, CMU]** exterior wall **[load-bearing, non-load bearing], [fire resistance rated, non-rated]** system, with air and water resistive barrier over the **[exterior sheathing, CMU surface]**, with cellular glass structural insulating block, extruded polystyrene (xps) continuous insulation in the wall cavity and **[faced, unfaced] [fiberglass, mineral wool]** batt insulation in any interior stud cavity that effectively controls thermal, air, and water performance and provides continuous insulation and continuity of the building envelope. Provide labor, materials, tools and equipment necessary to complete the Work of this Section including, but not limited to, the following:
   a. Extruded Polystyrene continuous insulation for cavity wall application.
   b. Cellular Glass Structural Insulating Block.
   c. Fasteners and Hardware or other method as recommended by continuous insulation manufacturer.

2. The complete wall system shall include the following:
   a. Masonry Veneer over **[steel frame, wood frame, concrete masonry]** cavity wall by contractors.
   b. Masonry veneer ties.
   c. Cellular Glass Structural Insulating Block secured in mortar to prevent thermal bridging between below grade and above grade continuous insulation.
   d. [Cold-formed metal framing independently braced to resist vertical and transverse structural loading, Wood framing independently braced to resist vertical and transverse structural loading, Concrete masonry unit (CMU) reinforced structural wall.]
   e. [Hook and ladder joint reinforcement] (CMU structural wall only.)
   f. [Interior gypsum wallboard.] (Interior gypsum wallboard not required where CMU structural wall will be interior finished surface.)
   g. **[Faced, Unfaced] [Fiberglass, Mineral Wool, None]** Insulation batts in the framing cavity**.**
   h. [Exterior gypsum sheathing with sealed joints, Exterior sheathing with sealed joints]. (Exterior gypsum sheathing not required where XPS will be used as sheathing. See separate FOAMULAR® NGX™ sheathing Data Sheet & XPS Sheathing Guide Specification.)
   i. Continuous air and water resistive barrier system applied to the exterior face of the **[sheathing, CMU]** wall installed in an airtight and flexible manner, allowing for the relative movement of systems due to thermal and moisture variations and capable of withstanding positive and negative combined wind, stack, and HVAC pressures on the envelope without damage or displacement.
   j. Extruded polystyrene continuous insulation preliminarily secured to **[exterior sheathing, laterally reinforced stud framing, CMU]** with **[screws and air and water sealing washers, impaling pins attached with screws, impaling pins adhesively attached, adhesive, compression fit between masonry ties]** and permanently secured with masonry veneer assembly. (Screws required if insulation is it act as sheathing- see separate FOAMULAR® NGX™ sheathing Data Sheet & Guide Specification.)
   k. **[Safing to firestop the perimeter of door and window penetrations through wall.]**
   l. **[Safing and sealant for sealing gaps between exterior wall and floor edge, perimeter fire containment system.]**

3. All joints, penetrations, and gaps of the air barrier wall system shall be made water and air tight.

B. RELATED SECTIONS

The items listed are not included in this Section but are specified in the Section listed: [Delete section from the list below that are not required by the project.]

1. **Section 01 83 16 [Project Specific],** Exterior Enclosure Performance Requirements

2. **Section 03 45 00 [Project Specific],** Precast Architectural Concrete
3. **Section 04 20 00 [Project Specific],** Unit Masonry
4. **Section 04 42 00 [Project Specific],** Exterior Stone Cladding
5. **Section 04 43 00 [Project Specific],** Stone Masonry
6. **Section 05 41 00 [Project Specific],** Structural Metal Stud Framing
7. **Section 05 50 00 [Project Specific],** Metal Fabrication (lintels, shelf angles, and masonry support)
8. **Section 06 11 00 [Project Specific],** Wood Framing
9. **Section 06 16 33 [Project Specific],** Wood Board Sheathing
10. **Section 06 16 43 [Project Specific],** Gypsum Sheathing
11. **Section 07 10 00 [Project Specific],** Dampproofing and Waterproofing
12. **Section 07 21 00 [Project Specific],** Thermal Insulation
13. **Section 07 21 13 [Project Specific],** Board Insulation
14. **Section 07 21 16 [Project Specific],** Blanket Insulation
15. **Section 07 27 00 [Project Specific],** Air Barriers
16. **Section 07 50 00 [Project Specific],** Membrane Roofing
17. **Section 07 62 00 [Project Specific],** Sheet Metal Flashing and Trim
18. **Section 07 65 00 [Project Specific],** Flexible Flashings
19. **Section 07 84 00 [Project Specific],** Firestopping
20. **Section 07 92 00 [Project Specific],** Joint Sealants
21. **Section 09 29 00 [Project Specific],** Gypsum Board
22. **Section xx xx xx [Project Specific],** LEED Requirements

1.2 REFERENCES

A. REFERENCE STANDARDS

Materials shall meet the property requirements of one or more of the following specifications as applicable to the specific product or end use. [Delete references from the list below that are not required by the text of the edited Section.]

1. American Society for Testing of Materials (ASTM)
   a. ASTM C165: Test Method for Measuring Compressive Properties of Thermal Insulations.
   b. ASTM C240: Test Methods for Testing Cellular Glass Insulation Block.
   c. ASTM C518: Standard Test Method for Steady-State Thermal Transmission Properties by Means of Heat Flow Meter Apparatus.
   d. ASTM C578: Standard Specification for Rigid Cellular Polystyrene Thermal Insulation.
   e. ASTM C1902: Standard Specification for Cellular Glass Insulation Used in Building and Roof Applications.
   f. ASTM D1621: Standard Test Method for Compressive Properties of Rigid Cellular Plastics.
   g. ASTM D2126: Standard Test Method for Response of Rigid Cellular Plastics to Thermal and Humid Aging.
   h. ASTM E84: Standard Test Method for Surface Burning Characteristics of Building Materials.
   i. ASTM E96: Standard Test Methods for Water Vapor Transmission of Materials.
   j. ASTM E119: Standard Test Methods for Fire Tests of Building Constructions and Materials.
   k. ASTM E228: Standard Test Method for Linear Thermal Expansion of Solid Materials with a Push-Rod Dilatometer.
   l. ASTM E331: Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors and Curtain Walls by Uniform Static Air Pressure Difference.
   m. ASTM E2357: Standard Test Method for Determining Air Leakage of Air Barrier Assemblies.

2. International Code Council Evaluation Service (ICC-ES)
   a. AC 71: Acceptance Criteria for Foam Plastic Sheathing Panels Used as Water Resistive Barriers.

3. National Fire Protection Association (NFPA)
   a. NFPA 285: Standard Fire Method for Evaluation of Fire Propagation Characteristics of Exterior Non-Load-Bearing Wall Assemblies Containing Combustible Components.

1.3 ADMINISTRATIVE REQUIREMENTS

A. COORDINATION

Coordinate installation of masonry veneer, masonry ties, insulation, firestopping, and accessories with air barrier membrane, roofing, fenestration, and other moisture protection work.

B. PREINSTALLATION MEETINGS
Convene a meeting of involved sub-contractors a minimum of two weeks prior to commencing Work described in this Section.
1. Attendance is required by representatives of related trades including Owner's Representative, Contractor, Architect, Installer, Air Barrier Membrane System Manufacturer, Roofing and Foundation Waterproofing Subcontractor, masonry subcontractor, mechanical subcontractor, electrical contractor, and all subcontractors who have materials penetrating the air barrier membrane system or finishes covering the membrane system. Manufacturer's Representative is available upon request with minimum two-week notice.
2. Contractor shall notify **[Architect, Engineer, Consultant]** at least 14 days prior to time for meeting.
3. Contractor shall record minutes of meeting and distribute to attending parties.
4. The agenda shall include at a minimum:
   a. Materials proposed for use.
   b. **[Verification of eligibility for any warranty]**.
   c. Sequence of construction.
   d. Coordination with substrate preparation, condition, and pretreatment.
   e. Compatibility of materials.
   f. Air barrier requirements and installation.
   g. Mechanical and electrical requirements and installation.
   h. Minimum curing period.
   i. Special details.
   j. Mockups.
   k. Air leakage and adhesion testing and inspection.
   l. Air barrier protection and repair.
   m. Work scheduling that covers air barrier coordination with installation of adjacent and covering materials.
   n. Review and approval of all glazing applications.
   o. Roofing installation.

1.4 SUBMITTALS
Provide the following information in accordance with **Section 01 33 00 [Project Specific]** Submittal Procedures.
A. PRODUCT DATA: Manufacturers' data on each type of product furnished including:
1. Preparation instructions and recommendations.
2. Technical data and tested physical and performance properties of products.
3. Storage, handling requirements, and recommendations.

B. SHOP DRAWINGS (project-specific to cladding and cladding attachment)
1. Show locations and extent of cladding attachment and cladding. Include details for substrate joints and cracks, counterflashing strips, penetrations, inside and outside corners, terminations, flashing transition assemblies, and tie-ins with adjoining construction.
2. Include details of interfaces with other materials that form part of building enclosure.

C. SAMPLES: Submit product minimum **[three]** samples of the following:
1. Extruded Polystyrene Insulation minimum **[three inches by three inches].**
2. Cellular Glass Structural Insulating Block minimum **[three inches by three inches].**
3. Any fasteners, hardware, and adhesives recommended by manufacturer.

D. CERTIFICATES:
Submit documentation signed by Manufacturer that products meet Quality Assurance Certification requirements of this Section.

E. TEST AND EVALUATION REPORTS:
1. **[NFPA 285: Provide documentation from qualified testing agency or fire engineer that the cladding, cladding attachment, insulation, and air barrier system as components of the designed wall assembly have been tested and passed NFPA 285 or approved by third-party engineering**

judgement.] [If needed, refer to applicable building code for requirements. Refer to Owens Corning NFPA 285 Design Guide for assemblies using FOAMULAR® NGX™.]

2. **[ASTM E119: Provide documentation from qualified testing agency or fire engineer that the cladding, cladding attachment, insulation, and air barrier system as components of the designed wall assembly have been tested and passed ASTM E119 or approved by third-party engineering judgement.]** [If needed, refer to applicable building code for requirements. Refer to Owens Corning Structural Fire Resistance Tech Bulletin ES-SS-03, ES-WS-03, ES-CMU-03 for assemblies using FOAMULAR® NGX™.]
3. Engineering analysis: provide engineering analysis by cladding attachment manufacturer for cladding and building conditions using specified insulation, fasteners, cladding, and attachment accessories.

F. MANUFACTURER'S INSTRUCTIONS
Provide Manufacturer's installation instructions for each product specified in this Section.

G. SUSTAINABLE DESIGN SUBMITTALS
Submit material health and recycled content of each product specified as required in Quality Assurance Sustainability Standards Certification of this Section.
[LEED: Provide product prerequisite and/or credit summaries for each product specified as applicable including recycled content and Health Product Transparency information.]

H. SPECIAL PROCEDURE SUBMITTALS
[None.]

I. QUALIFICATION STATEMENTS
Provide documentation of required Quality Assurance Qualifications for Manufacturers and Installers for all products in wall assembly as required in this Section.

K. WARRANTY DOCUMENTATION
Submit sample warranties as required by this Section.

1.5 QUALITY ASSURANCE

A. QUALIFICATIONS

1. MANUFACTURERS
Insulation systems shall be manufactured and marketed by a firm with a minimum of **[20]** years' experience in the production and sales of insulation materials. Obtain continuous insulation materials through one source from a single manufacturer. Manufacturers proposed for use, but not named in these specifications shall submit evidence of ability to meet all requirements specified and include a list of projects of similar design and complexity completed within the past **[five]** years.

2. INSTALLERS
The installation work of this section shall be performed by one entity, an experienced contractor that employs installers and supervisors who are trained and authorized by manufacturer, with a minimum **[two]** years' record of successful installations on projects of similar scope.

B. CERTIFICATIONS

1. Provide Manufacturer's written certification that cladding attachment system components are compatible.
2. Provide Manufacturer's written certification that assembly components are compatible with all adjacent materials that come into contact during construction and throughout the life of the building.
3. Provide Manufacturer's written certification that products are for the intended purpose as described in this Section.

C. SUSTAINABILITY STANDARDS CERTIFICATIONS

1. Minimum recycled content Certified by independent third-party testing.

D. MOCK-UPS
Construct a wall system sample panel minimum 8 feet long x 8 feet high that includes **[steel stud framing, wood stud framing, CMU structural wall], [sheathing],** air and water barrier, extruded polystyrene (XPS)

continuous insulation, cellular glass structural insulating block, insulation fastening methods, through-wall flashing, weeps/ venting, termination bars, drip edges, sealants, masonry ties, **[perimeter fire rated joint],** and masonry veneer. The mock-up shall also include a window, storefront, or door frame, and sill opening transition assembly detailed with lintel, head, and sill flashings, and end dams to demonstrate surface preparation, crack and joint treatment, application of air barriers, and sealing of gaps, terminations, and penetrations of air-barrier assembly.

1. Coordinate construction of mockups to permit inspection by Owner's testing agency of air barrier before external insulation and cladding are installed.
2. Include transitions to roofing membrane, building corner condition, and foundation wall.
3. **[Architect, Engineer, Consultant]** approval of mockup is required. If it is determined that mockup does not comply with requirements, affected details must be reconstructed until mockups are approved.
4. Locate as directed and remove upon review and approval.
5. Approval of mockups does not constitute approval of deviations from the Contract Documents contained in mockups unless **[Architect, Engineer, Consultant]** specifically approves such deviations in writing. **[Indicate portion of wall represented by mockup on Drawings or draw mockup as separate element.]**
   [Add note to indicate if ABAA's Quality Assurance Program is required.]
6. **[Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.]**
7. **[Preconstruction Testing Service: Owner will engage a qualified testing agency to perform preconstruction testing on field mockups.]**

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver and store products in Manufacturer’s unopened packaging until ready for installation.

B. Store and protect products in accordance with manufacturer’s instructions. Store in a dry area and protect from water, direct sunlight, flame, and ignition sources.

C. Remove and replace materials that are damaged.

D. In the event the extruded polystyrene insulation board becomes wet, wipe dry prior to installation.

E. In the event the batt or blanket insulation becomes wet, remove it from the jobsite. [An exception may be allowed in cases where the contractor is able to demonstrate that wet insulation when fully dried (either before installation or afterward following exposure to system operating temperatures) will provide installed performance that is equivalent to new, completely dry insulation. In such cases, consult insulation Manufacturer for technical assistance.]

1.7 FIELD CONDITIONS

A. AMBIENT CONDITIONS

1. Apply products within the range of ambient and substrate temperatures recommended by manufacturer.
2. Protect substrates from environmental conditions that affect insulation performance.

1.8 WARRANTY

A. MANUFACTURER WARRANTY

1. Product Warranty
   Provide Manufacturer’s standard limited warranty against manufacturing defects.
2. Provide Manufacturer’s Lifetime Limited Warranty for ASTM C578 performance properties including retaining 90% thermal performance for the life of the product. (See Owens Corning FOAMULAR® NGX™ Sample Warranty.)

PART 2 – PRODUCTS

2.1 EXTRUDED POLYSTYRENE INSULATION

A. MANUFACTURERS

BASIS-OF-DESIGN: Owens Corning® (www.owenscorning.com/insulation/commercial) FOAMULAR® NGX™ 250 XPS or equal product from one of the following:

1. **[Insert acceptable alternate supplier.]**
2. **[Insert acceptable alternate supplier.]**

3. Substitution Limitations
   The "Basis of Design" products listed in this Section are tested and warranted as a system. The Contractor shall provide the products of the named manufacturers without substitution, unless a written request for an "or equal complete system substitution" has been approved in writing by the **[Architect, Engineer, Consultant]**. Substitution requests must be accompanied by the following to be considered for substitution:
   a. Verification that proposed products meet published product performance criteria.
   b. Verification from the proposed manufacturers of independent third-party listings or engineering judgements that the proposed system substitution meets the **[NFPA 285 (fire propagation)], the [ASTM E119 (fire resistance)], [ASTM E2357 (air leakage)], and/or [ASTM E331 (water penetration)]** requirements.
   c. Verification from proposed manufacturers that the proposed substitution is tested with the other assembly components to meet Division 01, EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS, **Section 01 83 16 [Project Specific].**

B. DESCRIPTION
Provide continuous extruded polystyrene insulation (sheathing), unfaced. Each insulation board must be labeled with manufacturer's name, product brand name, ASTM material specification reference, and identification of the third-party inspection agency used for building code qualification.

C. PERFORMANCE/ DESIGN CRITERIA
1. Type IV per ASTM C578 certified by independent third-party testing agency. (Also available in X, VI, VII, and V. See Owens Corning ASTM C578 Types & Properties Technical Bulletin for more information.)
2. Compressive Strength: 25 psi, minimum per ASTM D1621. (Also available in 15, 40, 60, and 100 psi. Contact Owens Corning for more information.)
3. Thermal Resistance (180-day real-time aging as mandated by ASTM C578, measured per ASTM C518 at mean temperature of 75F): R-5.0 per inch of thickness, with 90% lifetime limited warranty on thermal resistance.
4. Water Absorption (ASTM C272): Maximum.0.30 percent by volume.
5. Surface Burning Characteristics (ASTM E84): Flame spread less than 25; smoke developed less than 450, certified by independent third-party testing agency.
6. **[Tested per ASTM E331 as part of specified tested wall assembly.]**
7. **[Tested per ASTM E2357 as part of specified tested wall assembly.]**
8. **[Tested per NFPA 285 as part of specified tested wall assembly.]**

D. MATERIALS
1. Compliance certified by independent third party such as GREENGUARD Indoor Air Quality Certified® and/or GREENGUARD Gold℠.
2. Contains no HCFCs or HFC 134a blowing agents.
3. Zero ozone depleting blowing agent that has warming potential (100 years) of less than 80. (See Owens Corning FOAMULAR® NGX™ Technical Bulletin).
4. Recycled Content: Minimum 20%, certified by independent third party such as SCS Global Services.
5. Provide R-5 per inch of thickness; **[3/4", 1", 1-1/2", 2", 2-1/2", 3", 4"]** thick; 48"x96"; square edge. (FOAMULAR® NGX™ 250 XPS also available in Tongue & Groove and Shiplap.)

2.2 CELLULAR GLASS STRUCTURAL INSULATING BLOCK

A. MANUFACTURERS

BASIS-OF-DESIGN: Owens Corning® (www.owenscorning.com/insulation/commercial) FOAMGLAS® PERINSUL® SIB or equal product from one of the following:

1. **[Insert acceptable alternate supplier.]**
2. **[Insert acceptable alternate supplier.]**
3. Substitution Limitations
   The "Basis of Design" products listed in this Section are engineered as a system. The Contractor shall provide the products of the named manufacturers without substitution, unless a written request for an "or equal complete system substitution" has been approved in writing by the **[Architect, Engineer, Consultant]**. Substitution requests must be accompanied by the following to be considered for substitution:
   a. Verification that proposed products meet published product performance criteria.
   b. Verification from the proposed manufacturers of independent third-party listings or engineering judgements that the proposed product meets the structural requirements.

c. Verification from proposed manufacturers that the proposed substitution is tested with the other assembly components to meet Division 01, EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS, **Section 01 83 16 [Project Specific].**

B. DESCRIPTION
Provide cellular glass structural insulating block for use under first course of masonry veneer. Each insulation block must be labeled with manufacturer's name and product brand name.

C. PERFORMANCE/ DESIGN CRITERIA
1. Type V per ASTM C1902 certified by independent third-party testing agency. See Owens Corning ASTM C1902 Types & Properties Technical Bulletin for more information.)
2. Compressive Strength: 304 psi, minimum per ASTM D1621.
3. Thermal Resistance (measured per ASTM C518 at mean temperature of 75˚F): R-2.8 per inch of thickness in horizontal direction and R-2.4 per inch of thickness in vertical direction, with 100% lifetime limited warranty on thermal resistance.
4. Water Absorption (ASTM C272): Maximum.0.001 percent by volume.
5. Surface Burning Characteristics (ASTM E84): Flame spread less than 25; smoke developed less than 450, certified by independent third-party testing agency (unfaced).

D. MATERIALS
1. Faced on top and bottom for installation into mortar bed.
2. Contains no HCFCs or HFC 134a blowing agents.
3. Recycled Content: Minimum 20%, certified by independent third party.
4. Provide size: **[2.25" by 3.625" (Standard/ Nominal), 2.75" by 3.625" (Jumbo), 3.625" by 3.625" (Economy)]** thick by 17.7" long; square edge.

2.3 [FASTENERS FOR EXTRUDED POLYSTYRENE INSULATION]

A. MANUFACTURERS
1. **[Insert acceptable alternate supplier.]**
2. **[Insert acceptable alternate supplier.]**
3. Substitution Limitations
The Contractor shall provide the products of the named manufacturers without substitution, unless a written request for an "or equal complete system substitution" has been approved in writing by the **[Architect, Engineer, Consultant]**. Substitution requests must be accompanied by the following to be considered for substitution:
a. Verification that proposed products meet published product performance criteria.
b. Verification from the proposed manufacturers of independent third-party listings or engineering judgements that the proposed system substitution meets the **[NFPA 285 (fire propagation)]**, the **[ASTM E119 (fire resistance)],** ASTM E2357 (air leakage), and ASTM E331 (water penetration) requirements.
c. Verification from proposed manufacturers that the proposed substitution is tested with the other assembly components to meet Division 01, EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS, **Section 01 83 16 [Project Specific].**

B. DESCRIPTION
Screw with Air & Water Sealing Washer: Provide preassembled screw and stress plate fasteners recommended by their manufacturer for securing extruded polystyrene (XPS) continuous insulation to substrate. Polymer or other corrosion-protected, coated steel screw fasteners for anchoring to sheathing and metal wall framing. Fastener length and size based on wall sheathing thickness and fastener manufacturer recommendation.

C. PERFORMANCE/ DESIGN CRITERIA
1. Tested per ASTM E331 as part of specified tested wall assembly.
2. Tested per ASTM E2357 as part of specified tested wall assembly.

D. MATERIALS
1. Screws for steel stud framing: Meet or exceed ASTM C954 and premium ceramic coating exceeds 1,000 hours of salt spray testing **[Zinc, Ceramic]** coated for corrosion protection.
2. Minimum 2-inch diameter air and water sealing washers: seal tested per ASTM E331 (water) and ASTM E2357 (air), **[pronged for ease of pre-positioning and easy on-the-wall screw assembly].**
3. Bugle head screws: Ranging from #6 - #10, self-drilling for steel studs. HiLo thread for light gauge steel. Length of screw shall be one inch longer than the thickness of the insulation and gypsum sheathing combined for a minimum four threads of penetration through the backside of the steel studs.

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2.4 ADHESIVES FOR EXTRUDED POLYSTYRENE INSULATION

A. MANUFACTURERS

1. **[Insert acceptable alternate supplier.]**
2. **[Insert acceptable alternate supplier.]**
3. Substitution Limitations

   The Contractor shall provide the products of the named manufacturers without substitution, unless a written request for an "or equal complete system substitution" has been approved in writing by the **[Architect, Engineer, Consultant]**. Substitution requests must be accompanied by the following to be considered for substitution:

   a. Verification that proposed products meet published product performance criteria.
   b. Verification from the proposed manufacturers of independent third-party listings or engineering judgements that the proposed system substitution meets the **[NFPA 285 (fire propagation)], the [ASTM E119 (fire resistance)], [ASTM E2357 (air leakage)], and/or [ASTM E331 (water penetration)]** requirements.
   c. Verification from proposed manufacturers that the proposed substitution is tested with the other assembly components to meet Division 01, EXTERIOR ENCLOSURE PERFORMANCE REQUIREMENTS, **Section 01 83 16 [Project Specific].**

B. DESCRIPTION

Compatible, non-solvent based adhesive for use with extruded polystyrene insulation. Provide adhesive recommended by the manufacturer for securing extruded polystyrene (XPS) continuous insulation to CMU or concrete wall and/or air and water barrier.

C. PERFORMANCE/ DESIGN CRITERIA

1. Non-solvent based.
2. Low VOC.
3. Compatible with air barrier and extruded polystyrene.

D. MATERIALS

1. **[Two-Part Adhesive], [Single-Component Foamed Adhesive], [Aerosol Spray Adhesive] [Single-Component Tube Applied].**

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify that wall, opening framing, bridging and structural bracing, and other framing support members and anchorage have been installed per requirements of the Project.
B. Verify adjacent materials are dry and ready to receive insulation.
C. Do not begin installation until substrates have been properly prepared. If substrate preparation is the responsibility of another installer, notify owner's agent and **[Architect, Engineer, Consultant]** of unsatisfactory preparation in writing before proceeding. Do not proceed with work until unsatisfactory conditions have been corrected.
D. Installation of products specified in this Section constitutes acceptance of existing conditions and assumption of responsibility for satisfactory performance.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.
B. Prepare surfaces using methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3.3 INSTALLATION

A. EXTRUDED POLYSTYRENE CONTINUOUS INSULATION

1. Verify manufacturer recommended cure time for air and water barrier system before installing continuous insulation board**.**
2. Install extruded polystyrene (XPS) insulation boards over the exterior gypsum sheathing and air & water resistive barrier layer in accordance with manufacturers' written recommendations.
3. Install XPS insulation board in maximum sizes to minimize joints.
4. Locate joints square to framing members. Center joints over framing. Provide additional framing as necessary.
5. Stagger joints a minimum of one stud space from adjacent joints.

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6. Insulation board edges shall be butted together tightly and fit around openings and penetrations. Install square edges to fit square and tight.
7. Extend insulation in thickness indicated to envelop entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation.
   [Owens Corning does not require a particular method of securing FOAMULAR® NGX™ Insulation, nor does Owens Corning require joint sealing unless the XPS is to create an air & water barrier- refer to Owens Corning® FOAMULAR® Air & Water Barrier System Guide Specification.]
8. Apply single layer of insulation boards to produce thickness indicated unless multiple layers are otherwise shown or required to make up total thickness.
9. Fasten XPS insulation to exterior face of **[framing and sheathing, CMU]** wall using **[mechanical fasteners, compatible adhesive, and/or compression fit]** per manufacturer's written instructions.
   [Choose a, b, c, or combination]
   a. Screw with Air & Water Sealing Washer
      1. Install through XPS insulation into sheathing and stud with self-drilling screws using a standard drill with a variable clutch adjustment and appropriate adapter or auto-feed fastening system.
      2. Do not attach with impact driver.
      3. Drive fasteners so the washer is tight and flush with insulation surface but do not countersink.
      4. Fastener spacing shall be evenly distributed and the minimum necessary per job site conditions as required by Insulation & Fastener Manufacturers to hold the continuous insulation in place until cladding attachment system can be installed to permanently secure the insulation board in accordance with **[Division 04 20 00, 07 05 43, 07 42 00, 07 44 00, 07 46 00]** requirements.
      5. Two-inch diameter pronged fasteners can bridge between adjoining board edges.
   b. Compatible Adhesive
      1. Apply compatible adhesive to sheathing & air barrier, per adhesive manufacturer, air barrier manufacturer, and insulation manufacturer recommendations.
      2. Install XPS insulation in adhesive while wet.
      3. Hold insulation securely in place until adhesion is satisfactory.
      4. Application rate and spacing shall be evenly distributed and minimum necessary per jobsite conditions as required by Insulation & Adhesive Manufacturers to hold the continuous insulation in place until cladding attachment system can be installed to permanently secure the insulation board in accordance with **[Division 04 20 00, 07 05 43, 07 42 00, 07 44 00, 07 46 00]** requirements.
   c. Compression Fit
      1. Secure insulation boards with two-piece wall ties designed for this purpose and specified in **[Division 04, Masonry Anchorage and Reinforcing.]**
      2. Fit courses of 16 inches wide insulation boards horizontally between 16 inches o.c. horizontal continuous joint reinforcing/ adjustable wall tie eyes.
      3. Snugly friction fit insulation in place, between the wall tie eyes.
      4. Push the insulation back tightly against the back-up wall surface, with edges butted tightly in both directions.
      5. Secure insulation in place by inserting the adjustable brick tie pintel into the wall tie eye(s).
10. **[Fastening requirements may be revised per job site conditions if insulation board is being installed at the same time as the cladding attachment system that will serve to secure insulation board to the substrate. Contractor must receive written confirmation from the [Architect, Engineer, Consultant] before altering fastener requirements.]**
11. Install masonry veneer as soon as possible, best within 60 days.

B. CELLULAR GLASS STRUCTURAL INSULATING BLOCK
1. Verify manufacturer recommended cure time for air and water barrier system and waterproofing before installing structural insulating block**.**
2. Install a single layer of cellular glass structural insulating block with facers on top and bottom surfaces fully embedded into mortar set on brick ledge in accordance with manufacturers' written recommendations.
3. Install cellular glass structural insulating block maximum sizes to minimize joints.
4. Locate joints square to framing members. Do not cantilever cellular glass structural insulating block.
5. Butt joints of cellular glass structural insulating block with no gaps or mortar between joints.

6. Insulation board edges shall be butted together tightly and fit around openings and penetrations. Install square edges to fit square and tight.
7. Extend insulation in single course to cover entire area to be insulated. Cut and fit tightly around obstructions and fill voids with insulation. Do not drill.
8. Place layer of mortar on upper facer of cellular glass structural insulating block to fully and continuously cover material and receive subsequent masonry courses as specified in **[Section 04 20 00].** First course shall be solid brick with no holes or voids.
9. Install masonry veneer immediately.

3.4 REPAIR

A. FILL ERRANT PUNCTURES, PENETRATIONS, AND HOLES

1. If fasteners are removed leaving penetration into the air barrier system beneath, the affected area must be detailed with air barrier sealant see **[Section 07 27 00 Air Barriers- Project Specific]** [Note: Fill of errant punctures, penetrations, and holes may be included in two separate specification sections and therefore the responsibility of two separate trades. Identify the responsible trade according to project specific requirements.]
2. Completely fill the hole with sealant. Fill the hole in the continuous insulation board to full depth making sealant contact with the air and water barrier membrane below the insulation and fully flush with the outer face of the insulation.

3.5 CLEANING

A. Prior to project closeout, remove all related rubbish, excess material, scaffolding, tools, and equipment from the site. Dispose of waste material in a manner approved by applicable jurisdictions.

3.6 PROTECTION

A. Protect insulation from damage due to weather and physical abuse until protected by permanent construction.
B. If black tape or coatings are installed over the XPS insulation board, cover the black surfaces as soon as possible to avoid damage due to potential solar heat build-up on the black surface.
C. Do not permit extruded polystyrene insulation board to come in contact with surfaces or temperatures in excess of 165°F.
D. Touch-up, repair, or replace damaged products before Substantial Completion.

END OF SECTION 07 21 13.13

Owens Corning® Enclosure Solutions
FOAMGLAS® PERINSUL® SIB
Cellular Glass Structural Insulating Block
For Masonry Veneer Walls Specification

GUIDE SPECIFICATIONS

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