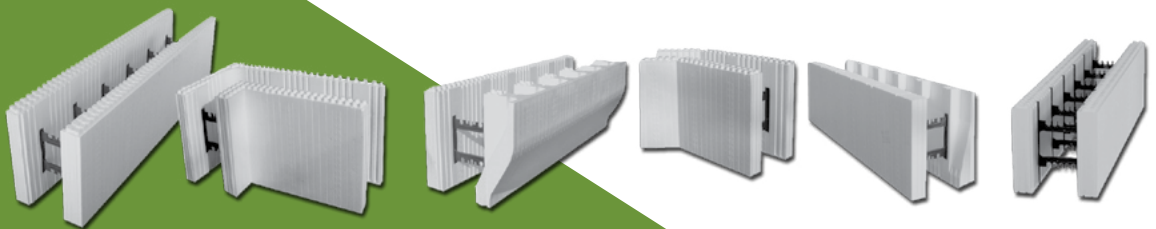




## Specification Package CANADA





**Build Anything Better.**



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CAD Drawing Library	<b>LogixICF.com</b>
Full Logix ICF Technical Library	<b>LogixICF.com</b>



# Build Anything **Better.**<sup>™</sup>

DISCOVER A COMPLETE CONSTRUCTION SOLUTION  
WITH BUILT-IN SAVINGS, RESILIENCE  
AND COMFORT.



- 2 SMART FUNDAMENTALS
- 3 RUGGED REINFORCED CORNERS
- 4 INTELLIGENT INTERLOCK
- 5 DESIGNED FOR COMMERCIAL CONSTRUCTION
- 6 BUILT-IN SAVINGS, RESILIENCE & COMFORT
- 7 BUILD ANYTHING BETTER WITH LOGIX
- 8 EFFICIENT OUTLINE DESIGN
- 9 WALL OPENINGS — THE COMPLETE SOLUTION
- 10 SPECIALTY PRODUCT SOLUTIONS
- 11 LEADING R-VALUE SOLUTIONS
- 12 THE SOLUTION FOR ICF WALLS WITH EXPOSED CONCRETE

A PRODUCT BY



ICF Pro-Link is a database that matches incoming ICF leads with ICF-experienced installers, architects, designers and engineers.

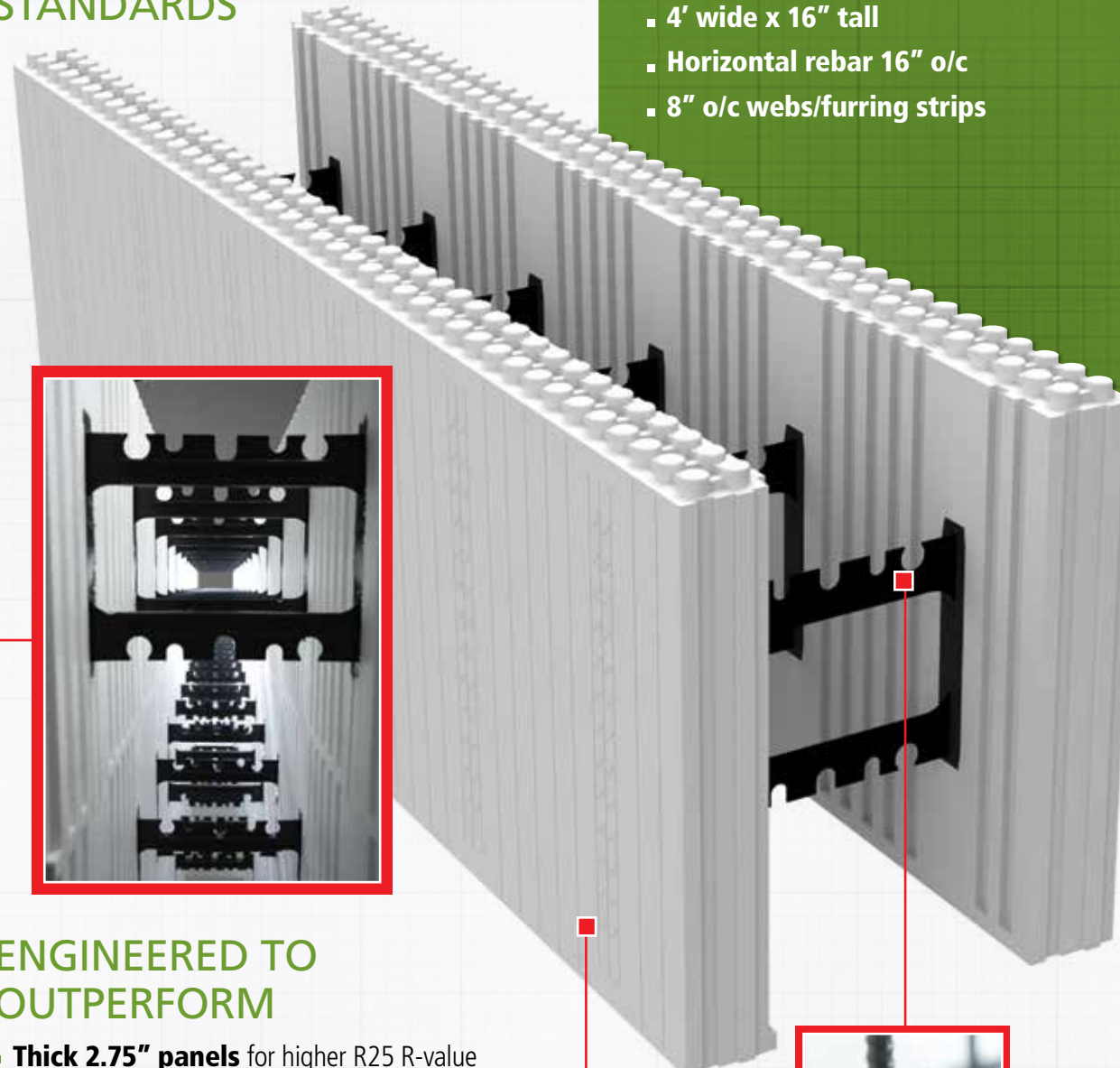
[ICFProLink.com](http://ICFProLink.com)

888.415.6449 ■ [LogixICF.com](http://LogixICF.com)



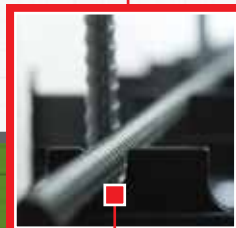
**CONFORMS WITH  
ACCEPTED CONVENTIONS &  
STANDARDS**

- 4' wide x 16" tall
- Horizontal rebar 16" o/c
- 8" o/c webs/furring strips

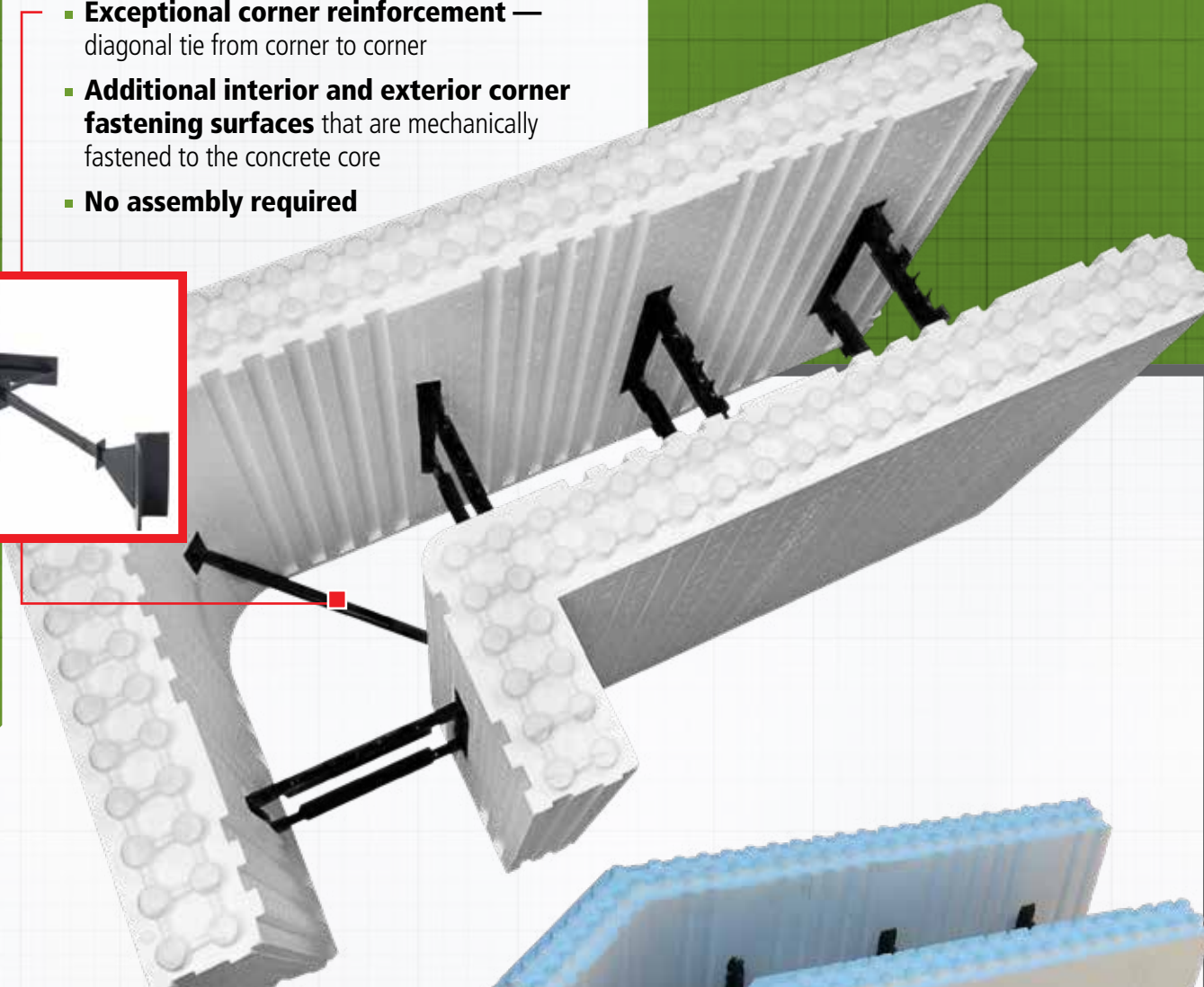


**ENGINEERED TO  
OUTPERFORM**

- **Thick 2.75" panels** for higher R25 R-value
- **Walls go up straighter and faster**
- **Wiring channels every 16" o/c** with no webs to cut through
- **Maximum concrete flow** to prevent voids
- **Virtually indestructible rebar holders** make one-man long bar placement easy



- **Superior form pressure resistance** provided by rugged 2.75" thick panels
- **One tie every 1.08 sq. ft.** for even more support
- **Exceptional corner reinforcement** — diagonal tie from corner to corner
- **Additional interior and exterior corner fastening surfaces** that are mechanically fastened to the concrete core
- **No assembly required**

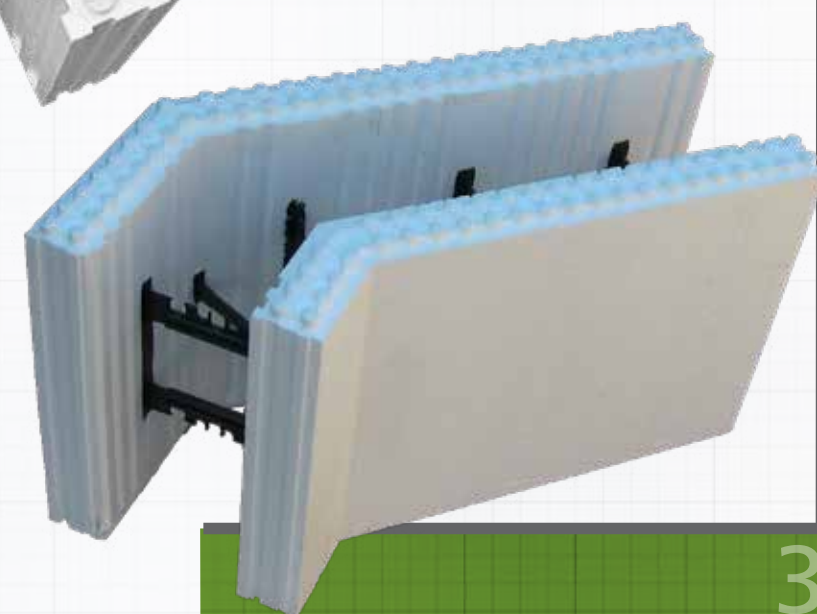


**90 DEGREE CORNER**

- **32" leg for less cutting + less waste** with short (< 2') offsets/returns

**45 DEGREE CORNER**

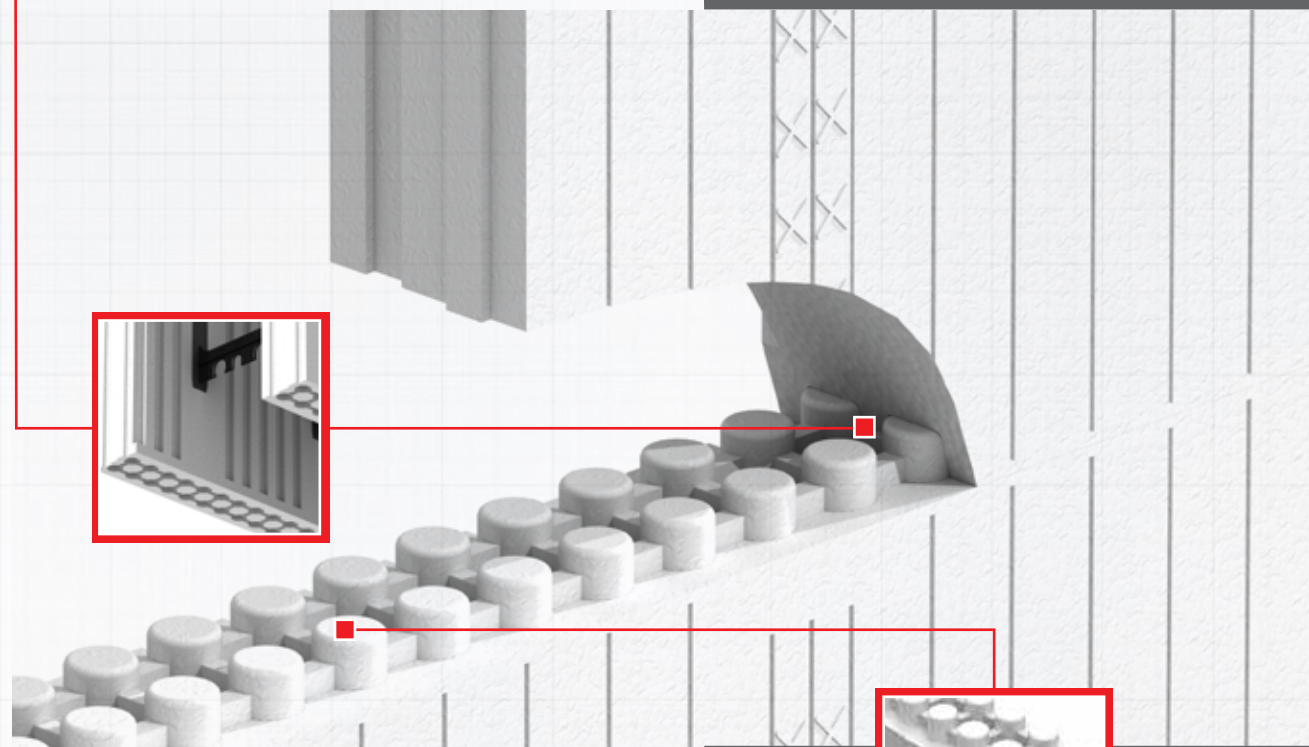
- **Preformed 45° corners** for a quick, easy build of unique designs





**THE LOGIX BASE PLATE**

- **Maximum bearing surface**
- **No bottom nodules** to cut away at approximately \$1.50 per block
- **Yields intuitive and predictable step footing heights**
- **Minimizes compression**



**THE LOGIX FACE PLATE**

- **Maximum Friction Fit for a snug and secure interlock** — up to 32% more interlock contact!
- **Fast and easy to assemble** (and disassemble when needed)
- **No plastic, metal or locks to fight during assembly**
- **Built-in dams to seal against bleed water**
- **Sufficient bearing surface** to minimize compression

**TANDEM INTERLOCK DESIGN**

**COMMERCIAL CONSTRUCTION IS AS FAST AND EFFICIENT AS 1-2-3!**

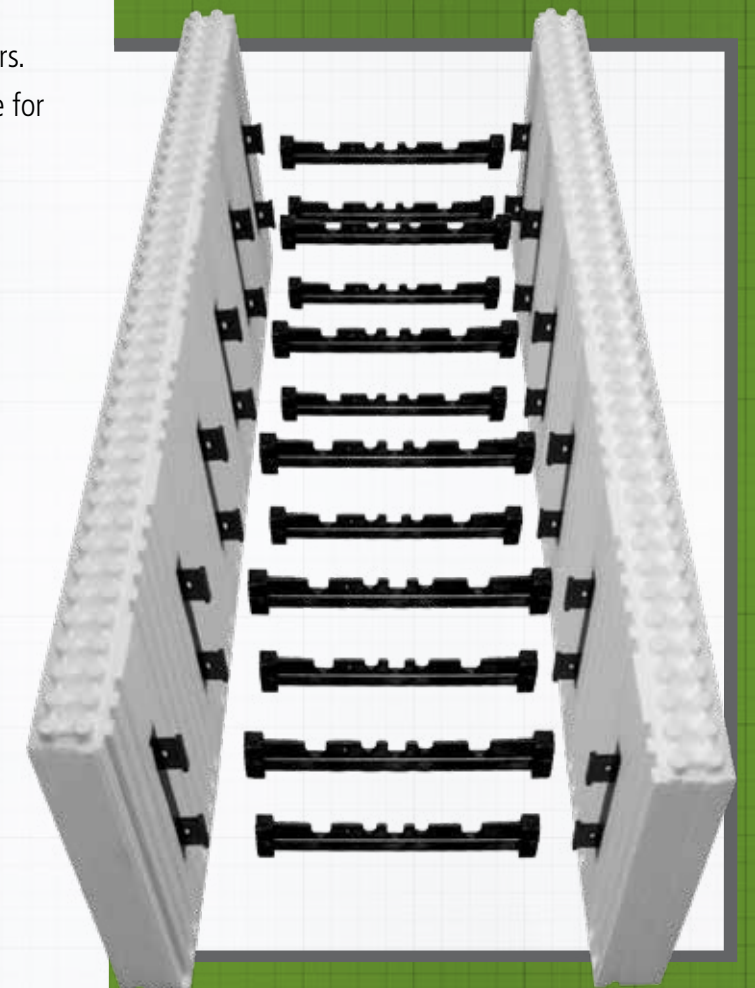
**Why? Because unassembled Logix KD is fully compatible with assembled Logix Pro™.**

1. Install back Logix KD panel and attach internal web connectors.
  2. Install heavy commercial rebar patterns quickly, moving web connectors around as needed.
  3. Attach front Logix KD panels to web connectors.
- Then use assembled Logix Pro everywhere else for maximum efficiency.

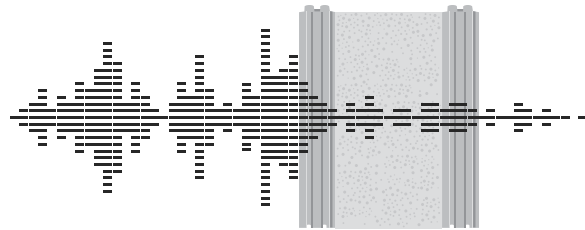


**LOGIX IS PERFECTLY DESIGNED TO SEAMLESSLY ACCOMMODATE COMMERCIAL REBAR.**

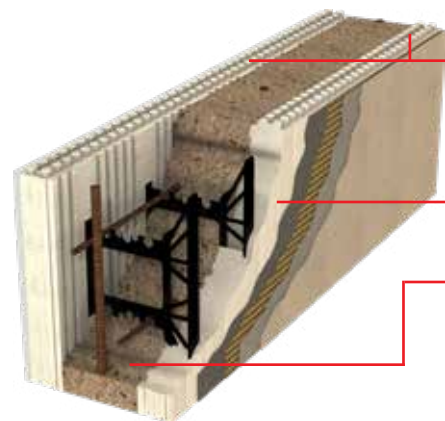
Other ICF brands force builders to do it backwards — and waste a tremendous amount of time and money building their complicated rebar patterns inside tight wall cavities obstructed by webs.







Outside noise is reduced to a whisper.



1. Two 2.75" thick panels of continuous foam insulation.
2. An air-tight wall assembly.
3. The temperature moderating thermal mass of concrete.



**BUILT-IN COMFORT!**

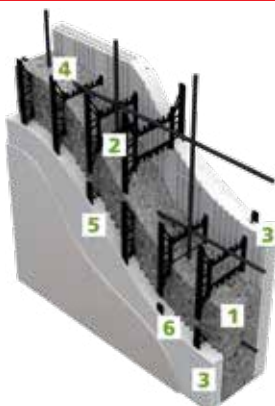
- Drafts and cold spots in the home are eliminated in northern climates.
- Humidity is easily controlled in warm, moist climates.
- EPS foam and concrete do not off-gas unhealthy, allergy-aggravating remittances.
- No nutrient source exists in the Logix wall assembly for unhealthy mold growth.

**BUILT-IN ENERGY-SAVERS!**

THREE built-in energy-saving elements deliver up to 50% energy savings.

**BUILT-IN RESILIENCE!**

- **Wind Protection** — Wind-rated to over 300 mph
- **Fire Protection** — 4-hour fire rating
- **Earthquake Protection** — Engineering available for all seismic zones
- **Moisture Protection** — Does not rot!



1. Concrete
2. Steel Reinforcement
3. Insulation
4. Air Barrier
5. Vapor Barrier
6. Furring Strips

**BUILT-IN COST-SAVINGS!**

Six construction steps. One simple package.  
= Less labor  
= Lower construction costs  
= Faster builds

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6



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- BASEMENTS
- COMPLETE HOMES
- HIGH PERFORMANCE HOMES
- MID-RISE MULTI-FAMILY BUILDINGS
- COMMERCIAL BUILDINGS
- SCHOOLS
- ASSISTED LIVING FACILITIES
- DISASTER RESILIENT HOMES & BUILDINGS
- OTHER SPECIALTIES



FOR COMPREHENSIVE SUPPORT, VISIT [LOGIXICF.COM](http://LOGIXICF.COM).

7



- **2x more cutlines than most ICFs**
- **2x the ability to cut on a cutline**
- **2x the chance to preserve the interlock**
- **With efficient running bonds**, there's no need to brace with numerous wood boards

LOGIX GIVES YOU  
CUTLINES EVERY 1".  
THAT'S TWICE THE  
NUMBER OF MOST  
OTHER BRANDS.

It's always better to cut on a cutline. That's why every brand has them — but Logix gives you more!

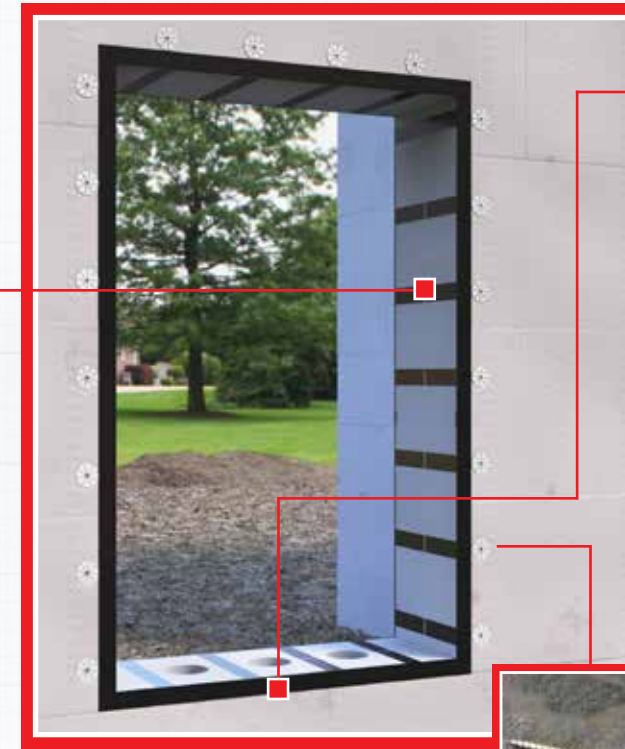


Many other ICF brands have only 2" cutlines — that's only half the number of cutlines you get with Logix ICF.

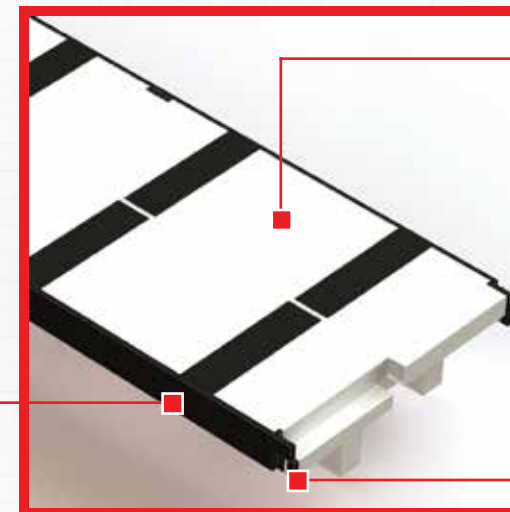
The cutlines in other brands are so infrequent, in fact, that it's often not worth trying to cut on one at all!

That's also why other brands recommend labor-intensive stack seams braced with wood in EVERY wall section. And what they don't tell you is that every 9' stack bond (which needs to be braced on both sides and then the wood removed after the pour) has a hidden time and materials cost of up to \$70 per, adding \$100s to the cost per floor.

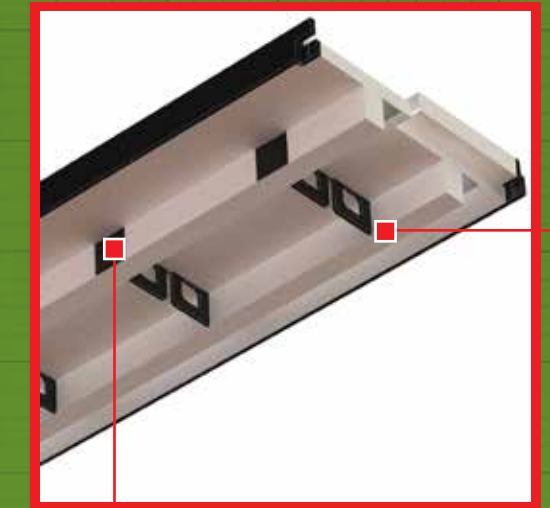
**LOGIX PRO BUCK™**



- **Strong, secure, reliable fastening** — high-strength exposed furring strips
- **Fast picture framing to the internal flanges every 8" o/c** (that do not have to be removed for finishing!)



- **Concrete anchors every 8" o/c** ensure a solid connection to the concrete wall and provide a chair for horizontal rebar placement
- **Easy, void-free concrete placement under the opening** — foam-only areas for 4" access holes

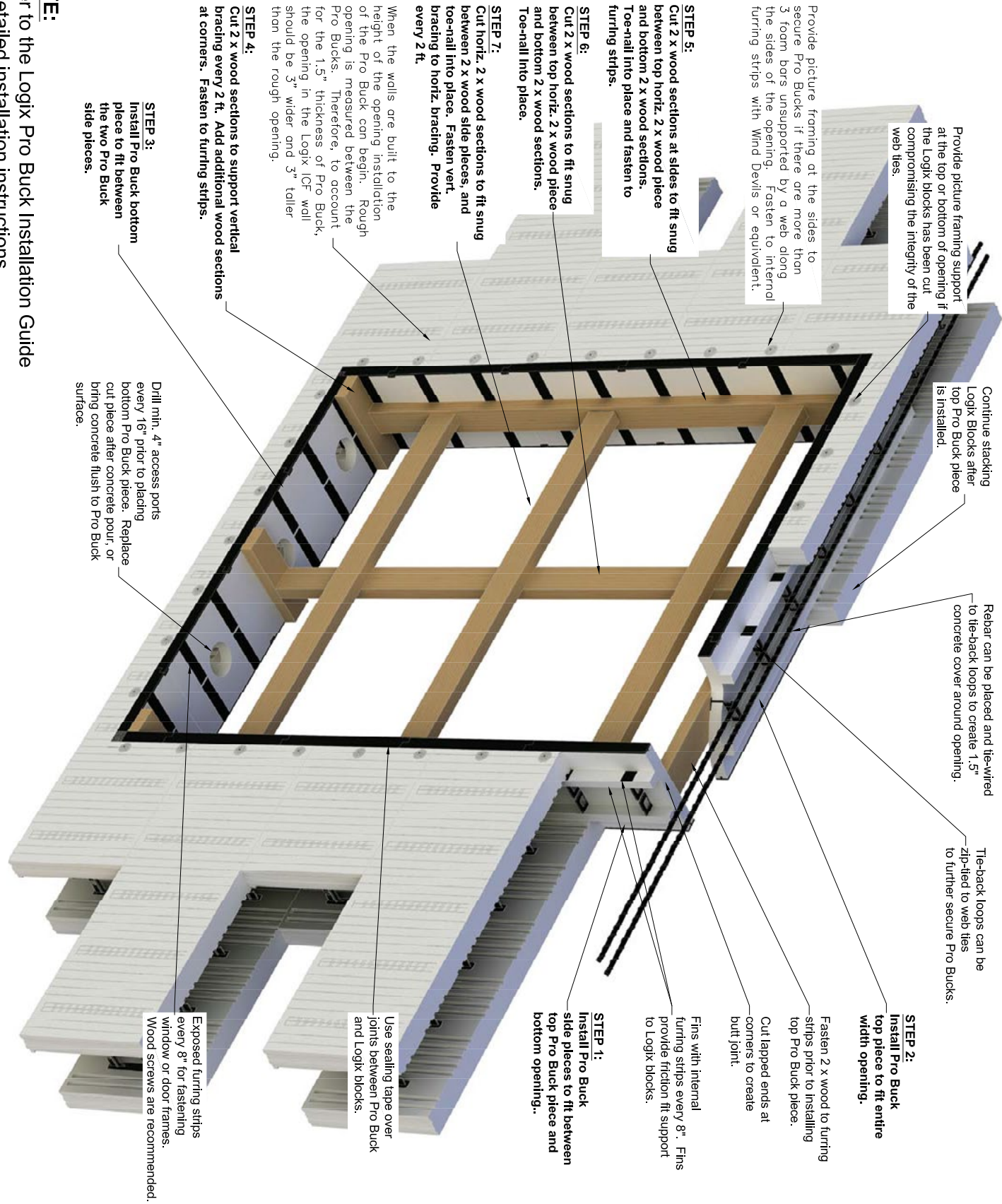


- **Strong, dependable, insulating foam** — high-density 2 lb. foam
- **Minimal waste** — leftover pieces securely clip together end-to-end, generating minimal waste

**WATCH THE VIDEO**



**NOTE:**  
Refer to the Logix Pro Buck Installation Guide for detailed installation instructions.



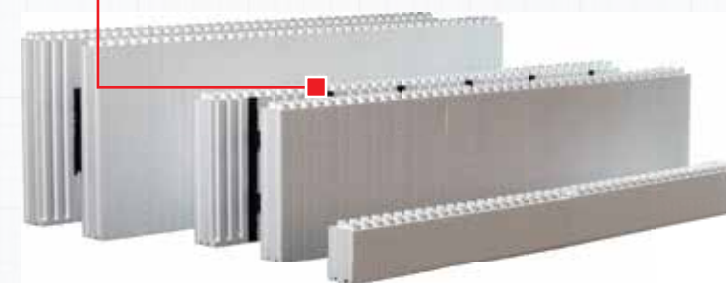
### PICK A WIDTH

- Available in concrete core widths of 4" to 12" (+ even wider with the Xtender Clip)
- Extended Brickledge, Taper Tops and Double Taper Tops (available in all widths)



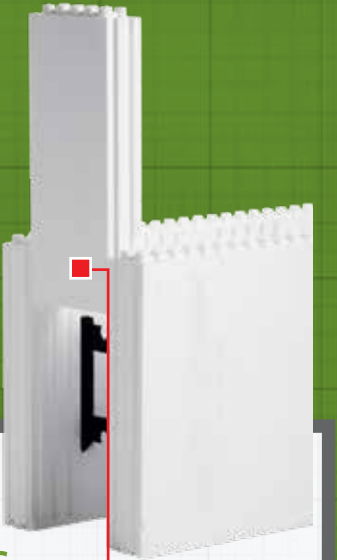
### PICK A HEIGHT

- Use 12" high Logix V12 and 4" high Height Adjusters to hit ANY 4" height increment without cutting a block



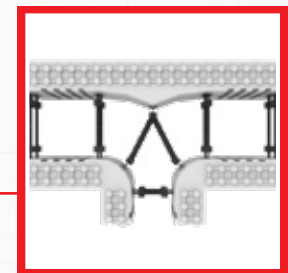
## SPECIALTY PRODUCT SOLUTIONS

- Save real time and money on the job site
- Across a large variety of concrete core widths (not just 6" and 8")

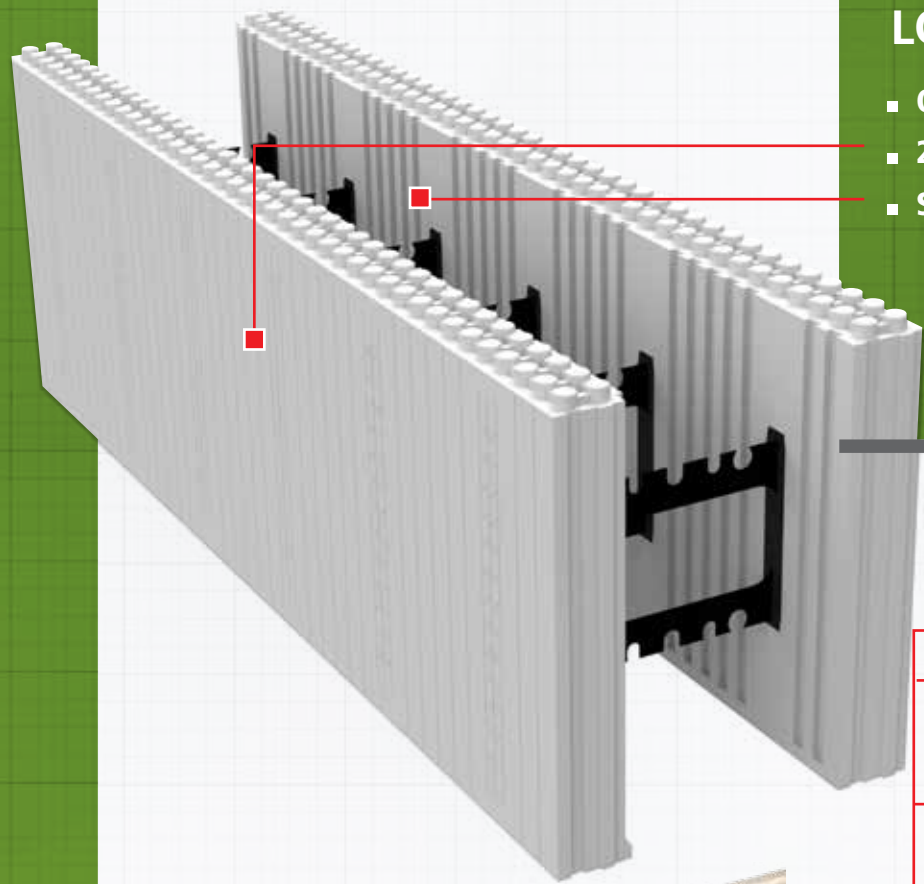


### SPECIALTIES INSTALL FAST

- Logix End Caps — terminate walls FAST!
- Pilaster Blocks — form pilasters in tall walls FAST!
- T-Blocks — form T-Walls FAST!





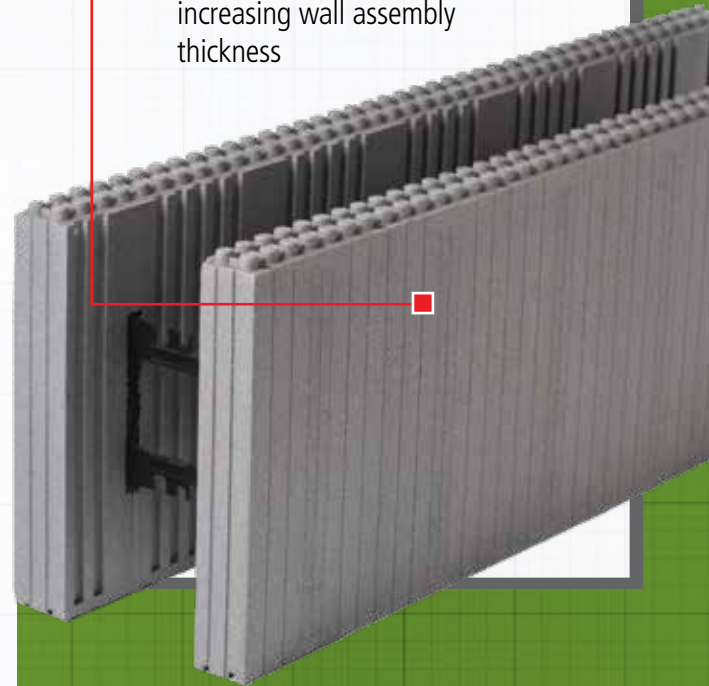


**LOGIX PRO™**

- Our flagship product line
- 2.75" thick foam panels
- Superior R25 wall assembly

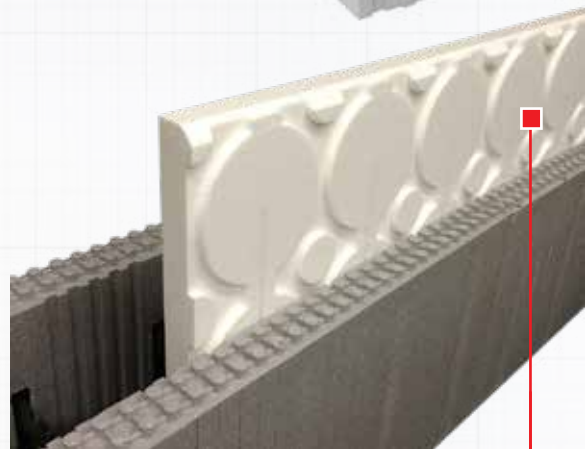
**LOGIX PLATINUM SERIES®**

- Made with Neopor® by BASF®
- R-value enhanced with graphite infrared reflectors and heat absorbers
- Delivers a full R28 without increasing wall assembly thickness

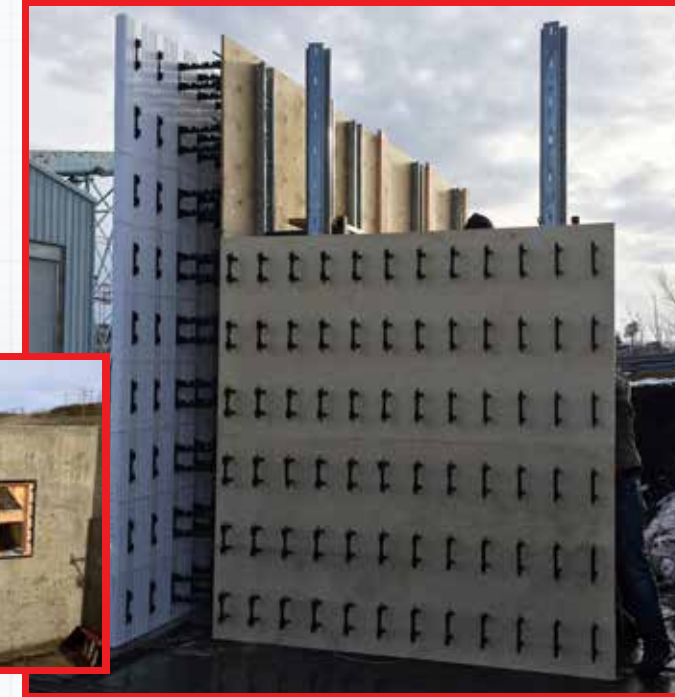


**LOGIX D-RV®**

- Efficient slide-in panel
- Delivers an optional drainage plane
- Increases wall assembly R-values to R33 – R37
- Can also be used to reduce sound



**LOGIX XP-1™**



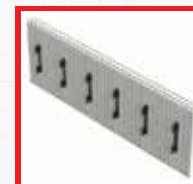
**ENGINEERED FOR SUPERIOR STRENGTH AND STABILITY**

- 4' x 8' plywood sheets minimize the number of seams and create a secure auto-offset
- Fool-proof and code-compliant rebar coverage is designed right into the XP-1™ system

**INTELLIGENTLY IMAGINED TO MINIMIZE COSTS**

- The ONLY parts ordered through Logix are:

KD Panels



KD Connectors



XP-1™ Side Webs

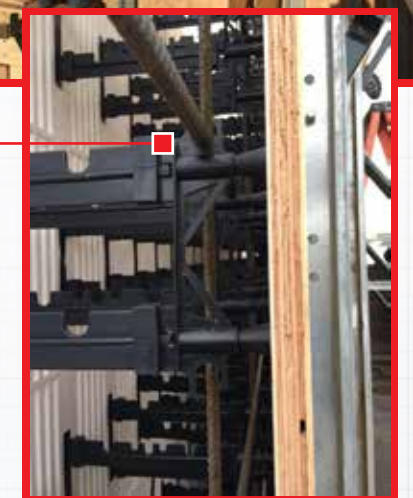


XP-1™ Cones



DESIGNED FOR  
MAXIMUM SIMPLICITY,  
EFFICIENCY, SPEED AND  
VERSATILITY

- XP-1™ is self-aligning and forgiving
- The 4' x 8' plywood sheets are reusable
- The 10 available wall thicknesses allow for the seamless integration of XP-1™ walls with many regular ICF and bare concrete walls



All 4' x 8' plywood sheets and screws are purchased **LOCALLY!** Needless freight charges and mark-ups are eliminated.





## LOGIX INSULATED CONCRETE FORMS GENERAL SPECIFICATIONS SHEET

This document is intended for general information purposes only regarding specifications for Logix Insulated Concrete Forms (herein referred to as Logix ICF). Technical specification sheet, as per Construction Specifications institute (CSI) formatting, can be downloaded at [www.logixicf.com](http://www.logixicf.com).

### 1 PRODUCT DESCRIPTION

- Logix ICF consists of two flame-resistant EPS boards separated by polypropylene webs.
- Logix ICF consists of solid form units (LOGIX Pro Forms) or knock-down forms (LOGIX KD Forms) or a combination of both Logix form and Logix KD forms, referred to as LOGIX Hybrid Forms.
- The EPS foam boards are a minimum 70 mm (2.75 inch) thick, and can range in thickness of 70 (2.75 inches), 102 (4 inches), 127 (5 inches), 152 (6 inches), 178 (7 inches) and 203 mm (8 inches), which gives a total EPS foam board thickness of 140 (5.50 inches), 203 (8 inches), 254 (10 inches), 305 (12 inches), 356 (14 inches) and 406 mm (16 inches), respectively.
- The webs separate the EPS boards to form 102 mm (4 inch), 159 mm (6.25 inc), 203 mm (8 inch), 254 mm (10 inch) and 305 mm (12 inch) cavities, which create the concrete wall thicknesses. With Logix Xtenders the concrete wall thickness can be increased to virtually any thickness.
- The webs are spaced every 203 mm (8 inch) on centre horizontally and 406 mm (16 inch) on centre vertically, and contain a 32 mm (1.25 inch) wide furring strip that extends the height of each ICF block. The furring strips shall facilitate fasteners for attachment of both exterior and interior finishes.
- A furring strip is located in the corners of corner forms. The furring strip consists of both a vertical and horizontal component. The vertical component extends nearly the full height of the form, extends a minimum of 64 mm (2.5 inches) from both sides of the corner, and a minimum of 5 mm (0.2 inches) thick. The horizontal component is a minimum 51mm (2 inches) in height, extend a minimum of 152 mm (6 inches) from both sides of the corner, and a minimum of 5 mm (0.2 inches) thick.
- The webs facilitate rebar placement in accordance with CAN/CSA A23.1, and ACI 318

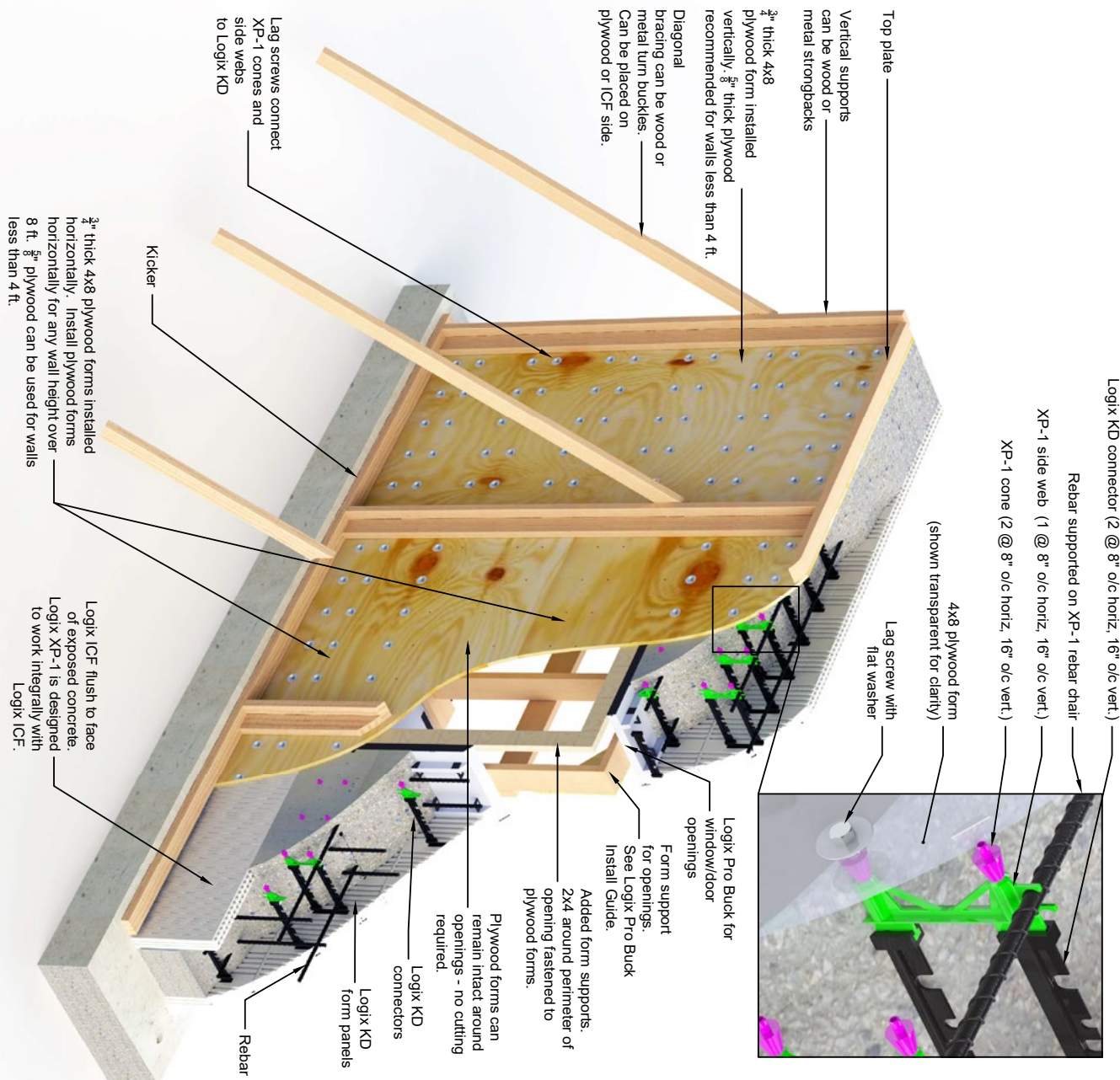
### INSTALLATION STEPS

Before erecting XP-1 wall systems, the XP-1 side webs and cones should be assembled and fastened to the plywood sheets. The XP-1 wall system should only be built on relatively level ground, and free of debris.

1. Lightly tap the XP-1 cones with a hammer or rubber mallet into the holes drilled on the 4x8 plywood sheets. For drilling locations refer to "Logix XP-1 - Wall Thickness Charts & Plywood Drilling Locations."
2. Connect XP-1 side webs to the cones installed on the plywood sheets. Each XP-1 side web is easily hand-placed and friction fits onto two XP-1 cones.
3. Ensure the assembled XP-1 cones and side webs are properly secured to the plywood by using 1" flat washers and appropriate lag screws. For screw sizes refer to "Logix XP-1 - Wall Thickness Charts & Plywood Drilling Locations." Make sure to lay the plywood forms on a flat surface, with the XP-1 side webs facing down, before fastening screws. This will ensure the XP-1 side webs do not fall off when fastening.
4. Using 2x4s plumb and level a framed wall with a bottom kicker and top plate, and vertical supports every 4ft. Secure to the ground following the layout of the wall and using diagonal bracing to keep the framed wall plumb. Steel strong backs and turnbuckles can also be used to plumb the wall.
5. Place the first course of plywood sheets vertically or horizontally and fasten to the framing members making sure the vertical edges of the plywood sheets align with the approximate center of the vertical supports. The vertical supports will provide proper edge nailing for the plywood sheets.
6. When placing plywood sheets horizontally offset the vertical joints by 4 ft to create a running bond pattern.
7. Apply form oil to the inside face of the plywood forms. Do not use petroleum based oil in cases where the KD panels may be in contact with the form oil.
8. Start placing KD form panels once the plywood sheets are at most 8ft tall. The KD forms connect to the XP-1 side webs with KD connectors.
9. Placement of rebar can take place as the KD panels are installed.
10. Follow the same procedures you would use to create openings in Logix ICF walls. There is no need cut around the plywood. For added support fasten 2x4s around the perimeter of the r/o against the plywood.
11. Apply additional form support at end walls and corners. Refer to XP-1 Installation Guide for further details.

### FEATURES

- Bracing can be placed on either ICF or wood form side depending on site conditions
- Plywood can be placed vertically or horizontally. Recommend installing sheets horizontally for any wall height other than 8ft.
- No need to cut plywood for openings.
- XP-1 side webs have built-in chairs for horizontal rebar to allow proper rebar cover
- 3/4" or 1/2" plywood can be used.
- Stripped Plywood forms, lag screws and washers can be reused for other jobs
- After concrete sets and wood forms are stripped cones can be removed easily with plyers and optionally patched just the same as conventional concrete
- Designed to work integrally with LOGIX ICF.



Refer to the Logix XP-1 Installation Guide for detailed installation instructions.

**LOGIX XP-1**





LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

**2 CODE/CERTIFICATION APPROVALS**

- International Code Council Evaluation Report No. 1642
- CCMC Report No. 13110-R
- City of Los Angeles Research Report No. 25518
- Miami-Dade County Approval No.09-0714.03
- State of Florida Certification of Approval No.FL14109
- Wisconsin Building Products Evaluation No.200266-I
- City of New York Materials and Equipment Acceptance – MEA 273-04-M
- QAI listed QM0503

**3 DESIGN/PERFORMANCE OF LOGIX ICF**

A brief description of each test is outlined in the attached Appendix. Test reports are available upon request.

Test Description	Result	Pass/Fail Criteria	Referenced Standard Test Method
R-Value (Thermal Resistance) per inch (per 25.4mm)	R 4.13 (RSI 0.72)	Min. R 4.00 (RSI 0.70)	ASTM C518
Water Absorption	0.18%	Max. 3.0%	ASTM D2842
Water Vapor Presence	100.0ng/Pa-s-m2 (1.74perm-in.)	Max. 201 ng/Pa-s-m2 (3.5perm-in.)	ASTM E96
Compressive Strength	165kPa (23.9psi)	Min. 104kPa (15.0psi)	ASTM D1621 & ASTM C165
Flexural Strength	365kPa (53.0psi)	Min. 240kPa (35.0psi)	ASTM C203
Dimensional Stability – Thermal & Humid Aging	0.5%	Max. 2.0%	ASTM D2126
Density	27.5kg/m3 (1.72pcf)	Min. 22 kg/m3 (1.35pcf)	ASTM C1622 & ASTM C303
Dimensions	Min. length variation = 0.0% Max. length variation = 0.4% Min. width variation = 0.1% Max. width variation = 0.4% Min. thickness variation = -0.3mm Max. thickness variation = 0.9mm Max. squareness = 3mm	Min. -0.2% Max. 0.4% Min. -0.2% Max. 0.4% Max. -2mm Max. 4mm Max. 3mm	ASTM C303
Limiting Oxygen Index	29.1%	Min. 24.0%	ASTM D2863
Formaldehyde Emission	No formaldehyde detected	N/A*	AATTC-112
Fungi Resistance	No fungal growth detected	N/A*	ASTM G21
Flame Spread Rating	< 25	N/A*	ASTM E84/CAN ULC S102
Smoke Developed Rating	< 450	N/A*	ASTM E84/CAN ULC S102

LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

Test Description	Result	Pass/Fail Criteria	Referenced Standard Test Method
Fire Endurance Test	See Fire Resistance Rating table	N/A*	ASTM E119/CAN ULC S101
Standard Room Fire Test	w/in acceptable limits	Met conditions required for exposure to fire for 15 minutes.	UBC 26-3/CAN ULC 1715
Concrete Pour-in-place	Observations of deflection recorded.	N/A*	CCMC Masterformat 03131
Sound Transmission	STC 56 for 6.25" Logix wall system (2 layers of 5/8" drywall & 2x2 wood strips on one side, 1/2" drywall on the other side) STC 50 for 4" Logix wall system (1/2" drywall & 2x2 wood strips on one side, 1/2" drywall on the other side).	N/A*	ASTM E90
UPITT Toxicity	Pass	LC50 < 19.7g	University of Pittsburgh Toxicity Test

\*Code body or referenced test standard required reporting test results only - no Pass/Fail criteria specified.

**TESTS CONDUCTED ON POLYPROPYLENE WEB**

Test Description	Result	US Requirements	Referenced Standard Test Method
Flammability	Flame Front Distance = 100mm (4") Avg. Linear Burn Rate = 17.9mm/min (0.70in/min)	Max. linear burn rate = 40.0mm/min (1.57in/min) for Flame Front Dist. = 100mm (4")	ASTM D635
Smoke Density Rating	19.1%	Max. 75%	ASTM D2843
Average Lateral Fastener Resistance of Drywall Screws	1.63kN (367lbs)	N/A*	ASTM D1761
Average Withdrawal Fastener Resistance of Drywall Screws	0.75kN (169lbs)	N/A*	ASTM D1761
Shear Strength of Polypropylene Web	26.1MPa (37.9psi)	N/A*	ASTM D732, CCMC Masterformat 03131
Average Tensile Strength of Polypropylene Web	3.75kN (842lbs)	N/A*	ASTM D638
Average Withdrawal Resistance of Staples 1.59mm 16ga.	105N (24lbs)	N/A*	ASTM D1761 (under cyclic temperatures)



LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

Test Description	Result	US Requirements	Referenced Standard Test Method
Average Withdrawal Resistance of Plane Shank 1.5" long, 3/8" head	155N (35lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Ring Shank 1.5" long, 3/8" head	431N (97lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Spiral Shank 1.5" long, 3/8" head	135N (30lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Staples 1.59mm 16ga.	169N (38lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Plane Shank 1.5" long, 3/8" head	520N (117lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Ring Shank 1.5" long, 3/8" head	378N (85lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Spiral Shank 1.5" long, 3/8" head	200N (45lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Corrosion Resistance No.8-18 x 0.323 HD x 1.5/8"	567N (127lbs)	N/A*	ASTM D1761
Average Withdrawal Resistance of Corrosion Resistance 6d (0.113" shank x 0.267 HD x 2" long)	93N (21lbs)	N/A*	ASTM D1761
#6 Coarse Drywall Screw, 1-5/8" long**	787N (177lbs)	N/A*	ASTM D1761
#6 Fine Drywall Screw, 1-5/8" long**	765N (172lbs)	N/A*	ASTM D1761
16ga. Staple, 1-1/2" long**	124N (28lbs)	N/A*	ASTM D1761
Galvanized Ringed Wallboard Nail, 1-1/2" long**	462N (104lbs)	N/A*	ASTM D1761
Hot-dipped Galvanized Spiral Nail, 2" long**	226N (51lbs)	N/A*	ASTM D1761
#8 Wood Screw, 2" long**	920N (207lbs)	N/A*	ASTM D1761
#8 Exterior Deck Screw, 2" long**	934N (210lbs)	N/A*	ASTM D1761
#10 Wood Screw, 2" long**	880N (198lbs)	N/A*	ASTM D1761

LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

\*Code body or referenced test standard required reporting test results only - no Pass/Fail criteria specified.

\*\*Applicable to corner web only.

**FIRE RESISTANCE RATING**

Form Size (Concrete Wall Thickness)	Rating with 1/2" drywall
100mm (4")	2hrs
159mm (6.25")	3hrs (4hrs if 5/8" drywall used)
203mm (8") and above	4hrs

\*Bearing load applied to wall = 360,000lbs (360kips)

**4 MANUFACTURED UNITS**

LOGIX manufactures both assembled and unassembled insulated concrete form units. LOGIX assembled forms, known simply as "LOGIX Pro", are delivered to the job site as assembled form blocks. LOGIX unassembled forms (or knock-down forms), known as "LOGIX KD", are delivered to the job site in components that make up the form blocks - the form panels and KD Connectors. LOGIX KD are assembled on the job site.

Below is a summary of the types of LOGIX and LOGIX KD forms available.

**LOGIX (assembled form blocks)**

	Description
LOGIX Pro	White in color
LOGIX Pro Platinum <sup>3</sup>	Grey in color. Offers higher R-value <sup>1</sup> than LOGIX Pro.
LOGIX Pro TX	LOGIX Pro with termite resistant additive Preventol <sup>2</sup> .
LOGIX Pro Platinum <sup>3</sup> TX	LOGIX Platinum with Preventol.

**LOGIX KD (unassembled form blocks)**

	Description
LOGIX KD	White in color
LOGIX KD Platinum <sup>3</sup>	Grey in color. Offers higher R-value <sup>1</sup> than LOGIX Pro.
LOGIX KD TX	LOGIX Pro with termite resistant additive Preventol <sup>2</sup> .
LOGIX KD Platinum <sup>3</sup> TX	LOGIX Platinum with Preventol.

Notes:

1. See Section 8.5 for LOGIX R-values.
2. Preventol is an effective termite resistant additive.
3. Care should be taken to protect exposed foam surfaces from reflected sunlight and prolonged solar exposure until wall cladding or finish material is applied. Shade exposed foam areas, or remove sources of reflective surfaces, where heat build up onto exposed foam might occur. For more information refer to BASF Technical Leaflet N-4 Neopor, "Recommendations for packaging, transporting, storing and installing building insulation products made from Neopor EPS foam." (The BASF Technical Leaflet is attached to every bundle of LOGIX Platinum forms delivered to a job site).



LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

STRAIGHT FORMS

LOGIX FORM PANELS	STANDARD					TAPER TOP					BRICK LEDGE					TRANSITION																						
STANDARD																																						
Conc. Core Thickness	4	6.25	8	10	12	4	6.25	8	10	12	4	6.25	8	10	12	4	6.25	8	10	12																		
Width Top <sup>1</sup>	9.5	11.75	13.5	15.5	17.5	9.5	11.75	13.5	15.5	17.5	13.375	15.625	17.375	19.375	21.375	11.25	13.5	15.25	17.25	19.25																		
Width Bot. <sup>1</sup>	9.5	11.75	13.5	15.5	17.5	9.5	11.75	13.5	15.5	17.5	9.5	11.75	13.5	15.5	17.5	9.5	11.75	13.5	15.5	17.5																		
Form Type <sup>2</sup>	KD/P	KD/P	KD/P	KD/P	KD	KD	KD/P	KD/P	KD/P	KD	KD/P	KD/P	KD/P	KD/P	KD	KD/P	KD/P	KD/P	KD	KD																		
TAPER TOP																																						
Conc. Core Thickness	4					6.25	8	10	12	4					6.25	8	10	12	4					6.25	8	10	12											
Width Top <sup>1</sup>						9.5	11.75	13.5	15.5	17.5	13.375					15.625	17.375	19.375	21.375	11.25					13.5	15.25	17.25	19.25										
Width Bot. <sup>1</sup>						9.5	11.75	13.5	15.5	17.5	9.5					11.75	13.5	15.5	17.5	9.5					11.75	13.5	15.5	17.5										
Form Type <sup>2</sup>						KD	KD	KD	KD	KD	KD					KD	KD	KD	KD	KD					KD	KD	KD	KD										
BRICK LEDGE																																						
Conc. Core Thickness						4					6.25	8	10	12	4					6.25	8	10	12						4					6.25	8	10	12	
Width Top <sup>1</sup>											17.25	19.5	21.25	23.25	25.25	15.125					17.375	19.125	21.125	23.125						13					15.25	17	19	21
Width Bot. <sup>1</sup>											9.5	11.75	13.5	15.5	17.5	9.5					11.75	13.5	15.5	17.5						9.5					11.75	13.5	15.5	17.5
Form Type <sup>2</sup>											KD	KD	KD	KD	KD	KD					KD	KD	KD	KD						KD					KD	KD	KD	KD
TRANSITION																																						
Conc. Core Thickness											4					6.25	8	10	12						4					6.25	8	10	12					
Width Top <sup>1</sup>																13	15.25	17	19	21						13					15.25	17	19	21				
Width Bot. <sup>1</sup>																9.5	11.75	13.5	15.5	17.5						9.5					11.75	13.5	15.5	17.5				
Form Type <sup>2</sup>																KD	KD	KD	KD	KD						KD					KD	KD	KD	KD				

1. Width at Top and Bottom is measured from outside face to outside face of forms.  
2. "KD" and "P" denotes LOGIX KD (unassembled forms) and LOGIX PRO (assembled forms), respectively.

LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

CORNER FORMS

	Left Hand Corner Form	Right Hand Corner Form
4 inch Concrete Core Thickness		
Form Type <sup>1</sup>	KD/P	KD/P
6.25 inch Concrete Core Thickness		
Form Type <sup>1</sup>	KD/P	KD/P
8 inch Concrete Core Thickness		
Form Type <sup>1</sup>	KD/P	KD/P
10 inch Concrete Core Thickness		
Form Type <sup>1</sup>	KD/P	KD/P
12 inch Concrete Core Thickness		
Form Type <sup>1</sup>	KD	KD

1. "KD" and "P" denotes LOGIX KD (unassembled forms) and LOGIX PRO (assembled forms), respectively.



LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

45° FORMS

	Left Hand 45° Form	Right Hand 45° Form
<b>4 inch Concrete Core Thickness</b>		
<b>Form Type<sup>1</sup></b>	<b>KD/P</b>	<b>KD/P</b>
<b>6.25 inch Concrete Core Thickness</b>		
<b>Form Type<sup>1</sup></b>	<b>KD/P</b>	<b>KD/P</b>
<b>8 inch Concrete Core Thickness</b>		
<b>Form Type<sup>1</sup></b>	<b>KD/P</b>	<b>KD/P</b>

1. "KD" and "P" denotes LOGIX KD (unassembled forms) and LOGIX PRO (assembled forms), respectively.

LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

HALF HEIGHT FORMS

HALF HEIGHT STANDARD FORMS <sup>1</sup>		
4 inch Concrete Core Thickness	6.25 inch Concrete Core Thickness	8 inch Concrete Core Thickness

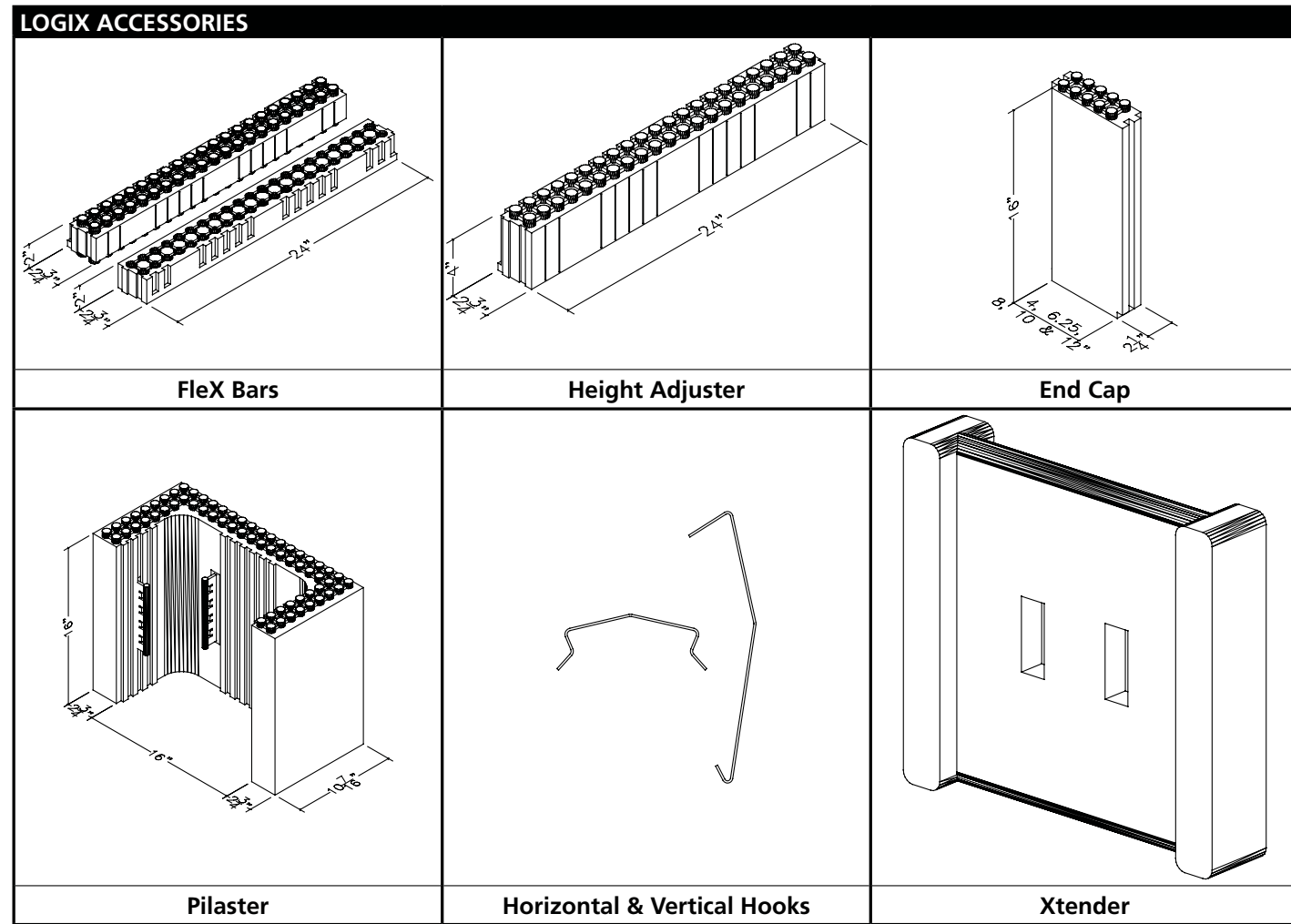
	HALF HEIGHT CORNER FORMS <sup>1</sup>		HALF HEIGHT 45° FORMS <sup>1</sup>	
	Left Hand 45° Form	Right Hand 45° Form	Left Hand 45° Form	Right Hand 45° Form
<b>4 inch Concrete Core Thickness</b>				
<b>6.25 inch Concrete Core Thickness</b>				
<b>8 inch Concrete Core Thickness</b>				

1. Height of forms for Half Height Forms = 8 inches



LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

ACCESSORIES



FURRING STRIP DIMENSIONS

	Block Size				
	100mm (4")	159mm (6.25")	203mm (8")	254mm (10")	305mm (12")
Height (full height blocks)	362mm (14.25")	362mm (14.25")	362mm (14.25")	362mm (14.25")	362mm (14.25")
Height (half height blocks)	159mm (6.25")	159mm (6.25")	159mm (6.25")	n/a	n/a
Width	32mm (1.25")	32mm (1.25")	32mm (1.25")	32mm (1.25")	32mm (1.25")
Thickness	4.8mm (0.1875")	4.8mm (0.1875")	4.8mm (0.1875")	4.8mm (0.1875")	4.8mm (0.1875")

LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

90° CORNER FURRING STRING DIMENSIONS (full height blocks)

	Block Size				
	100mm (4")	159mm (6.25")	203mm (8")	254mm (10")	305mm (12")
Height (Vertical Strip)	362mm (14.25")	362mm (14.25")	362mm (14.25")	362mm (14.25")	362mm (14.25")
Height (Horizontal Strip)	50mm (2")	50mm (2")	50mm (2")	50mm (2")	50mm (2")
Width (Vertical Strip – one side of corner)	48mm (1.875")	48mm (1.875")	48mm (1.875")	48mm (1.875")	48mm (1.875")
Width (Horizontal Strip – one side of corner)	147mm (5.75")	147mm (5.75")	147mm (5.75")	147mm (5.75")	147mm (5.75")
Thickness	4.8mm (0.1875")	4.8mm (0.1875")	4.8mm (0.1875")	4.8mm (0.1875")	4.8mm (0.1875")

5 DESIGN PROPERTIES OF STEEL

Property	Value
Yield Stress, fy	Min. 276Mpa (40ksi)

6 DESIGN PROPERTIES OF CONCRETE

Properties	Value for each Block Size				
	100mm (4")	159mm (6.25")	203mm (8")	254mm (10")	305mm (12")
28day Compressive Strength	20Mpa (2900psi)	20Mpa (2900psi)	20Mpa (2900psi)	20Mpa (2900psi)	20Mpa (2900psi)
Recommended Max. Aggregate Size	9.5mm (0.375")	9.5mm (0.375")	9.5mm (0.375")	9.5mm (0.375")	9.5mm (0.375")
Recommended Slump	127-178mm (5 – 7in.)	127-178mm (5 – 7in.)	127-178mm (5 – 7in.)	127-178mm (5 – 7in.)	127-178mm (5 – 7in.)
Min. Concrete Cover Attainable	25mm (1in.)	25mm (1in.)	25mm (1in.)	25mm (1in.)	25mm (1in.)

7 QUALITY ASSURANCE

Manufacturers of Logix ICF are certified under QAI carrying the QAI labels. Unannounced quality control inspections are conducted by QAI at least 4 times a year to ensure strict compliance with established quality control procedures.



## APPENDIX

### TEST DESCRIPTIONS

To be read in reference to the tabulated test results in Section 3

**Compressive Strength** – indication of the amount of pressure required to compress the EPS to its yield point or by 10% of its original dimension, whichever occurs first.

**Concrete Pour-in-place** – assembly of a Logix ICF wall in which observations were recorded visually for the behaviour of the ICF wall during concrete pouring. Deflections before, during and after the pour were recorded. In addition, the form was structurally inspected to check for any structural damage caused to the ICF form during the pour. Using 203mm (8in) Logix ICF blocks, the wall size was 3.66m (12ft) high by 2.44m (8ft) wide.

**Density** – a measure of the weight of EPS per unit volume.

**Dimensions** – length, width and thickness of full size (finished product) EPS panels measured to ensure the final dimensions are within acceptable tolerances.

**Dimensional Stability, Thermal & Humid Aging** – a measure of dimensional change in EPS after exposure to hot and cold temperatures at high relative humidity for seven days. The EPS is normally exposed to temperatures of 70°C (158°F) and -40°C (-40°F) for seven days at 97% or ambient humidity. After exposure the dimensions of the EPS samples are measured at room temperature. The tabulated value is expressed as a percent change in dimensions before and after exposure. The smaller the percent change the smaller the change in dimensions.

**Fire Endurance Test** – fire test of a wall assembly, with cast-in-place concrete. The non-fire exposed side of the wall has no cover or protective barrier; the fire exposed side is covered with 25.4mm (1/2") drywall over the EPS. The wall assembly is subjected to a bearing load of 360kips while exposed to fire until a certain temperature on the wall is reached. The time to reach that temperature including observations are recorded. After the fire test the wall assembly is subjected to the impact, cooling and erosion effects of a hose stream – the hose stream test.

**Flammability** – fire test on the polypropylene web to determine the burning characteristics of the web material. With the web supported in a horizontal position, a flame is applied at one end. The flame front distance is the distance the flame travels from the applied end to the point the flame goes out. The linear burn rate is the rate it takes to travel the flame front distance.

**Flame Spread & Smoke Developed Rating** – flame spread and smoke developed rating is determined from a fire test. Flame spread and smoke developed rating is a surface burning characteristic of a material and is not related to the fire resistance of a material. Flame spread rating is an indication of how fast fire will spread over the EPS from the original flame source. Smoke developed rating is an indication of how much smoke is generated during the fire test. The tabulated values are relative numbers based on calculations from the fire test results. The number is compared to asbestos and red oak, which have a rating of 0 and 100, respectively. Flame spread ratings provide an indication, particularly useful for fire officials, of how fast fire may spread in a building based on the building's materials. The National Fire Protection Agency (NFPA) classifies a material's suitability for use in construction based on its flame spread index.

**Flexural Strength** – measured as the amount of pressure it takes to reach the breaking load of EPS samples in bending. Samples are supported at the ends and a concentrated load is applied at the mid-span of the samples. The load is gradually increased until the samples fail.

**Formaldehyde Emission** – a measure of the amount of formaldehyde released from the EPS when heated to 120°F (49°C).

**Fungi Resistance** – a measure of the amount of fungi growth on the EPS when exposed to certain types of fungi.

**Lateral Fastener Resistance** – test to determine the lateral strength of Type S and Type W drywall screws fastened to the web. A concentrated load is applied perpendicular to the axis of the screw, which is fastened to the web. The load is gradually increased and tested to failure. Deflections are recorded during the duration of the tests.



LOGIX INSULATED CONCRETE FORMS  
GENERAL SPECIFICATIONS SHEET, CONT'D

**Limiting Oxygen Index** – a measure of the EPS to sustain a flame. The measurement is described as the amount of oxygen required (expressed as a percentage) to just support flaming combustion of the EPS when exposed to a flowing mixture of nitrogen and oxygen. The tabulated value is the amount of oxygen in the nitrogen/oxygen mixture required to just keep the EPS aflame.

**Shear Strength** – test to determine the shear strength of the polypropylene web.

**Smoke Density Rating** – a measure of the relative amount of smoke produced by the burning of the polypropylene web. The tabulated value is the amount of loss of light transmission through the smoke produced from the burning of the web, expressed as a percentage.

**Smoke Developed Rating** – see Flame Spread Rating.

**Standard Room Fire Test** – fire test of a room assembly where one corner of the room is built with Logix ICF blocks with cast-in-place concrete, and covered with ½" drywall. The room is exposed to a column of fire originating in the corner of the room adjacent to the ICF. The ICF is exposed to the fire for 15 minutes and observations recorded. The tabulated value is based on observations that showed melting of the EPS did not extend outside of the column of fire, smoke generated was not excessive, and since there was no damage to the concrete the structural integrity of the wall remained in place. Using 159mm (6.25in) ICF blocks, the size of the corner built with ICF was 2.44m (8ft) long in one direction, 2.44m (8ft) long in the other direction, and 2.44m (8ft) high.

**Tensile Strength** – test to determine the tensile strength of the polypropylene web.

**Thermal Resistance** – a measure of a materials resistance to heat flow through the EPS. The higher the R-value the greater the resistance to heat flow, the better the insulator.

**Water Absorption** – a measure of the ability of the EPS to absorb water. The tabulated value is a ratio of the weight of water absorbed by the EPS to the weight of the EPS dry, expressed as a percentage. The smaller the value the less water absorbed by the EPS.

**Water Vapour Permeance** – the rate at which water vapour will pass through the EPS. During the test, a vapour pressure difference between the two sides of the EPS is produced. The tabulated value is the rate at which the vapour passes through the EPS. The smaller the value the lower the water vapour permeance of the EPS.

**Withdrawal Fastener Resistance** – test to determine the withdrawal strength (or pullout strength) of Type S and Type W drywall screws fastened to the web. A concentrated load was applied parallel to the axis of the screw, which is fastened to the web. The load is gradually increased and tested to failure.

## LIMITED LIFETIME WARRANTY

Each LOGIX™ Insulated Concrete Form used in the construction of a building in Canada or the United States carries the following lifetime warranty to the first owner of such building. If a LOGIX™ Insulated Concrete Form, as a result of a manufacturer's defect in workmanship or materials (as reasonably determined by LOGIX™), fails to meet the standards set forth in our product manual existing at the time of such construction, when installed in accordance with our recommended guidelines, LOGIX™ will, at its option, provide a replacement or refund the actual purchase price of such Form. This lifetime warranty is exclusive of all other costs and expenses of any nature or kind, including labor, to remove the defective product and replace it with a new product. Proof of building ownership at the time of installation and proof of purchase from a LOGIX™ authorized distributor is required.

THE FOREGOING WARRANTY SHALL BE IN LIEU OF ANY AND ALL OTHER WARRANTIES, EXPRESS, IMPLIED OR STATUTORY, INCLUDING BUT NOT LIMITED TO, WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ALL OF WHICH ARE HEREBY EXPRESSLY DISCLAIMED. If the proceeding sole and exclusive remedies should be found to have failed their essential purpose, in no event shall LOGIX's liability or first owner's remedy exceed the actual purchase price for the product.





The LEED v4 for Building Design and Construction (LEED BD+C) was finalized in 2013. Rather than product focused, LEED v4 places more emphasis on building system performance in an effort to produce buildings with a lower environmental impact, compared to previous LEED versions, by promoting more sustainable materials and environmentally friendly design, construction and manufacturing methods.

Rather than adopting a stand-alone rating system, as was done in previous versions, the Canada Green Building Council (CaGBC) will be adopting LEED v4. However, because LEED v4 was developed in the United States, which mainly references US standards, the CaGBC will be providing Canadian options to show compliance – termed Alternative Compliance Path (ACP). For example, where an equivalent Canadian standard exists, the ACP can allow the use of that standard, in lieu of the standard required in the LEED requirements.

While some of the building types may seem familiar from previous LEED versions, LEED v4 BD+C now include 8 building types:

1. New Construction
2. Core and Shell
3. Schools
4. Retail
5. Data Centers
6. Warehouses and Distribution Centers
7. Hospitality
8. Healthcare

A minimum of 40 points are required to achieve LEED v4 certification. The point system for LEED v4 certification is listed below:

- Certified LEED – 40 to 49
- Silver – 50 to 59
- Gold – 60 to 79
- Platinum – 80 to 110

LEED v4 BD+C include 8 categories. Each category may vary in points based on the building types. The categories total 109 possible LEED points plus and additional point under "Integrative Process. The categories include

1. Location and Transportation (16 points)
2. Sustainable Sites (10 points)15
3. Water Efficiency (11 points)12
4. Energy and Atmosphere (33 points)35
5. Material and Resources (13 points)
6. Indoor Environmental Quality (16 points)
7. Innovation (6 points)
8. Regional Priority (4 points)

The categories where Logix can potentially contribute to gaining LEED points are items 2, 4, 5, and 6, as listed above. The potential LEED point contribution when using Logix is listed below, with details shown on the next page.

Building Type	Potential LEED Potential Contribution <sup>1</sup>
New Construction & Major Renovations	34
Core & Shell	32
Schools	32
Retail	34
Data Centers	34
Warehouses & Distribution Centers	34
Hospitality	34
Healthcare	35

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**POTENTIAL LEED POINTS CONTRIBUTION WITH LOGIX<sup>1</sup>**

Sustainable Sites	Applicable Building Types	Maximum Points Contribution	Comments
Protect or Restore Habitat	All	2 (1 for healthcare)	Although the points may not apply to LOGIX, wall bracing for LOGIX is one of a combination of actions that, together with other procedures, can result in proper protection or restoration of natural areas around the job site. LOGIX is typically placed within the building perimeter. This type of assembly avoids disturbance to existing natural areas and keeps construction activity close to the building perimeter.

Energy & Atmosphere	Applicable Building Types	Maximum Points Contribution	Comments
Minimum Energy Performance	All	n/a (required)	The continuous insulation and air barrier properties of Logix can help meet required minimum levels of efficiency for the building.
Optimize Energy Performance	All	18 except Schools and Healthcare (16 for Schools, 20 for Healthcare)	The continuous insulation and air barrier properties of Logix can help achieve the levels of energy performance that go beyond the prerequisite standard.

Material & Resources	Applicable Building Types	Maximum Points Contribution	Comments
Construction and Demolition Waste Management Planning	All	n/a (required)	Logix products produce little waste compared to wood, which should ease the waste management planning. In addition, EPS recycling programs can be implemented as part of the waste management planning.
Building Life-cycle Impact Reduction	All	3	Can help contribute 3 points under "Option 4. Whole-Building-Life-Cycle Assessment." The high energy efficient walls Logix creates contributes to the reduction of a building's impact on global warming.
Building Product Disclosure & Optimization - Environmental Product Declarations.	All	1	Can help contribute 1 point under "Option 1. Environmental Product Declaration (EPD)." Logix uses EPS which carries EPD documents, which conform to ISO 14025.
Building Product Disclosure & Optimization - Sourcing of Raw Materials.	All	2	Logix products are made with up to 10% recycled pre-consumer EPS.
Building Product Disclosure & Optimization - Material Ingredients.	All	1	Contributes to 1 point under "Option 3. Product Manufacturer Supply Chain Optimization." Logix products are certified under a third party program with Quality Auditing Institute (QAI).

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Material & Resources	Applicable Building Types	Maximum Points Contribution	Comments
Construction & Demolition Waste Management	All	2	Programs can be put in place to recycle EPS from job sites. EPS is also light in weight, and produces less waste than wood products.

Indoor Environmental Quality	Applicable Building Types	Maximum Points Contribution	Comments
Minimum Acoustic Performance	Schools	N/a (required)	Logix can help increase the acoustical performance of wall and ceiling assemblies.
Low-emitting Materials	All	3	Logix Platinum is made with BASF Neopor, which is Greenguard Certified. In addition, the EPS used for Logix has been tested to show no signs of harmful emissions.
Thermal Comfort	All except Core & Shell	1	Logix offers continuous insulation in wall and ceiling assemblies, and is made with BASF Neopor, which offer the highest thermal value of any EPS material.
Acoustic Performance	All except Core & Shell	1	Logix can contribute to the STC ratings of wall and ceiling assemblies. STC testing of various wall assemblies have been conducted with Logix.

<sup>1</sup>The total LEED point contribution from Logix is a best estimate based on available information and test data. The actual LEED point contribution may change based on project specifics, and should be determined by a LEED Accredited Professional for each project seeking LEED accreditation.

For more information about the LEED green building rating system visit [www.usgbc.org](http://www.usgbc.org) or [www.cagbc.org](http://www.cagbc.org).

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**{NOTE TO USERS:}** This document has been prepared for the LOGIX Insulated Concrete Forming (LOGIX ICF) product, and has been prepared in accordance with the Construction Specifications Institute (CSI) Section Format 2004. The main intention of this document is to aid the Contractor/Installing Contractor in developing CSI specifications (of LOGIX ICF) for use in combination with specific project specification manuals, which follow CSI formatting, as part of the overall project scope of work.

This document is a template and where appropriate, may require modifications to suit specific projects.

*Italicized text enclosed in parenthesis, { }, are intended for the user of this document to aid in determining where modifications may be required.*

## PART 1 GENERAL

### 1.0 SUMMARY

This section outlines the specifications for the implementation of LOGIX Insulated Concrete Forms (herein referred to as LOGIX ICF).

#### 1.0.1 Section Includes

LOGIX Insulated Concrete Forms - permanent insulating concrete forming system

#### 1.0.2 Products Supplied But Not Installed Under This Section

- Cast-in-place concrete
- EPS compatible waterproofing system
- EPS compatible parge coat
- Wall alignment system (wall bracing system)

LOGIX ICF products or components that are installed by owner or by others shall comply with Division 1 as required.

#### 1.0.3 Products Installed But Not Supplied Under This Section

- Service Penetration Sleeves
- Inserts
- Hold-Downs & Anchors
- Bolts
- Reinforcing Steel
- Window & Door Bucks (Openings)
- Concrete

LOGIX ICF products or components that are installed by owner or by others shall comply with Division 1 as required.

The Installing Contractor shall furnish all labor, materials, tools and equipment to perform the installation of LOGIX ICF, including placement of reinforcing steel, placement of concrete and final cleanup.

#### 1.0.4 Related Sections

{NOTE: This section may be modified to suit specific project details.}

- Section 03 20 00: Concrete Reinforcement
- Section 03 30 00: Cast-in-place Concrete
- Division 04 00 00: Masonry
- Division 05 00 00: Metals
- Division 06 00 00: Woods, Plastics, and Composites
- Section 07 13 00: Sheet Waterproofing
- Section 07 24 00: Exterior Insulation Finishing Systems
- Section 07 46 00: Siding
- Division 08 00 00: Doors & Windows
- Division 09 22 00 – 09 25 00: Supports for Plaster and Gypsum Board – Other Plastering
- Section 09 70 00 – 09800: Wall Finishes - Acoustical Treatments

### 1.0.5 Alternates

Unless otherwise approved by owner or owner’s Engineer or Architect, alternate materials or ICF products shall not be accepted. Alternates are materials or other ICF products that are not specified within this document and/or do not meet the specifications within this document.

## 1.1 REFERENCES

{NOTE: users of this specification should modify this section to suit specific project details.}

- ASTM D1622 Apparent Density of Rigid Cellular Plastics
- ASTM C165 Measuring Compressive Properties of Thermal Insulations
- ASTM C203 Breaking Load & Flexural Properties of Block-Type Thermal Insulation
- ASTM C303 Dimensions & Density of Preformed Block & Board-Type Thermal Insulation
- ASTM C518 Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus
- ASTM D1621 Compressive Properties of Rigid Cellular Properties
- ASTM D1761 Mechanical Fasteners in Wood
- ASTM D1929 Determining Ignition Temperatures of Plastics
- ASTM D2126 Response of Rigid Cellular Plastics to Thermal & Humid Aging
- ASTM D2842 Water Absorption of Rigid Cellular Plastics
- ASTM D2843 Density of Smoke from the Burning or Decomposition of Plastics
- ASTM D2863 Limiting Oxygen Index
- ASTM D635 Rate of Burning &/or Extent & Time of Burning of Plastics in a Horizontal Position
- ASTM D638 Tensile Properties of Plastics
- ASTM D732 Shear Strength of Plastics by Punch Tool
- ASTM E119 Fire Tests of Building Construction & Materials
- ASTM E96 Water Vapor Transmission of Materials
- CCMC Masterformat 03131
- UBC 26-3 Room Fire Test Standard for Interior of Foam Plastic Systems
- CAN/ULC S701 Thermal Insulation: Polystyrene Boards & Pipe Coverings
- ASTM E84 Surface Burning Characteristics of Building Materials
- CSA A23.1 Concrete Materials & Methods of Concrete Construction
- CSA A23.3 Design of Concrete Structures

{NOTE: users of this specification should modify this section to suit specific code approvals.}

- Greenguard Indoor Air Quality Certificate of Compliance certificate no. 38-00
- International Code Council Evaluation Report No. 6142
- City of Los Angeles Research Report No. 25518

- Wisconsin Building Products Evaluation Report No. 200721-I
- Florida Product Approval No. FL14109
- Miami-Dade County NOA No.09-0714.03
- City of New York MEA 273-04-M
- QAI Fire Resistance Ratings, per CAN/ULC S101

Form Size (Concrete Wall Thickness)	Rating with ½ inch drywall
4 inch (102 mm)	2hrs
6.25 inch (159 mm)	3hrs (4hrs if 5/8" drywall used)
8 to 12 inch (203 mm)	4hrs

\*Bearing load applied to wall = 360,000lbs (360kips)

- CCMC Evaluation Report 13110-R
- Ruling of the Minister of Municipal Affairs and Housing No. 05-11-135 (13110-R)

## 1.2 DEFINITIONS

Wall Alignment System - bracing that acts as an alignment/scaffold system designed for use with LOGIX insulated concrete forms.

Installing Contractor – A contractor contracted to install LOGIX ICF, and who has training and experience in the installation of permanent insulated concrete forms.

Technical Advisor – An individual who has the training and experience to assist in the installation of permanent insulated concrete forms. The role of the Technical Advisor shall be as technical support to the Installing Contractor. The Technical Advisor may be a representative of the distribution firm or LOGIX ICF.

EPS - Acronym for “Expanded Polystyrene”, the foam component of the LOGIX Insulated Concrete Form.

ICF - Acronym for “Insulated Concrete Form”.

LOGIX ICF Products – refers to the LOGIX ICF forming system including related components listed in Section 1.0.2 and 1.0.3

Service Penetrations – services such as electrical wiring, pipes, ventilation systems, etc.that are installed in or through the LOGIX ICF walls.

## 1.3 SYSTEM DESCRIPTION

- LOGIX ICF shall consist of two flame-resistant EPS boards separated by polypropylene webs.
- LOGIX ICF shall be solid form units (LOGIX Pro) or knock-down forms (LOGIX KD) or a combination of both LOGIX Pro and LOGIX KD, referred to as LOGIX Hybrid Forms.
- The EPS foam boards shall be minimum 70 mm (2.75 inch) thick, and can range in thickness of 70 (2.75 inches), 102 (4 inches), 127 (5 inches), 152 (6 inches), 178 (7 inches) and 203 mm (8 inches), which gives a total EPS foam board thickness of 140 (5.50 inches), 203 (8 inches), 254 (10 inches), 305 (12 inches), 356 (14 inches) and 406 mm (16 inches), respectively.



- The webs shall separate the EPS boards to form 102 mm (4 inch), 159 mm (6.25 inc), 203 mm (8 inch), 254 mm (10 inch) and 305 mm (12 inch) cavities, which create the concrete wall thicknesses. LOGIX Xtenders shall be used to build LOGIX walls larger than 12 inches.
- The webs shall be spaced every 203 mm (8 inch) on centre horizontally and 406 mm (16 inch) on centre vertically, and contain a 32 mm (1.25 inch) wide furring strip that extends the height of each ICF block. The furring strips shall facilitate fasteners for attachment of both exterior and interior finishes.
- A furring strip shall be located in the corners of corner forms. The furring strip shall consist of both a vertical and horizontal component. The vertical component shall extend nearly the full height of the form, extend a minimum of 64 mm (2.5 inches) from both sides of the corner, and a minimum of 5 mm (0.2 inches) thick. The horizontal component shall be minimum 51mm (2 inches) in height, extend a minimum of 152 mm (6 inches) from both sides of the corner, and a minimum of 5 mm (0.2 inches) thick.
- The webs facilitate rebar placement in accordance with CAN/CSA A23.1

### 1.3.1 Design/Performance Requirements

{NOTE: users of this specification should modify this section to suit specific project details.}

{NOTE: Additional design/performance information, as required, can be obtained by contacting LOGIX at [info@LOGIXicf.com](mailto:info@LOGIXicf.com)}

#### Tests Conducted on EPS Material

Test Description	Result	Pass/Fail Criteria	Referenced Standard Test Method
R-Value (Thermal Resistance) per inch (per 25.4mm)	R 4.13 (RSI 0.72)	Min. R 4.00 (RSI 0.70)	ASTM C518
Water Absorption	0.18%	Max. 3.0%	ASTM D2842
Water Vapor Presence	94.0ng/Pa-s-m <sup>2</sup> (1.64perm-in.)	Max. 201 ng/Pa-s-m <sup>2</sup> (3.5perm-in.)	ASTM E96
Compressive Strength	165kPa (23.9psi)	Min. 104kPa (15.0psi)	ASTM D1621 & ASTM C165
Flexural Strength	365kPa (53.0psi)	Min. 240kPa (35.0psi)	ASTM C203
Dimensional Stability – Thermal & Humid Aging	0.5%	Max. 2.0%	ASTM D2126
Density	27.5kg/m <sup>3</sup> (1.72pcf)	Min. 22 kg/m <sup>3</sup> (1.35pcf)	ASTM C1622 & ASTM C303
Dimensions	Min. length variation = 0.0% Max. length variation = 0.4% Min. width variation = 0.1% Max. width variation = 0.4% Min. thickness variation = -0.3mm Max. thickness variation = 0.9mm Max. squareness = 3mm	Min. -0.2% Max. 0.4% Min. -0.2% Max. 0.4% Max. -2mm Max. 4mm Max. 3mm	ASTM C303
Limiting Oxygen Index	29.1%	Min. 24.0%	ASTM D2863
Formaldehyde Emission	No formaldehyde detected	N/A*	AATTC-112
Fungi Resistance	No fungal growth detected	N/A*	ASTM G21
Flame Spread Rating	< 25	N/A*	ASTM E84
Smoke Developed Rating	< 450	N/A*	ASTM E84
Fire Endurance Test	See Fire Resistance Rating table	N/A*	ASTM E119/CAN ULC S101
Standard Room Fire Test	w/in acceptable limits	Met conditions required for exposure to fire for 15 minutes.	UBC 26-3

Test Description	Result	Pass/Fail Criteria	Referenced Standard Test Method
Concrete Pour-in-place	Observations of deflection recorded.	N/A*	CCMC Masterformat 03131
Sound Transmission	STC 56 for 6.25 inch (159 mm) LOGIX wall system STC 50 for 4 inch LOGIX wall system	N/A*	ASTM E90
UPITT Toxicity	Pass	LC50 < 19.7g	University of Pittsburgh Toxicity Test

\*Code body or referenced test standard required reporting test results only - no Pass/Fail criteria specified.

#### Tests Conducted on Polypropylene Web

Test Description	Result	US Requirements	Referenced Standard Test Method
Flammability	Flame Front Distance = 4 inch (102 mm) Avg. Linear Burn Rate = 17.9mm/min (0.70in/min)	Max. linear burn rate = 40.0mm/min (1.57in/min) for Flame Front Dist. = 4 inch (102 mm)	ASTM D635
Smoke Density Rating	19.1%	Max. 75%	ASTM D2843
Average Lateral Fastener Resistance of Drywall Screws	1.63kN (367lbs)	N/A*	ASTM D1761
Average Withdrawal Fastener Resistance of Drywall Screws	0.75kN (169lbs)	N/A*	ASTM D1761
Shear Strength of Polypropylene Web	26.1MPa (37.9psi)	N/A*	ASTM D732, CCMC Masterformat 03131
Average Tensile Strength of Polypropylene Web	3.75kN (842lbs)	N/A*	ASTM D638
Average Withdrawal Resistance of Staples 1.59mm 16ga.	105N (24lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Plane Shank 1.5" long, 3/8" head	155N (35lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Ring Shank 1.5" long, 3/8" head	431N (97lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Spiral Shank 1.5" long, 3/8" head	135N (30lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Staples 1.59mm 16ga.	169N (38lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Plane Shank 1.5" long, 3/8" head	520N (117lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Ring Shank 1.5" long, 3/8" head	378N (85lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Lateral Resistance of Spiral Shank 1.5" long, 3/8" head	200N (45lbs)	N/A*	ASTM D1761 (under cyclic temperatures)
Average Withdrawal Resistance of Corrosion Resistance No.8-18 x 0.323 HD x 1.5/8"	567N (127lbs)	N/A*	ASTM D1761

Test Description	Result	US Requirements	Referenced Standard Test Method
Average Withdrawal Resistance of Corrosion Resistance 6d (0.113" shank x 0.267 HD x 2" long)	93N (21lbs)	N/A*	ASTM D1761
#6 Coarse Drywall Screw, 1-5/8" long**	787N (177lbs)	N/A*	ASTM D1761
#6 Fine Drywall Screw, 1-5/8" long**	765N (172lbs)	N/A*	ASTM D1761
16ga. Staple, 1-1/2" long**	124N (28lbs)	N/A*	ASTM D1761
Galvanized Ringed Wallboard Nail, 1-1/2" long**	462N (104lbs)	N/A*	ASTM D1761
Hot-dipped Galvanized Spiral Nail, 2" long**	226N (51lbs)	N/A*	ASTM D1761
#8 Wood Screw, 2" long**	920N (207lbs)	N/A*	ASTM D1761
#8 Exterior Deck Screw, 2" long**	934N (210lbs)	N/A*	ASTM D1761
#10 Wood Screw, 2" long**	880N (198lbs)	N/A*	ASTM D1761

\*Code body or referenced test standard required reporting test results only - no Pass/Fail criteria specified.

\*\*Applicable to corner web flanges only.

## 1.4 SUBMITTALS

Relevant data for submission before, during and after construction may include the following:

- Laboratory tests or data that validate product compliance with performance criteria specified;
- Manufacturer's Product/Design Manual;
- Relevant code compliance certificates

### 1.4.1 Quality Assurance

{NOTE: This section may be modified to suit specific project details.}

The Installing Contractor shall comply with all requirements, but not limited to, as outlined in this section.

#### 1.4.1.1 Qualifications

Installing Contractor shall be ICF trained and experienced.

Installers of LOGIX shall provide proof of training documentation to contractor.

A LOGIX Technical Representative shall be available to supervise construction on a regular basis.

#### 1.4.1.2 Regulatory Requirements

Installing Contractor including trades working under the Installing Contractor shall comply with local building code and regulatory requirements.

#### 1.4.1.3 Field Samples

Installing Contractor shall provide field samples, if required. The samples will be physical examples illustrating finishes, coatings, or finish such as concrete, brick or stone.

#### 1.4.1.4 Mock-Ups

If required by owner, full-size assemblies of a wall assembly shall be constructed for review of construction, coordination of the work specified, testing, operation and training of the trades. The mock-up can form part of the finished work if approved by the owner.

#### 1.4.1.5 Pre-installation Meetings

The Installing Contractor shall meet with the Contractor and relevant trades, as required, to coordinate the delivery, storage and handling of LOGIX ICF including ICF components listed in Section 1.0.2, 1.0.3 and 2.2.

## 1.5 DELIVERY, STORAGE & HANDLING

### 1.5.1 Packing, Shipping, Handling & Unloading

LOGIX ICF shall be delivered on-site in original factory packaging. All delivered LOGIX ICF products shall show traceability by bearing on the identification label the location of manufacturing plant, product description, batch/lot number and date produced.

Care shall be exercised in handling and unloading LOGIX ICF onto the construction site to minimize damage to the EPS boards and/or webs. LOGIX ICF shall remain in original factory packaging until ready for installation.

Storage location shall be in an area that will minimize damage or soiling to LOGIX ICF products. Protection shall be provided in cases where stored products of LOGIX ICF could be exposed, for more than 2 weeks, to UV or freezing rain or snow conditions.

## 1.6 PROJECT CONDITIONS

{NOTE: If appropriate, include additional relevant specific site conditions}

See above section.

## 1.7 SEQUENCING

{NOTE: This section is optional. State in this section, if appropriate, requirements for coordinating work that requires unusual scheduling with work in another section. The particular schedule of events should be specified here.}

## 1.8 WARRANTY

{NOTE: Contact manufacturer for details of warranty and describe in this section.}

### 1.8.1 Special Warranty

{NOTE: Include statements specific to this section which supplement or extend the warranty.}

## PART 2 PRODUCTS



## 2.0 MANUFACTURERS

LOGIX ICF products have been used as the basis for design. Other manufacturers' products of equivalent quality, dimensions and operating features may be acceptable, at the Engineer's discretion, if they comply with all requirements specified or indicated in these Contract documents.

## 2.1 MATERIALS

LOGIX ICF shall be used in construction. Substitutions or alternatives to LOGIX ICF may be acceptable at the Engineer's discretion if they comply with all requirement specified or indicated in these Contract documents.

## 2.2 MANUFACTURED UNITS

{NOTE: This section may be modified to suit specific project details.}

LOGIX ICF is available in 5 block sizes: 102 (4 inch), 159 (6.25 inch), 203 (8 inch), 254 (10 inch), and 305 mm (12 inch). LOGIX Xtenders shall be used to build LOGIX walls larger than 12 inches. The following table lists the available LOGIX ICF products and web furring strip dimensions.

LOGIX ICF products consists of:

1. LOGIX Pro (assembled form blocks)
2. LOGIX KD (unassembled form blocks)
3. LOGIX XRV (LOGIX KD forms with EPS panels greater than 70 mm (2.75 inches))

LOGIX ICF Products		Availability	
		Solid Form Units	Knock-down Forms
Standard	16 inches tall by 48 inches long. Range of thickness is 2.75, 4, 5, 6, 7, and 8 inches	4, 6.25, 8, and 10 inch	6.25, 8, 10, and 12 inches
Brick Ledge	16 inches tall by 48 inches long by 2.75 inches thick. Brick ledge extends 5.875 inches from face of concrete.	6.25, 8, and 10 inch	6.25, 8, 10, and 12 inches
Transition	16 inches tall by 48 inches long by 2.75 inches thick. Corbel ledge extends 3.75 inches from face of concrete.	6.25 and 8 inch	6.25, 8, 10, and 12 inches
Taper Top	16 inches tall by 48 inches long by 2.75 inches thick. At tapered end concrete extends 1.75 inches from face of concrete.	4, 6.25, 8, and 10 inch	6.25, 8, 10, and 12 inches
90° Corner	16 inches tall by 2.75 inches thick. Length of corner forms varies based on concrete core thickness.	4, 6.25, 8, and 10 inch	6.25, 8, 10, and 12 inches
45° Corner	16 inches tall by 2.75 inches thick. Length of corner forms varies based on concrete core thickness.	4, 6.25, and 8 inch	n/a
Half Height Standard	8 inches tall by 48 inches long. Range of thickness is 2.75, 4, 5, 6, 7, and 8 inches	4, 6.25, and 8 inch	n/a
Half Height 90° Corner	8 inches tall by 2.75 inches thick. Length of corner forms varies based on concrete core thickness.	4, 6.25, and 8 inch	n/a
Half Height 45° Corner	8 inches tall by 2.75 inches thick. Length of corner forms varies based on concrete core thickness.	4, 6.25, and 8 inch	n/a
Height Adjuster	4 inches tall by 24 inches long by 2.75 inches thick.	n/a	n/a
End Cap	16 inches tall by 2.25 inches thick.	4, 6.25, 8, 10 and 12 inch	4, 6.25, 8, 10 and 12 inch
Pilaster	16 inches tall by 2.75 inches thick. Provides a pilaster 16 inches wide, and can extend a maximum of 10.7 inches from face of concrete.	n/a	n/a

### Furring Strip Dimensions

	Block Size				
	102 mm (4 inch)	159 mm (6.25 inch)	203 mm (8 inch)	254 mm (10 inch)	305 mm (12 inch)
Height (full height blocks)	362 (14.25)	362 (14.25)	362 (14.25)	362 (14.25)	362 (14.25)
Height (half height blocks)	159 (6.25)	159 (6.25)	159 (6.25)	n/a	n/a
Width	32 (1.25)	32 (1.25)	32 (1.25)	32 (1.25)	32 (1.25)
Thickness	4.8 (0.1875)	4.8 (0.1875)	4.8 (0.1875)	4.8 (0.1875)	4.8 (0.1875)

### Corner Furring Strip Dimensions

Vertical Component – 362mm (14.25 inches) high by 5 mm (0.2 inches) thick. Extends beyond both sides of the corner by 52 mm (2 inches).

Horizontal Component – 52 mm (2 inches) high by 5 mm (0.2 inches) thick. Extends beyond both sides of the corner by 152 mm (6 inches).

### 2.3 CONCRETE & REINFORCING STEEL

Recommended maximum aggregate sizes are listed in the following table.

Block Cavity Size			
102 mm (4 inch)	159 mm (6.25 inch)	203 mm (8 inch)	254 and 305mm (10 and 12 inch)
9.5 (0.375)	19 (0.75)	19 (0.75)	19 (0.75)

Recommended concrete slump is 127 to 178 mm (5 to 7 inch). Slump may differ depending on design revisions to suit application.

Reinforcing steel shall be as specified under Section 03 20 00, and as required by the design engineer.

Structural design of reinforced concrete shall comply with CAN/CSA A23.1 & A23.3 as applicable.

### 2.4 WALL ALIGNMENT AND SCAFFOLDING SYSTEM

The Wall Alignment and Scaffolding System shall be used as a wall bracing system, and consist of an adjustable mechanism to ensure, and maintain, plumbness of the wall during construction. Installation of LOGIX ICF shall comply with ACI 347R.

Assembly of the wall alignment and scaffolding system must comply with local building and regulatory codes.

The wall alignment and scaffolding system shall be assembled to handle all design construction loads, and must be approved by a design engineer.

The wall alignment and scaffolding system must demonstrate resistance to the following design load conditions:

- Design wind load of 90 mph unoccupied, and 35 mph occupied, in accordance with ASCE 7-98 “Minimum Design Loads for Buildings and Other Structures”, and the “Tilt-up Concrete Association’s Guideline for Temporary Wind Bracing of Tilt-up

Concrete Panels During Construction.”

- Light-duty loading of 25 psf, as specified by OSHA.
- Horizontal loading of 200 lb applied at the top rail to simulate a worker leaning against the guardrail.

### 2.5 WATERPROOFING

Waterproofing shall be installed as specified under Division 07 00 00.

Where called for on drawings, waterproofing shall be an EPS compatible waterproofing system approved by the owner’s Engineer or Architect.

### 2.6 PARGING

Where parging (stucco type) is required, supply & installation of parging shall be as specified under Section 09 24 00, Portland Cement Plaster.

Alternate EIFS coatings shall be supplied and installed under Section 07 24 00, EIFS Systems.

### 2.7 STRUCTURAL METAL PANELS

For the use of Structural Metal Panels over ICF panels, ICF Dead and Construction load anchor points must be defined, if required by the Structural Metal Panel manufacturers. The location of the ICF Connectors/Dead and Construction load anchors must be coordinated by the Architect/General Contractor with the ICF Manufacturer, and the Metal Panel Manufacturer. Panel subframing must be fastened to the concrete.

## 3 EXECUTION

### 3.0 EXAMINATION

Special attention shall be paid to assessing all areas of work to determine, as much as possible, the scope of work involved.

### 3.1 SITE VERIFICATION OF CONDITIONS

The Installing Contractor shall verify the following site conditions prior to installation of LOGIX ICF:

- Site access and egress;
- Site conditions are as set out in Section 1.6 Project Conditions;
- Footings installed under Section 03 30 00 are within +/- 6 mm (¼ inch) of level and that steps in footings are 406 mm (16 inches) in height;
- Reinforcing steel dowels are in place at specified centers along footing lengths.

### 3.2 PREPARATION

The Installing Contractor shall ensure top of footings are clear of debris prior to installing LOGIX ICF. All debris must be removed from the interior of the forms prior to installation.



### 3.3 INSTALLATION

Installation of LOGIX ICF products shall be in conformance to the Installation Manual or as per the Technical Advisor's recommendations. Alternate installation methods shall be approved by the owners' engineer.

The Installing Contractor shall ensure the proper installation methods for the following work are employed on site. The installation method shall comply with the manufacturer's installation instructions, unless alternate methods are approved by the owner's engineer.

- (a) Installation of First Course
- (b) Installation of Horizontal Reinforcement
- (c) Setting Successive Courses
- (d) Forming Door & Window Openings
- (e) LOGIX Alignment & Scaffolding System Installation
- (f) Installation of Vertical Reinforcement
- (g) Inspection and alignment of forms Prior to Concrete Placement
- (h) Concrete Placement
- (i) LOGIX Alignment & Scaffolding System Removal

### 3.4 SERVICE PENETRATIONS

Service penetrations shall be installed where indicated on approved drawings. Service penetrations shall be installed by the appropriate trade.

Where service penetrations run through the LOGIX ICF wall, sleeves shall be provided to create a void where the service is to be located. Sleeves shall be placed prior to concrete placement.

### 3.5 CONCRETE PLACEMENT

Concrete placement shall not exceed a pour rate of 4 ft/hr. Maximum pour height shall not exceed 14 ft. In addition, Logix ICF shall demonstrate resistance to the lateral concrete pressure exerted from placing concrete in a 14 ft tall wall, per ACI 347, "Guide to Formwork for Concrete."

### 3.6 FIELD QUALITY CONTROL

The Installing Contractor shall inspect the erected formwork prior to placing concrete. The formwork shall be inspected to verify, but not limited to, the following:

- Conformance to design drawings;
- Plumbness of wall;
- Rebar placement;
- Stability of wall alignment system (wall bracing system) and any additional anchoring system required to keep the walls aligned position and rigidity.

### 3.7 CLEANUP

Installing Contractor shall ensure his/her work site is kept clean at all times. All material shall be properly disposed, and all remaining debris shall be removed from the work site following the complete installation of LOGIX ICF.

### 3.8 PROTECTION

Prior to concrete placement, interlocking knobs along the top of the ICF wall shall be protected with tape or other means to ensure no concrete debris sets on and between the interlocking knobs.

Protection of installed forms shall be provided if the forms are expected to be exposed to UV rays for longer than 180days (i.e. delay in final wall finish application).

See Section 1.5.1 for additional protection requirements.

**END OF SECTION**