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This MANU-SPEC® utilizes the Construction Specifications Institute (CSI) *Manual of Practice*, including *MasterFormat*™, *SectionFormat*™ and *PageFormat*™. A MANU-SPEC is a manufacturer-specific proprietary product specification using the proprietary method of specifying applicable to project specifications and master guide specifications. Optional text is indicated by brackets (); delete optional text in final copy of specification. Specifier Notes typically precede specification text; delete notes in final copy of specification. Trade/brand names with appropriate symbols typically are used in Specifier Notes; symbols are not used in specification text. Metric conversion, where used, is soft metric conversion.

This MANU-SPEC specifies permanent forms, including extruded polystyrene insulation for insulated concrete forming systems marketed under the trade names FOAMULAR and FOAMULAR PINKFOAM XTRA and manufactured by Owens Corning. FOAMULAR and FOAMULAR PINKFOAM XTRA are registered trademarks of Owens Corning. Revise MANU-SPEC section number and title below to suit project requirements, specification practices and section content. Refer to CSI *MasterFormat* for other section numbers and titles.

SECTION 03130
PERMANENT FORMS
(INSULATED CONCRETE FORMING SYSTEM)

PART 1 GENERAL

1.01 SUMMARY

Specifier Note: The Owens Corning FOAMULAR PINKFOAM XTRA concrete forming system is a permanent (retained-in-place) system and includes: FOAMULAR PINKFOAM XTRA insulation, polypropylene ties, 90 degree corner ties, T-intersection ties, connector ties and internal alignment brace.

- A. Section Includes: Permanent forms, including extruded polystyrene insulation, for insulated concrete forming systems.

Specifier Note: Revise paragraph below to suit project requirements. Add section numbers and titles per CSI *MasterFormat* and specifier's practice.

- B. Related Sections: Section(s) related to this section include:
1. Earthwork: Division 2 Earthwork Sections.
 2. Concrete: Division 3 Concrete Sections.
 3. Dampproofing and Waterproofing: Division 7 Dampproofing and Waterproofing Sections.

Specifier Note: Article below may be omitted when specifying manufacturer's proprietary products and recommended installation. Retain Reference Article when specifying products and installation by an industry referenced standard. If retained, list standard(s) referenced in this section. Indicate issuing authority name, acronym, standard designation and title. Establish policy for indicating edition date of standards referenced. Conditions of the Contract or Division 1 References Section may establish the edition date of standards. This Article does not require compliance with standards, but is merely a listing of references used. Article below should list only those industry standards referenced in this section.

1.02 REFERENCES

- A. General: Standards listed by reference, including revisions by issuing authority, form a part of this specification section to extent indicated. Standards listed are identified by issuing authority, authority abbreviation, designation number,



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title or other designation established by issuing authority. Standards subsequently referenced herein are referred to by issuing authority abbreviation and standard designation.

- B. American Society for Testing & Materials (ASTM):
 - 1. ASTM C578 Standard Specification for Rigid, Cellular Polystyrene Thermal Insulation.

1.03 SYSTEM DESCRIPTION

- A. Performance Requirements: Provide extruded polystyrene insulation which has been manufactured and installed to maintain performance criteria stated by manufacturer without defects, damage or failure.

Specifier Note: Article below includes submittal of relevant data to be furnished by Contractor either before, during or after construction. Coordinate this Article with Architect's and Contractor's duties and responsibilities in Conditions of the Contract and Division 1 Submittal Procedures Section.

1.04 SUBMITTALS

- A. General: Submit listed submittals in accordance with Conditions of the Contract and Division 1 Submittal Procedures Section.
- B. Product Data: Submit product data, including manufacturer's SPEC-DATA® product sheet, for specified products.
- C. Samples: Submit selection and verification samples for finishes, colors and textures.
- D. Quality Assurance Submittals: Submit the following:
 - 1. Test Reports: Certified test reports showing compliance with specified performance characteristics and physical properties.
 - 2. Certificates: Product certificates signed by manufacturer certifying materials comply with specified performance characteristics and criteria, and physical requirements.
 - 3. Manufacturer's Instructions: Manufacturer's installation instructions.

Specifier Note: Coordinate paragraph below with Part 3 Field Quality Requirements Article herein. Retain or delete as applicable.

- 4. Manufacturer's Field Reports: Manufacturer's field reports specified herein.
- E. Closeout Submittals: Submit the following:
 - 1. Warranty: Warranty documents specified herein.
 - 2. Record Documents: Project record documents for installed materials in accordance with Division 1 Closeout Submittals (Project Record Documents) Section.

Specifier Note: Article below should include prerequisites, standards, limitations and criteria which establish an overall level of quality for products and workmanship for this section. Coordinate below Article with Division 1 Quality Assurance Section.

1.05 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Installer Qualifications: Installer experienced in performing work of this section who has specialized in installation of work similar to that required for this project.

Specifier Note: Retain paragraph below to suit project requirements; otherwise, delete paragraph below.

- a. Certificate: When requested, submit certificate indicating qualifications.
- 2. Manufacturer Qualifications: Manufacturer capable of providing field service representation during construction and approving application method.

Specifier Note: Paragraph below should list obligations for compliance with specific code requirements particular to this section.

General statements to comply with a particular code are typically addressed in Conditions of the Contract and Division 1 Regulatory Requirements Section. Repetitive statements should be avoided.

- B. Regulatory Requirements: (Specify applicable requirements of regulatory agencies.).

Specifier Note: Building Codes. Edit paragraph below to suit project. Current data on building code requirements and product compliance may be obtained from Owens Corning technical support specialists. Installation must comply with the requirements of all applicable local, state and national code jurisdictions. For code compliance, see the following reports: California Energy Commission and Department of Consumer Affairs; State of Minnesota Department of Energy; City of New York B.S.A. #978-79-S, and Underwriters Laboratories, Inc., Classification Certificate U-197.

1. Building Code: (Specify applicable requirements of building code to suit project requirements.).

Specifier Note: Approvals. Edit paragraph below to suit project. Current data on approvals and product compliance may be obtained from Owens Corning technical support specialists. For code compliance, see the following reports: California Energy Commission and Department of Consumer Affairs; State of Minnesota Department of Energy; City of New York B.S.A. #978-79-S, and Underwriters Laboratories, Inc., Classification Certificate U-197.

2. Approvals: (Specify applicable requirements for approvals to suit project requirements.).

Specifier Note: Coordinate paragraph below with Division 1 Project Management and Coordination (Project Meetings) Section.

- C. Preinstallation Meetings: Conduct preinstallation meeting to verify project requirements, substrate conditions, manufacturer's installation instructions and manufacturer's warranty requirements. Comply with Division 1 Project Management and Coordination (Project Meetings) Section.

Specifier Note: Article below should include special and unique requirements. Coordinate Article below with Division 1 Product Requirements Section.

1.06 DELIVERY, STORAGE & HANDLING

- A. General: Comply with Division 1 Product Requirements Sections.
- B. Ordering: Comply with manufacturer's ordering instructions and lead time requirements to avoid construction delays.
- C. Delivery: Deliver materials in manufacturer's original, unopened, undamaged containers with identification labels intact.

Specifier Note: Handle and store product according to Owens Corning recommendations. High Density Palleting: All preassembled wall sections are provided on standard pallets for common carrier shipping and forklift handling. The folding feature of the standard connector ties eliminates wasted space for shipping and handling.

- D. Storage and Protection: Store materials protected from exposure to harmful weather conditions, at temperature and humidity conditions recommended by manufacturer.
1. Handle and store product according to Owens Corning recommendations. Materials should be delivered in their original unopened units, stored off the ground, protected from direct sunlight with a light colored opaque polyethylene film and ventilated to prevent excessive temperature. Damaged or deteriorated materials should be removed from the premises.

1.07 PROJECT CONDITIONS

- A. Environmental Requirements/Conditions: Substrate and ambient air temperature shall be in accordance with manufacturer's requirements.

Specifier Note: Coordinate Article below with Conditions of the Contract and with Division 1 Closeout Submittals (Warranty) Section.

1.08 WARRANTY



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- A. Project Warranty: Refer to Conditions of the Contract for project warranty provisions.

Specifier Note: Warranty: It is the responsibility of the contractor to install FOAMULAR in accordance with Owens Corning's published recommendations. The presence of an Owens Corning representative at the jobsite does not relieve the contractor from the responsibility to follow these instructions. Owens Corning is not responsible for any liability resulting from a failure to follow these instructions. The manufacturer offers a warranty on retention of R-value over time. The manufacturer's liability is expressly limited to replacement of defective goods. Any claim shall be deemed waived unless made in writing to the manufacturer within 30 days from the date it was, or reasonably should have been, discovered. Further information on warranty conditions, duration and remedies may be obtained from Owens Corning.

- B. Manufacturer's Warranty: Submit, for Owner's acceptance, manufacturer's standard warranty document executed by authorized company official. Manufacturer's warranty is in addition to, and not a limitation of, other rights Owner may have under Contract Documents.

Specifier Note: Coordinate paragraph below with manufacturer's warranty requirements.

1. Warranty Period: (Specify term.) years commencing on Date of Substantial Completion.

PART 2 PRODUCTS

Specifier Note: Retain Article below for proprietary method of specification. Add product attributes, performance characteristics, material standards and descriptions as applicable. Use of such phrases as "or equal" or "or approved equal" or similar phrases may cause ambiguity in specifications. Such phrases require verification (procedural, legal and regulatory) and assignment of responsibility for determining "or equal" products.

2.01 PERMANENT FORMS

Specifier Note: Owens Corning FOAMULAR PINKFORM XTRA is an extruded closed cell polystyrene rigid foam insulation used with waterproofing and dampproofing membranes to enhance the performance of vertical and horizontal applications. It is designed to improve thermal performance, prevent condensation on interior surfaces and enhance drainage. Owens Corning's patented Hydrovac process technology makes the unique closed cell polystyrene structure of FOAMULAR PINKFORM XTRA insulation highly resistant to moisture while retaining its initial R-value year after year even following prolonged exposure to humidity, condensation, ground water and freeze/thaw cycling. These products are well suited for below-grade foundations or above-grade walls. Limitations: FOAMULAR PINKFORM XTRA is practical for buildings having normal temperature conditions but should not be used in contact with chimneys, heater vents, steam pipes or other surfaces where temperatures exceed 150 degrees F (65 degrees C). It is not recommended for applications where sustained temperatures exceed 165 degrees F (74 degrees C). Construction should be evaluated by a qualified design professional for the necessity of providing vapor retarders to avoid condensation and subsequent damage to the structure. (See current ASHRAE Handbook of Fundamentals for more information.) Provisions should be made to protect the insulation from excessive exposure to direct sunlight by covering the insulation as soon as possible. Some plastic or oil based adhesives and many solvent laden mastics are not compatible with polystyrene based rigid foam insulation.

- A. Manufacturer: Owens Corning.

Specifier Note: Paragraph below is an addition to CSI *SectionFormat* and a supplement to MANU-SPEC. Retain or delete paragraph below per project requirements and specifier's practice.

1. Contact: One Owens Corning Parkway, Toledo, OH 43659; Telephone: (800) 438-7465, (800) GET-PINK; Fax: (419) 438-7465; website: www.owenscorning.com.

Specifier Note: The heart of the Owens Corning FOAMULAR PINKFOAM XTRA Insulated Concrete Forming System is an array of basic elements which have been field tested for over 10 years. The Owens Corning concrete forming system includes: FOAMULAR PINKFOAM XTRA Insulation, polypropylene ties, 90 degree corner ties, T-intersection ties, folding connector ties and internal alignment brace. The forming system offers wall sections, processed corner kits and T-intersections with appropriate connector ties. The processed corner kits are engineered to integrate with preassembled wall sections.

B. Proprietary Product(s)/System(s): FOAMULAR PINKFORM XTRA Insulated Concrete Forming System, including:

Specifier Note: FOAMULAR PINKFOAM XTRA Extruded Polystyrene Insulation. For the complete system, 2" (51 mm) thick sheets of FOAMULAR PINKFOAM XTRA insulation are precisely cut and sized to create the form walls. As a result, every project benefits from the stable, high efficiency properties of this proven material. Preassembled Wall Sections: Form walls are preassembled into 2' (610 mm) high, 8' (2438 mm) long sections. The folding connector ties provide for high density palleting of these sections to cut shipping and handling costs to a minimum. Pallet capacity is 300% greater than typical rigid insulating concrete forms. Processed Board: FOAMULAR PINKFOAM XTRA Insulation that has been factory processed for connectors is available for onsite assembly. Processed 90 degree Corner Kits and T-Intersections: A unique feature of the FOAMULAR PINKFOAM XTRA system is the high strength corner design. Once assembled, corners and intersections require a minimum of external bracing. The insulation portion of the 90 degree corner kits are processed for quick assembly with the appropriate connector ties. The kit is supplied complete using the same high density palleting technique as the wall sections. Processed Corner Kits as well as intersections are engineered to integrate with wall sections. Once constructed, wall and corner forms are clamped together for a precise, dependable fit.

1. FOAMULAR PINKFOAM XTRA Polystyrene Insulation.

Specifier Note: Polypropylene Connector Ties: The FOAMULAR PINKFOAM XTRA Insulated Concrete Forming System features the patented Life-Form connector tie technology. All connector ties have excellent insulating qualities to minimize the thermal bridging. The patented design has the internalized strength to perform in a wide range of cast-in-place concrete construction projects.

2. Polypropylene Connector Ties.

Specifier Note: 90 degree Corner Ties and T-Intersection Ties: The appropriate ties are included with each processed Corner Kit. The 1 piece tie design for both 90 degree corners and T-intersections reduces the assembly time and ensures proper alignment with a minimum of exterior bracing. Folding Connector Ties: All wall sections include these unique folding ties installed 8" (203 mm) oc. Drywall and other finish materials are attached directly to the tie's exposed tabs. For traditional concrete walls, tabs are snapped off, releasing insulation for stripping. Ties are hinged to allow for high density packaging and shipping of wall sections. Hinged connector ties: These ties allow wall forms to be folded flat, eliminating wasted space for shipping and storage. Sections are quickly unfolded at the jobsite for final assembly. Owens Corning offers wall sections which constitute the major portion of the forms needed for most residential or commercial projects and drastically reduces the time consuming step of form assembly. The elements quickly integrate with each other as well as a host of special forming accessories.

3. Corner Ties, T-intersection Ties and Connector Ties.

Specifier Note: Internal Alignment Brace: This unique FOAMULAR PINKFOAM XTRA accessory is available for insertion into form walls that are over 4' (1219 mm) tall. At the jobsite, it integrates into all wall sections and reduces typical external bracing requirements by 50%.

4. Internal Alignment Brace.

C. Insulated Concrete Forming System:

1. Wall Thickness: (Specify wall thickness as indicated on drawings.)

- a. Insulation Board Thickness: (Specify board thickness.) FOAMULAR PINKFOAM XTRA boards are available for most concrete walls in thickness from 4" - 24" (102 - 610 mm), in 2" (51 mm) increments.

2. Preassembled Wall Sections: (Specify wall section requirements.)

3. Corner Kits: Manufacturer's processed corner kit.

4. Special Shapes: (Specify requirements for special shapes.)

D. Material Standard: Provide FOAMULAR PINKFORM XTRA insulation products complying with ASTM C578 standards for Type IV material.

Specifier Note: Paragraph below lists properties for Owens Corning Insulated Concrete Forming System. Revise paragraph below to suit project requirements. System provides an R20+ when left in place. Test reports and additional information are available



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upon request.

- E. Product(s) Testing: Provide insulated concrete forming system complying with the following properties:
1. Flexural Strength (ASTM C203): 75 psi (517 kPa) minimum.
 2. Water Absorption (ASTM C272): 0.1% by volume maximum.
 3. Thermal Conductivity k-Value at 75 degrees F (24 degrees C) (ASTM C518): 0.2.
 4. Thermal Conductivity k-Value at 40 degrees F (4 degrees C) (ASTM C518): 0.18.
 5. Compressive Strength (ASTM D1621): 25 psi (172 kPa) minimum.
 6. Dimensional Stability (ASTM D2126): 2% linear change maximum.
 7. Oxygen Index (ASTM D2863): 24 minimum.
 8. Flamespread (ASTM E84): 5.
 9. Smoke Developed (ASTM E84): 45 - 175.
 10. Water Vapor Permeance (ASTM E96): 1.1 perm max.
 11. Fire Resistance Rating of 8" (203 mm) Finished Wall: 3 hours.
 12. Sound Transmission Class for an 8" (203 mm) Finished Wall: STC 58.

Specifier Note: Edit Article below to suit project requirements. If substitutions are permitted, edit text below. Add text to refer to Division 1 Project Requirements (Product Substitutions Procedures) Section.

2.02 PRODUCT SUBSTITUTIONS

- A. Substitutions: No substitutions permitted.

2.03 ACCESSORIES

- A. General: Provide accessory materials, including panel adhesive, construction tape and panel protective coating, as recommended by panel manufacturer.

2.04 RELATED MATERIALS

- A. Related Materials: Refer to other sections listed in Related Sections paragraph herein for related materials.
1. Concrete: Provide 3000 - 3500 psi (21 - 24 MPa) minimum, 4" - 6" (102 - 152 mm) slump with 3/4" (19.1 mm) smooth aggregate.

2.05 SOURCE QUALITY

- A. Source Quality: Obtain below grade insulation panel materials from a single manufacturer.

PART 3 EXECUTION

Specifier Note: Article below is an addition to the CSI *SectionFormat* and a supplement to MANU-SPEC. Revise Article below to suit project requirements and specifier's practice.

3.01 MANUFACTURER'S INSTRUCTIONS

- A. Compliance: Comply with manufacturer's product data, including product technical bulletins, product catalog installation instructions and product carton instructions for installation.

3.02 EXAMINATION

- A. Site Verification of Conditions: Verify substrate conditions, which have been previously installed under other sections, are acceptable for product installation in accordance with manufacturer's instructions.

3.03 PREPARATION

Specifier Note: Site Preparation: Forms are placed on a standard footing or concrete pad. Temporary cleats keep forms aligned during final assembly and insertion of concrete. Any building code required reinforcing bar schedule can be accommodated.

- A. Surface Preparation: (Specify applicable product preparation requirements.).

Specifier Note: Coordinate Article below with manufacturer's recommended installation details and requirements.

3.04 INSTALLATION

Specifier Note: Although it does contain a flame retardant additive to inhibit ignition from small fire sources, Owens Corning FOAMULAR PINKFORM XTRA insulation will ignite if exposed to fire of sufficient heat and intensity. Products intended for wall applications should be installed only with a thermal barrier on the interior side of the wall. During shipping, storage, installation and use, this product should not be exposed to open flame or other ignition sources.

- A. Insulation Installation:

Specifier Note: Customizing: Preassembled wall sections are easily trimmed to fit any project dimension. The common vertical seams between the 2' x 8' (610 x 2438 mm) sections are quickly clamped together without special tools. Contact manufacturer regarding form system installation procedures to meet project requirements

1. Form System Installation: (Specify.).

Specifier Note: Final Assembly: In addition to producing a fully engineered concrete wall, the FOAMULAR PINKFOAM XTRA system gives the installer freedom to incorporate any reinforcing bar schedule for residential or commercial projects. Contact manufacturer for final assembly installation procedures to meet project requirements.

2. Final Assembly: (Specify.).

Specifier Note: Special Shapes: The installer can incorporate a wide variety of accessories to assemble special shapes such as 45 degree angles and curved walls. They integrate into the FOAMULAR PINKFOAM XTRA elements and are quickly assembled at the jobsite. Contact manufacturer regarding special shape accessories to meet project requirements.

3. Special Shapes: (Specify.).

Specifier Note: Bracing: The internal strength of the FOAMULAR PINKFOAM XTRA design offers the ability to construct forms with a minimum of external bracing. Vertical braces are placed every 8' - 10' (2.4 - 3.1 m) along 1 side of the form and anchored with dimensional lumber and hand tools. Diagonal bracing is used to align the form and provide final support. Complete installation recommendations are available from the manufacturer.

4. Bracing: Provide external bracing as required for concrete forming system. Provide vertical braces placed every 8' - 10' (2.4 - 3.1 m) along 1 side of form and anchored with dimensional lumber.

Specifier Note: Finishes: Edit paragraph below to suit project requirements. Consult with manufacturer for recommended finished for exterior and interior applications.

- B. Finishes: (Specify finish of form system to suit project requirements.).
C. Site Tolerances: (Specify site tolerances of installed form system.).
D. Related Products Installation: Refer to other sections listed in Related Sections paragraph herein for related products installation.
1. Concrete: Refer to Division 3 Concrete Sections for concrete installation.

3.05 FIELD QUALITY REQUIREMENTS

- A. Site Tests (Installation and Post-Installation Testing): (Specify applicable test requirements to be performed during and/or after product installation.).



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Specifier Note: Edit paragraph below. Establish number and duration of periodic site visits with Owner and manufacturer, and specify below. Consult with manufacturer for services required. Coordinate paragraph below with Division 1 Quality Assurance Section and Part 1 Quality Assurance Submittals herein. Delete if manufacturer's field service not required.

- B. Manufacturer's Field Services: Upon Owner's request, provide manufacturer's field service consisting of product use recommendations and periodic site visits for inspection of product installation in accordance with manufacturer's instructions.

- 1. Site Visits: (Specify number and duration of periodic site visits.).

3.06 CLEANING

- A. Cleaning: Remove temporary coverings and protection of adjacent work areas. Repair or replace damaged installed products. Clean installed products in accordance with manufacturer's instructions prior to Owner's acceptance. Remove construction debris from project site and legally dispose of debris.

3.07 PROTECTION

- A. Protection: Protect installed product and finish surfaces from damage during construction.

END OF SECTION