TIPS:

To view non-printing **Editor's Notes** that provide guidance for editing, click on the '¶' character located in the Paragraph section of the 'Home' Tab in the Microsoft Word ribbon above.

PART 1 - GENERAL

1.1 SUMMARY

A. Section includes:
   1. Insulating concrete forms
   2. Shoring bracing and anchoring

B. Related Requirements:

   1. Section 03-10-00 "Concrete Forming and Accessories" for form-facing material and form liners, for cast-in-place concrete.
   2. Section 03-20-00 "Concrete Reinforcing" for steel reinforcement bars.
   3. Section 03-30-00 "Cast-in-Place Concrete" for requirements related to cast-in-place structural concrete.
   4. Section 07-11-19 "Bituminous Dampproofing" for self-adhered membrane and fluid applied dampproofing materials compatible with EPS form units.
   5. Section 07-13-26 "Self-Adhering Sheet Waterproofing" for waterproofing materials compatible with EPS form units.
   6. Section 07-13-53 "Elastomeric Sheet Waterproofing" for waterproofing materials compatible with EPS form units.
   7. Section 07-13-54 "Thermoplastic Sheet Waterproofing" for waterproofing materials compatible with EPS form units.
   8. Section 07-14-13 "Hot Fluid-Applied Rubberized Asphalt Waterproofing" for waterproofing materials compatible with EPS form units.
   9. Section 07-14-16 "Cold Fluid-Applied Waterproofing" for waterproofing materials compatible with EPS form units.

1.2 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

   1. Review the following:

      a. Special inspection and testing and inspecting agency procedures for field quality control.
      b. Construction, movement, contraction, and isolation joints
      c. Shoring and reshoring procedures.
      d. Anchor rod and anchorage device installation tolerances.

1.3 SUBMITTALS

A. Provide submittals in accordance with section [01-33-00 Submittal Procedures]

B. Product Data:
   1. Provide most recent technical Insulating concrete forms components data sheets describing materials physical properties and include product characteristics, performance criteria, physical size and limitations.

C. Shop Drawings: Prepared by, and signed and sealed by, a qualified professional engineer responsible for their preparation, detailing fabrication, assembly, and support of forms.

   1. Indicate layout of insulating concrete forms, dimensions, course heights, form types, and details.

D. Manufacturer's Certificate: Certify that Insulating Concrete form meets or exceed [**ASTM E2634**] [**CAN/ULC S717**].

E. Test and Evaluation Report: Submit laboratory test reports certifying that the Insulating Concrete Form is in compliance with ICC-ES Acceptance Criteria AC353

F. Manufacturers Installation Instructions: Indicate any special instructions.

G. Field quality-control reports.

H. Minutes of preinstallation conference.

1.4 QUALITY ASSURANCE

A. Testing and Inspection Agency Qualifications: An independent agency, [**acceptable to authorities having jurisdiction**] qualified in accordance with ASTM C1077 and ASTM E329 for testing indicated.

B. Mockups: Formed surfaces to demonstrate typical joints, surface finish, texture, tolerances, and standard of workmanship.

   1. Build panel approximately [**100 sq. ft. (9.3 sq.m)**] <**Insert area**> in the location indicated or, if not indicated, as directed by Architect.
   2. Subject to compliance with requirements, approved mockups may become part of the completed Work.

1.5 DELIVERY, STORAGE, AND HANDLING

A. Insulating Concrete Forms: Store forms off ground and under cover to protect from moisture, sunlight, dirt, oil, and other contaminants.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Insulating Concrete Forms (ICF): Design, engineer, erect, shore, brace, and maintain insulating concrete forms in accordance with ACI 301 (ACI 301M), to support vertical, lateral, static, and dynamic loads, and construction loads that might be applied, until structure can support such loads, so that resulting concrete conforms to the required shapes, lines, and dimensions.

1. Design cross ties to transfer the effects of the following loads to the cast-in-place concrete core:

a. Wind Loads: As indicated on Drawings.

1) Horizontal Deflection Limit: Not more than [**1/240**] [**1/360**] [**1/600**] [**1/720**] <**Insert ratio**> of the wall height.

2.2 INSULATING CONCRETE FORMS

A. Insulating Concrete Forms: Concrete-forming system complying with [**ASTM E2634**] [**CAN/ULC S717**], consisting of two panels of insulation connected with cross ties.

1. Alleguard; Amvic™ ICF [**R22**] [**R30**]

a. ICF Core Thickness: [**4 inches (102 mm)**] [**6 inches (152 mm)**] [**8 inches (203 mm)**] [**10 inches (254 mm)**] [**12 inches (305 mm)**].
b. Cross Ties: Polypropylene, with integral reinforcement supports, designed to allow passage of concrete during placement spaced **[6” (152 mm) o.c.] [8” (203 mm) o.c.]**

2. Insulation: [**ASTM C578, Type II**] [**CAN/ULC S701, Type 2**] expanded polystyrene.

a. Thickness: Not less than [**2-1/2 inches (63.5 mm)**] [**3-1/4 inches (82.5 mm)**] each face.
b. Surface-Burning Characteristics: Comply with [**ASTM E84**] [**CAN/ULC S102**]; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1) Flame Spread: [**25**] [**250**] or less.
2) Smoke Developed Index: [**450 or less**] [**greater than 500**]

PART 3 - EXECUTION

3.1 INSTALLATION OF INSULATING CONCRETE FORMS

A. Comply with ACI 301 (ACI 301M) and manufacturer's instructions.

B. Construct formwork, so concrete members and structures are of size, shape, alignment, elevation, and position indicated, within tolerance limits of ACI 117 (ACI 117M).

C. Install forms in running bond pattern.

1. Align joints.
2. Align furring strips.
3. Install cross ties in accordance with manufacturer's written requirements to suit Project.

D. Construct forms tight to prevent loss of concrete mortar.

E. Form openings, chases, offsets, sinkages, keyways, reglets, blocking, screeds, and bulkheads required in the Work.

1. Determine sizes and locations from trades providing such items.
2. Obtain written approval of Architect prior to forming openings not indicated on Drawings.
3. Reinsulate ICF insulation that has been routed or cut out with manufacturer-approved non-solvent spray foam.
4. Reinforce each service penetration exceeding 16 by 16 inches (406 by 406 mm).

F. Install manufacturer's standard bucks and other accessories compatible with ICF system. Provide temporary ports or openings in formwork where required to facilitate cleaning and inspection.

1. Locate ports and openings in bottom of vertical forms, in inconspicuous location, to allow flushing water to drain.
2. Close temporary ports and openings with tight fitting panels, flush with inside face of form, and neatly fitted, so joints will not be apparent in exposed concrete surfaces.

G. Clean forms and adjacent surfaces to receive concrete. Remove chips, wood, sawdust, dirt, and other debris just before placing concrete.

H. Retighten forms and bracing before placing concrete, as required, to prevent mortar leaks and maintain proper alignment.

I. Shore insulating concrete forms to ensure stability and to resist stressing imposed by construction loads.

3.1 INSTALLATION OF EMBEDDED ITEMS

A. Place and secure anchorage devices and other embedded items required for adjoining work that is attached to or supported by cast-in-place concrete.

1. Use setting drawings, templates, diagrams, instructions, and directions furnished with items to be embedded.
2. Install anchor rods, accurately located, to elevations required and complying with tolerances in Section 7.5 of AISC 303.

3. Install reglets to receive waterproofing and to receive through-wall flashings in outer face of concrete frame at exterior walls, where flashing is shown at lintels, shelf angles, and other conditions.
4. Install dovetail anchor slots in concrete structures, as indicated on Drawings.
5. Clean embedded items immediately prior to concrete placement.

3.2 BRACING, ALIGNMENT, AND SCAFFOLDING SYSTEM INSTALLATION

A. As an integral installation component of an ICF system, provide an adjustable metal scaffolding support and wall alignment system.

B. Use a device with adequate degrees of adjustment to ensure completed ICF system walls are plumb after placement and consolidation of concrete.

C. Use an OSHA-compliant scaffold support system to facilitate proper stacking of forms and placement of concrete.

D. System adequate to reinforce and protect completed ICF installation prior to attachment of structural elements to protect from wind damage.

E. Plan sequence of removal of alignment, bracing system once concrete in formwork has reached sufficient strength.

3.3 FIELD QUALITY CONTROL

A. Special Inspections: Owner will engage a [**special inspector**] [**and**] [**qualified testing and inspecting agency**] to perform field tests and inspections and prepare test reports.

B. Testing Agency: Engage a qualified testing and inspecting agency to perform tests and inspections and to submit reports.

C. Inspections:

1. Inspect formwork for shape, location, and dimensions of the concrete member being formed.
2. Inspect insulating concrete forms for shape, location, and dimensions of the concrete member being formed.

3.1 CLEANUP AND PROTECTION

A. Clean up and properly dispose of all debris remaining on Project site related to the installation of the insulating concrete forms. The materials of an ICF are recyclable where available.

B. Consult with exterior finish contractor concerning exposure to ultraviolet light to ensure proper finish to ICF walls. If EPS shows signs of yellowing or dusting due to UV exposure, spray/wash and/or scrub and hose/wash to clean and dry prior to applying direct contact adhesive or cementitious finishes.

3.2 Follow manufacturer's written instructions for remediation of oxidized EPS before the application of finishes.

END OF SECTION 03-11-19