

SECTION 03 11 19 (03130)
PERMANENT FORMS - INSULATING CONCRETE FORMS.

PART 1 GENERAL

1.01 SUMMARY

- A. Comply with the requirements for Division 1.
- B. Supply and installation of insulating concrete form system, installation of reinforcing steel and placement of concrete within formwork.
- C. ICF Manufacture approved bracing and falsework shall be provided by the Installing Contractor to comply with all applicable Codes.

1.02 SCOPE OF WORK

- A. Furnish all labour (including certified technical support), materials, tools, and equipment to perform the installation of IntegraSpec® Insulated Concrete Wall / Building System as manufactured by: Phil-Insul Corporation (PIC) O/A IntegraSpec, 735 Arlington Park Place, Unit 11, Kingston, Ontario, Canada (800) 382-9102.
- B. Furnish all labour to include placement of reinforcing steel within forms (as per structural engineer's specifications), placement of concrete into forms, and final cleanup.

1.03 PRODUCTS SUPPLIED BUT NOT SPECIFIED OR INSTALLED UNDER THIS SECTION

- A. *EPS* compatible modified bituminous sheet waterproofing membrane.
- B. *EPS* compatible stucco and base coat.

1.04 PRODUCTS INSTALLED BUT NOT SPECIFIED OR SUPPLIED UNDER THIS SECTION

- | | |
|---|-----------------|
| A. Sleeves | H. Rebar Ties |
| B. Inserts | I. Flange Bolts |
| C. Anchors | J. Strapping |
| D. Bolts | |
| E. Reinforcing Steel | |
| F. Window and Door Opening IntegraBucks | |
| G. Concrete | |

1.05 RELATED SECTIONS

- A. Section 03 20 00 - Concrete Reinforcement (03200)
- B. Section 03 30 00 - Cast-In-Place Concrete (03300)
- C. Section 03 40 00 - Precast Concrete (03400)
- D. Division 04 00 00 - Masonry (04000)
- E. Division 05 00 00 - Metals (05000)
- F. Division 06 00 00 - Wood and Plastics (06000)
- G. Section 07 13 13 - Modified Bituminous Sheet Waterproofing (07130)
- H. Section 07 24 00 - Exterior Insulation Finishing Systems (07240)
- I. Section 07 46 00 - Siding (07460)
- J. Division 08 05 00 - Doors and Windows (08000)
- K. Section 09 20 00-09 25 00 - Portland Cement Plaster (Stucco) and Gypsum Board (09220-09250)
- L. Section 09 80 00 - Wall Finishes/Acoustical Treatments (09220-09250)

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1.06 ALTERNATES

- A. Materials shall be only as specified in Paragraphs 1.02 and 2.02 as per Manufacturer specified in Paragraph 2.01. No alternate materials shall be accepted for this Section.
- B. Any product submitted as “Equivalent” materials, must adhere to the minimum standard and criteria’s as set forth in section 1.09, 1.10, 1.11, 1.12, 2.02, 2.03.

1.07 REFERENCES

- A. ACI 318 Building Code Requirements for Reinforced Concrete
- B. ASTM C 578-03 Specification for Rigid, Cellular Polystyrene
- C. ASTM E2634-18 Specification for Flat Wall Insulating Concrete Form (ICF) Systems
- D. ASTM C473 Physical Testing of Gypsum Board Products and Gypsum Lath
- E. ASTM D1761 Mechanical Fasteners in Wood
- F. ASTM E84 Surface Burning Characteristics of Building Materials
- G. UBC 26-3 Uniform Building Code Standard Room Fire Test
- H. ASTM E119-98 (UBC 8-1), Wall assembly Fire Resistance
- I. CAN/ULC-S717.1, Standard for Flat Wall Insulating Concrete Form (ICF) Units
- J. ICC ES Evaluation Number ESR-1147
- K. ISO 9002
- L. Intertek ATL SEMKO - testing of expanded Polystyrene(EPS) Foam
- M. Florida Approval – FL6236
- N. LA Approval – RR 25571
- O. Ontario Building Code ruling 12938-R
- P. CAN/ULC S701-01 Compliance Report – Standard for Thermal Insulation , Polystyrene
- Q. ASTM E119-98, NFPA251 and CAN/ULCS101-M89 2hr fire rating for 4”concrete core
- R. ASTM E96-00 Compliance Report – Water Vapour Transmission of Materials
- S. EIFS Category II Construction
- T. Styropek BFL-397 – Surface Burning Characteristics Underwriters Lab Listing

1.08 DEFINITIONS

- A. ICF – Acronym for “Insulating Concrete Forms”.
- B. ICF *Wall Alignment and Scaffold System* - a form alignment and scaffold system designed for use with IntegraSpec® Insulating Concrete Wall Forms / Building System.
- C. *Contractor Installer*- An installation contractor, who has received field “On Site” training in the Installation, concrete pouring and wall alignment of IntegraSpec® Insulating Concrete Wall Forms / Building System (and holds a current IntegraSpec licence administered by IntegraSpec’s Technical personnel with appropriate grade level for the task)
- D. *Technical Advisor*- A technical representative, usually a staff member of a Distribution Firm, who has received instructional and field training in the installation of IntegraSpec® Insulating Concrete Wall Forms / Building System (as accredited by IntegraSpec® Insulating Concrete Wall Forms / Building System) and is in the capacity of supervising an installation crew on site and holds a current IntegraSpec licence with appropriate grade level for the task.
- E. *EPS*- Acronym for “Expanded Polystyrene” when referencing the insulating foam component of the IntegraSpec® Insulated Concrete Wall Forms / Building System.
- F. *Window or Door Opening Buck*- a pre-manufactured or site constructed frame assembly consisting of wood, plastic or EPS material used to form a rough opening within the ICF forming system that will retain concrete around the opening. The frame can also provide for subsequent anchorage of doors and windows within the wall assembly.
- G. IntegraSpec licence grade levels as follows
Training level ‘A’ – basements and foundations projects
Training level ‘B’ - residential one level above grade projects

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Training level 'C' - install , supervise and inspect any residential projects
Training level 'D' - install , supervise and inspect any commercial or residential projects

1.09 SYSTEM DESCRIPTION / PERFORMANCE REQUIREMENTS

- A. Insulating concrete wall form system shall consist of 2 flame resistant, bi-directional and reversible panels of Expanded Polystyrene (*EPS*) connected by high impact polystyrene plastic, slide-in and snap locking spacers (breakable in two equal parts) preventing floatation and compression of the EPS block/panels.
- B. IntegraSpec panel's to provide a 1" (25mm) interlock and cut lines pattern.
- C. IntegraSpec panels can be easily cut horizontally to accommodate various wall heights and or provide exterior forms for concrete floor or roof (panel's cut portion can also be utilized anywhere in the wall due to its reversible feature and slide-in spacers (which also eliminates wastes).
- D. IntegraSpec wall system to provide 4", 5", 6", 8", 10", 12" (102, 127, 152, 203, 254 or 305mm), or wider by joining IntegraSpec's interlocking spacers within the forms with the Integra "H Clip", insulated, even thickness, monolithic reinforced concrete wall (as per structural requirements).
- E. Wall system to provide locking spacers (top of each other) and inserts with min. 1 5/8" (42mm) wide fastening strips @ 8" (200 mm) o/c, imbedded inside IntegraSpec's EPS panels (to prevent thermal transfer through spacers), to facilitate fastening of the finishing substrate material(s) on both the interior and exterior of the IntegraSpec wall(s).
- F. Wall system to provide accurate positioning of steel within form cavity in increments of min. 6" (150 mm) horizontal spacing. Must also conform to reinforcing requirements of ACI 318.
- G. *EPS* foam panels with concrete to provide min. insulation levels as noted:
 - 4" (102 mm) Concrete Cavity Form: R 21.7 (RSI 3.82)
 - 5" (127 mm) Concrete Cavity Form: R 22.0 (RSI 3.87)
 - 6" (152 mm) Concrete Cavity Form: R 22.3 (RSI 3.93)
 - 8" (203 mm) Concrete Cavity Form: R 22.9 (RSI 4.03)
 - 10" (250 mm) Concrete Cavity Form: R 23.5 (RSI 4.14)
 - 12" (305 mm) Concrete Cavity Form: R 24.1 (RSI 4.24)
- H. *EPS* foam panels to provide maximum vapour permeance 39.8 ng/Pa.s.m².
- I. Finished wall assembly to provide min. rating of STC 51 (Sound Transmission Class) sound attenuation performance (field test).
- J. EPS IntegraSpec foam panels to be molded at a minimum of 1.5 lbs/cu/ft in density in accordance with ASTM C 578 – 03 and ASTM E 84.
- K. EPS IntegraSpec panels must provide permanent attachment / bonding of the IntegraSpec's EPS panels to the reinforced concrete core through the integral dovetailed grooves molded on the inside face (concrete core side) of IntegraSpec EPS panels.
- L. Wall assembly (EPS and concrete) must have a fire resistance of min. 2 hrs (4" (102 mm) concrete core), tested in accordance to CAN/ULC S101-M89, NFPA 251, and or ASTM E119-98 (UBC 8-1)

1.10 SUBMITTALS

- A. Upon request, submit relevant laboratory tests or data that validate product compliance with performance criteria specified prior to commencement of work under this Section.
- B. Submit copy of IntegraSpec Installation / Product Manual

1.11 QUALITY ASSURANCE

- A. Contractor shall engage an IntegraSpec field trained *Contractor Installer* or *Technical Advisor with current IntegraSpec licence appropriate for project* for the duration of the work under this Section.

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- B. *Contractor Installer /Technical Advisor* shall furnish proof of IntegraSpec training documentation to Contractor prior to commencement of work under this Section.
- C. Site Mock-up: If required, construct sample wall mock-up panel to include full wall system and details, located where directed by Consultant. Panel may form part of finished work if approved by Consultant.
- D. *Contractor Installer/Technical Advisor* to meet with Contractor prior to material delivery on site to co-ordinate provision of access, storage area, and handling of IntegraSpec product(s).
- E. *Contractor Installer/Technical Advisor* to provide a signed IntegraSpec compliance certificate to be completed by the certified Installer or Technical Advisor at the completion of the ICF portion of the project

1.12 DELIVERY STORAGE and HANDLING

- A. Deliver products in original factory UV protected, white plastic wrapped packaging, bearing identification of product, manufacturer, ICC (US) and CCMC (Can.) report numbers, and batch/lot number.
- B. Handle and store products in location to prevent damaging and soiling.
- C. UV protection is to be provided for exposed EPS panels and plastic material, should on-site storage extend beyond 30 days.

1.13 PROJECT CONDITIONS

- A. Use appropriate measures for protection and supplementary heating when required to ensure proper concrete curing conditions in accordance with manufacturer's recommendations if installation is carried out during periods of weather where temperatures are below minimum specified by governing Building Code for concrete and masonry.
- B. In climates subject to freezing temperature , protect the friction and mechanical interlocks and hollow core of the assembled forms from snow , freezing rain and water by covering these devices nightly .
- C. All products not in their protective wrapping to be protected daily from the elements
- D. Protect the friction and mechanical interlocks from cement during placement of concrete when subsequent wall assembly is to continue to additional levels .

1.14 COORDINATION

- A. Ensure those materials listed under Sub-Section 1.03 and 1.04 are provided to *Contractor Installer* prior to commencement of work under this Section.

1.15 WARRANTY

- A. Contact Distributor or Manufacturer for supply of written copy of specific warranties of the product.

PART 2 PRODUCTS

2.01 MANUFACTURER

IntegraSpec Corporation
 11U - 735 Arlington Park Place
 Kingston, Ontario, Canada
 Toll Free: (800) 382-9102; Fax: (613) 634-2291
 Email: info@integraspec.com; Web Site: www.integraspec.com

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2.02 MATERIALS

- A. Insulating concrete form panels and locking, slide in spacers shall be IntegraSpec® Insulating Concrete Wall Forms / Building System as manufactured by IntegraSpec Corp., Kingston, Ontario, Canada.
- B. Form units to be supplied through an authorized IntegraSpec Distributor or Head Office account.
- C. Substitutes and alternates will not be accepted. (See Section 1.06).
- D. ICF materials shipped to site to be complete with UV protective wrap
- E. ICF standard panels to be shipped in 2ft (.609) x 2ft. (609) x 4ft (1.2) bundles

2.03 COMPONENTS

- A. Provide IntegraSpec® Insulating Concrete Wall Forms / Building System as listed below as may be required for proper execution of the work:
 - (a) Bi-Directional and Reversible Standard Panels - 48"L X 12 ¼" H X 2 ½" Thickness (1220 X 311 X 64mm).
 - (b) Bi-Directional and Reversible 90 and 45 Degree Corner Units – 6", 8" and 10" (152, 203 and 254mm) Concrete Core.
 - (c) Slide in Concrete Spacers - 4", 5", 6", 8", 10" and 12" – (102,127,152, 203, 254 and 305mm).
 - (d) Taper Top Panels – 48"L X 12 ¼" H X 2 ½" tapered to ¾" Thickness (1220 X 311 X 64mm tapered to 19mm).
 - (e) 4" (102mm) Brick Ledge Panels.
 - (f) IntegraBucks - 4", 6" and 8" (102,152, 203mm).
 - (g) IntegraHeaders – 4", 6", 8" and 10" (102,152, 203 and 254mm).
 - (h) Integra "H Clip" – Joins 2 or more concrete spacers for wider than 12" (305mm) concrete cavity.

2.04 CONCRETE

- A. Concrete supplied under Section 03300 shall be of strength as specified by a design engineer (measured at 28 days). Recommended aggregate size to be 3/8" (10mm) aggregate for the 4" and 6" (102 and 152mm) forms and, ¾" (19mm) aggregate for the 8" and 10" (203 and 254mm) concrete cavity walls.
- B. Recommended concrete slump is 4" min. to 6" +/- 1" (100 mm. to 150 mm +/- 25 mm) (subject to design revision to suit application).

2.05 REINFORCING STEEL

- A. Reinforcing steel shall be as specified in Section 03210 and shall be supplied under that Section for placement by IntegraSpec's accredited *Contractor Installer*.

2.06 WALL ALIGNMENT and SCAFFOLD SYSTEM

- A. To aid in the construction of the IntegraSpec ICF wall system, and to provide an adjustable device and secure working platform for ensuring plumb and straight wall(s) during construction and concrete curing. Systems like Giraffe Braces and Plumbwall braces are acceptable.

2.07 WATERPROOFING/DAMPROOFING

- A. Where called for on drawings, waterproofing or damproofing material used, shall be compatible with EPS; product such as IntegraPROOF or Peel and Stick Modified

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Bituminous, sprayed or brush applied Polymeric materials, or other IntegraSpec approved waterproofing material or method, as specified under Section 07130 - Modified Bituminous Sheet Waterproofing

2.08 PARGING

- A. Where called for on drawings, compatible acrylic or conventional parging (stucco type) approved by IntegraSpec, shall be applied as per the manufacturer's recommendation (application on EPS), as specified under Section 09220-09250- Portland Cement Plaster (Stucco) and Gypsum Board

PART 3 EXECUTION

3.01 EXAMINATION

- A. Inspect all areas included in Scope of Work to establish extent of work and verify site access conditions.

3.02 SITE VERIFICATION OF CONDITIONS

- A. Verify that site conditions are as set out in Part 1- General Conditions.
- B. Examine footings installed under Section 03300 are within $\pm 1/4"$ (6mm) of level and that steps in footings are in increments of $12 1/4"$ (311mm) (preferred) in height.
- C. When specified, ensure reinforcing steel dowels are in place at specified location along footing lengths.

3.03 PREPARATION

- A. Clean all debris and from top of footings prior to installing the IntegraSpec ICFs.

3.04 INSTALLATION

- A. Installation of ICF to be in strict compliance with IntegraSpec's Installation Manual as supplied in evidence to contractor under Sub Section 1.10 of this Section.
- B. Layout of building to be chalked on to the footing . Footprint to be square and true . Full diagonal measurements should be performed or surveyor installed pins should be employed to create accurate square measurements of the building footprint .
- C. The Installation Contractor shall ensure IntegraSpec procedures for the following work are employed on site (As outlined in the Installation Manual):
 - (a) First and Second Course Placement
 - (b) Horizontal Steel Reinforcement Placement
 - (c) Successive Course Placement
 - (d) Door and Window Opening Construction
 - (e) Door and Window Lintel Steel Reinforcement
 - (f) Complete Service Penetrations
 - (g) Installation of Rim Joist Flange Bolts or Strong Tie
 - (h) Form Alignment and Scaffolding Installation
 - (i) Vertical Steel Reinforcement Placement
 - (j) Pre-Concrete Placement Inspection
 - (k) Concrete Placement
 - (l) Alignment Assembly Removal
 - (m) Site Clean Up
 - (n) Signing of compliance certificate

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3.05 SERVICE PENETRATIONS

- A. Service penetrations (e.g. - electrical service conduits, water service pipes, air supply and exhaust ducts etc.) shall be installed at the required locations as indicated by the appropriate trade.
- B. Service penetrations exceeding 16" x 16" (400mm x 400mm) in area shall be reinforced.
- C. Prior to concrete placement, install service penetration sleeves (supplied by others) at designated locations to create access where services can be passed through at later date.

3.06 CLEANUP

- A. Clean up and properly dispose of all debris remaining on job site related to the installation of the insulating concrete forms.

3.07 PROTECTION

- A. Recommended temporary coverage onto IntegraSpec ICFs to reduce extended exposure to Ultra Violet Sun light should final finish application be delayed longer than 90 days.

END OF SECTION