

## **SECTION 03 11 19**

### **PERMANENT FORMS - INSULATING CONCRETE FORMS (ICF's)**

#### **PART 1 GENERAL**

##### **1.01 SUMMARY**

- A. Supply and install Reward Wall Systems stay-in-place insulating concrete forms for structural cast-in-place concrete walls. Includes the installation of concrete steel reinforcement and the placement of concrete within the insulating concrete forms.
- B. Cast-in-place concrete walls include the construction of the following:
  - 1. Exterior and interior walls
  - 2. Basement and above grade walls
  - 3. Commercial and residential walls
  - 4. Load bearing and non-load bearing walls
- C. Bracing and scaffolding to be provided to comply with all applicable codes.

##### **1.02 WORK INCLUDED**

- A. Provide labor, materials, tools and equipment for the installation of the Reward insulating concrete form manufactured by Reward Wall Systems, Inc. 9931 South 136<sup>th</sup> Street, Suite 100, Omaha, NE 68138, (402) 592-7077.
- B. Provide labor to install the steel reinforcement and to place concrete into the Insulating concrete forms.

##### **1.03 PRODUCTS INSTALLED BUT NOT SUPPLIED UNDER THIS SECTION**

- A. Steel Reinforcement
- B. Concrete
- C. Window and Door Opening Bucks
- D. Anchor Bolts, Sleeves and Inserts
- E. Penetrations

##### **1.04 SUBMITTALS**

- A. Product Data: Submit manufacturer's product data and installation instructions.
- B. Code Compliance Data: Submit relevant code compliance data.

- C. Drawings and Calculations: Submit project drawings, details of construction, and structural calculations as required by the local building department.
- D. Steel Reinforcement and Concrete: Submit the reinforcement schedule and concrete mix design as proposed for use.

## **1.05 QUALITY ASSURANCE**

- A. Comply with applicable governing codes and regulations.
- B. Follow manufacturer's training and installation procedures.
- C. Contractor is responsible for proper construction and placement of forms, steel reinforcement and concrete.
- D. Installation to comply with the project drawings and calculations.
- E. Material in contact with the insulating concrete form must be compatible with expanded polystyrene.
- F. Standards:
  - 1. ASTM C 94 28-Day Concrete Compressive Strength
  - 2. ASTM C 150 Portland Cement
  - 3. ASTM C 33 Normal Weight Aggregates
  - 4. ASTM C 330 Light Weight Aggregates
  - 5. ASTM C618 Fly Ash
  - 6. ASTM A615 Steel Specifications for Steel Reinforcement
  - 7. ASTM A185 Steel Wire Fabric Specifications
  - 8. ASTM E84 Surface Burning Characteristics of Building Materials
  - 9. ASTM 1761 Mechanical Fasteners in Wood
  - 10. CAN4-S124 Test Method for Evaluation of Protective Coverings for Foam Plastics
  - 11. CAN/ULC C701 Thermal Insulation Polystyrene Boards and Pipe Coverings
  - 12. CSA A23.1 Concrete Materials and Methods of Concrete Construction
  - 13. CSA A23.3 Design of Concrete Structures
  - 14. CSA S269.3 Concrete Formwork

## **1.06 SYSTEM DESCRIPTION**

- A. Insulating concrete form consists of two panels of expanded polystyrene nominal density  $24.0 \text{ kg/m}^3$  connected by plastic ties.

- B. The iForm provides either a 22.9 cm, 28.0 cm, 33.0 or 38.1 cm overall wall section thickness. The iForm concrete cross section provides a 10.1 cm, 15.2 cm, 20.3 cm or 25.4 cm "flat" core respectively.
- C. The iForm has plastic ties recessed 1.3 cm behind each face of expanded polystyrene and located 15.2 cm o.c. The plastic ties provide 3.2 cm wide furring strip the full height of wall to fasten exterior and interior finishes.
- D. The wall system provides a calculated R-22 insulation value.
- E. The wall system provides fire resistance ratings and superior sound attenuation values.

### **1.07 RELATED SECTIONS**

A. Section 03050	Basic Concrete Materials and Methods
B. Section 03100	Concrete Forms and Accessories
C. Section 03200	Concrete Reinforcement
D. Section 03300	Cast-In-Place Concrete
E. Section 03400	Precast Concrete
F. Section 04000	Masonry
G. Section 06000	Woods and Plastics
H. Section 07100	Dampproofing and Waterproofing
I. Section 07130	Exterior Bituminous Sheet Waterproofing
J. Section 07240	Exterior Insulation Finish Systems
K. Section 07460	Siding
L. Section 07600	Flashing and Sheet Metal
M. Section 08000	Doors and Windows
N. Section 09200	Plaster (Stucco) and Gypsum Board
O. Section 09700	Wall Finishes

### **1.08 DELIVERY, STORAGE AND HANDLING**

- A. Deliver the product in original factory packaging with product listing label and manufacturing label.
- B. Handle and store the product to prevent damage and deterioration.
- C. Protect from prolonged exposure to the sunlight's UV rays.

### **1.09 PROJECT CONDITIONS**

- A. Follow manufacturers requirements for protection and placement of concrete during construction periods when the weather is below the minimum specified by the building codes to ensure proper curing conditions.

## **1.10 CONSTRUCTION SCHEDULES**

- A. Coordinate the delivery of materials and construction schedules for all related materials and sub-contractors that require attachment of components to formwork.

## **1.11 WARRANTY**

- A. Contact the manufacturer for a written copy of product warranty.

## **PART 2 PRODUCTS**

### **2.01 MANUFACTURER**

- A. Reward Wall Systems, Inc.  
9931 South 136<sup>th</sup> Street, Suite 100  
Omaha, NE 68138  
Phone: (402) 592-7077 Fax: (402) 592-7969  
E-mail: [reward@rewardwalls.com](mailto:reward@rewardwalls.com)  
[www.rewardwalls.com](http://www.rewardwalls.com)

### **2.02 MATERIALS**

- A. Insulating concrete forms manufactured by Reward Wall Systems, Inc.

#### iForm

- a. 22.9 cm (10.1 cm concrete core) Form – 122 cm L x 22.9 cm W x 40.6 cm H
- b. 28.0 cm (15.2 cm concrete core) Form – 122 cm L x 28.0 cm W x 40.6 cm
- c. 33.0 cm (20.3 cm concrete core) Form – 122 cm L x 33.0 cm W x 40.6 cm
- d. 38.1 cm (25.4 cm concrete core) Form – 122 cm L x 38.1 cm W x 40.6 cm
- e. 22.9 cm 90 Degree Corner Form (Universal Left and Right)
- f. 28.0 cm 90 Degree Corner Form (Universal Left and Right)
- g. 33.0 cm 90 Degree Corner Form (Universal Left and Right)
- h. 38.1 cm 90 Degree Corner Form (Universal Left and Right)
- i. 22.9 cm 45 Degree Corner Form
- j. 28.0 cm 45 Degree Corner Form
- k. 33.0 cm 45 Degree Corner Form
- l. 28.0 cm Ledge Form
- m. 33.0 cm Ledge Form

- n. 28.0 cm Taper Top Form
- o. 33.0 cm Taper Top Form

#### B. Concrete

- 1. Concrete supplied under Section 03300 shall meet the compressive strength requirement as specified by the design engineer.
- 2. Recommended concrete mix shall include a concrete slump of 14.0 cm to 16.5 cm and an aggregate size no greater than 1.3 cm.

#### C. Steel Reinforcement

- 1. Steel reinforcement shall be supplied and placed in the formwork as specified by the design engineer or prescriptive reinforcement tables.

#### D. Auxiliary Materials

- 1. Sufficient bracing, wall alignment and scaffolding
- 2. Waterproofing materials for below grade applications
- 3. Exterior finishes
- 4. Interior finish must meet code requirement for 15 minute thermal barrier
- 5. Door and window opening bucks
- 6. Penetration and sleeve material
- 7. Anchors and anchor bolts

### **PART 3 EXECUTION**

#### **3.01 INSPECTION**

- A. Verify all items in the Work Included section and verify site conditions.
- B. Verify footings are installed within +/- 0.6 cm of level and step footings are 40.6 cm in height.
- C. Verify steel reinforcement vertical dowels are in place as specified by design.

#### **3.02 PREPARATION**

- A. Clean top of footings and organize materials and equipment before starting formwork.

#### **3.03 INSTALLATION**

A. Installation of forms and contractors work must be in accordance to manufacturer's installation manual and training procedures including:

1. Placement of Reward forms
2. Steel reinforcement placement
3. Concrete placement
4. Door and window opening construction
5. Bracing, scaffolding and wall alignment
6. Anchors, anchor bolts, penetrations
7. Final pre-pour checklist

### **3.04 FIELD QUALITY CONTROL**

A. Ensure that the cast-in-place concrete walls are level, plumb, square and straight and that all dimensions conform to the drawings.

### **3.05 CLEANUP**

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

**END OF SECTION**