

**IntegraSpec<sup>®</sup>**  
.COM

*The User Friendly ICF*

**Insulating Concrete Forms**

By PHIL-INSUL CORPORATION

# INSTALLATION MANUAL



**Patented Independent Panel ICF**

**Version 8.0**

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ENGINEERING MANUAL

## IMPORTANT NOTE TO THE READER(S)

This guide is intended as a supplement to, or preparation before, on site training of installation crews by Phil-Insul Corporation (PIC) technical support staff or by a PIC accredited **Integra-Trained Installer(s)**. PIC reserves the right to change or modify the information contained herein; therefore, the reader is responsible for obtaining the most recent documentation / information either through PIC's web site [www.integraspec.com](http://www.integraspec.com) (if available) or by calling their distributor.

Site specific design and engineering is the sole responsibility of the IntegraSpec Installer.

Professional installation, design, engineering, and safety, along with meeting the building code requirements, is the sole responsibility of the **Integra-Trained installer(s)**.

### *IntegraSpec Key Notes symbols*



**FRIENDLY REMINDERS**



**TIPS AND ALTERNATIVES**



**REFERENCE TO BUILDING CODES & REGULATION**

While viewing this manual on computer, click on underlined reference(s) / link(s) to view the referenced file(s). Click on the Icon at bottom right of page(s) to return to the table of contents. In order to use the links to our Engineering Manual, the Engineering and Install manuals must be in the same directory on your computer.

### **DISCLAIMER**

PIC warrants the quality of its product, but does not warrant installation. Please refer to PIC's warranty in [Appendix E](#).

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# INTRODUCTION

The **IntegraSpec**<sup>®</sup> insulating concrete form (ICF) building system consists of stay-in-place expanded polystyrene units designed and suited for low-rise and multilevel commercial, industrial, institutional, agricultural, and residential construction. The system combines the insulating effectiveness of expanded polystyrene (EPS) with the structural integrity of reinforced, monolithic, moist cured concrete. **IntegraSpec**<sup>®</sup> integrates formwork, concrete, drainage, insulation, studs/strapping, vapour barriers, air barriers, and sheathing into one cost and time efficient building system, for year round construction.

**IntegraSpec**<sup>®</sup> form units consist of molded expanded polystyrene (EPS) panels and plastic spacers. The EPS panels incorporate plastic “inserts” which are molded as a unit within the panels. The design of the inserts prevents form unit compression and incorporates standard 1<sup>5</sup>/<sub>8</sub> inch studs/strapping, a “slide” for the spacers, as well as reinforcement to control form unit bulging and compression. The spacers connect the inside and outside panels of each form unit with integral snap-in rebar mounting points and a patented mechanical interlocking mechanism.

The EPS panels have a patented friction interlocking design, which allows **IntegraSpec**<sup>®</sup> form units to be stacked - no matter which way they are oriented - with no specific top, bottom, left or right hand side, substantially reducing waste. The patented combined friction/mechanical form unit interlocking system eliminates form unit flotation, compression, and bulging.

The approximate size of each assembled **IntegraSpec**<sup>®</sup> form unit is 4 feet (121.9 cm) by 12<sup>1</sup>/<sub>4</sub>" (31.1 cm) (interlocked together) with varying spacer sizes; creating the required concrete cavity. Changing the size of the form unit concrete cavity is a simple matter of changing the size of the spacer (refer to general specifications further in this section).

**IntegraSpec**<sup>®</sup> has been designed to easily accommodate most ICF wall alignment and scaffolding systems. Any questions with regards to alignment systems should be directed to **IntegraSpec**<sup>®</sup>'s Head Office. Please note professional installation and safety is the responsibility of the trained installers (Please refer to disclaimer on page ii). Appendix “A” included in this manual outlines the proper usage of alignment systems with **IntegraSpec**<sup>®</sup>.



## **IMPORTANT NOTES:**

**The procedures on the following pages outline activities and materials used for typical construction. Specific designs may require variations on these instructions; in all such cases, the requirements indicated by a design engineer shall take precedence.**

**Site preparation requirements, including excavation and placing of wall footings, are specific to the ICF industry. Again, requirements indicated by a design engineer and the local building code shall take precedence.**

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# IntegraSpec® - Shipping / Storage / Handling / Inventory

**IntegraSpec®** is cost efficient to transport, handle, and store. **IntegraSpec®** ships flat, in easy to handle packaging that can be stored outside for an extended period. **IntegraSpec®** bundles and spacer boxes are compact and only weigh between 18 - 46 lbs. (8.16 – 21 kg.) and therefore do not require specialized heavy equipment or multiple people to handle. **IntegraSpec®** bundles can be stacked, requiring less space on construction sites and in warehouses. **IntegraSpec®** is less likely to be damaged - being light weight and tightly wrapped in easy to move bundles. Inventory, storage, and shipping costs are also dramatically reduced because only one style of **IntegraSpec®** panels (standard panels) are required for building different concrete wall thicknesses by inserting different sized spacers.



Fig. S-11.0

Approximately 7,200 total square feet (697 square meters) of wall area can be shipped in a 53 feet (16.15 meters) tractor trailer load.



Fig. S-11.1

More than 1,200 total square feet (112 square meters) of wall area can easily be hauled using a pick-up truck and a small trailer.



# 1.0 INTEGRA-TRAINING

Installation accreditation of **IntegraSpec®** is given by PIC upon successful completion of the Integra-Training Level A, B, C, and D as outlined below:

## Integra-Training Level A

**Requirements** *Individuals must undergo “On Site” training/supervision sessions from PIC (from initial wall layout, alignment, and bracing to the concrete placement stage of the first level) and successfully pass a series of inspections on two projects by PIC’s technical staff or by someone who has been authorized to train by PIC.*

### Inspections / Supervision Prior to Placement of Concrete

- a) *Wall setup, window and door openings, alignment, and scaffolding;*
- b) *Reinforcing steel installation;*
- c) *Bracing of “T” walls, lintels, angled/curved walls, and short distance corners.*

### Inspections/Supervision During and after Placement of Concrete

- a) *Concrete placement and consolidation;*
- b) *Wall alignment and plumb line;*
- c) *Installation and bracing of window / door bucks and lintels;*
- d) *Installation of damp proofing / waterproofing where required;*
- e) *Overall installation quality.*

### Qualifications

*Upon successful completion of two or more basement / foundation / slab on grade projects, PIC will confirm in writing (along with issuing a file number) that the individual(s) has received Integra-Training Level A by qualified PIC technical staff or by a PIC approved Integra-Trained Level C or higher.*

## Integra-Training Level B

**Requirements** *Individuals must be Integra-Trained Level A, with successful completion of the following:*

1. *Three residential installations of **IntegraSpec®** as a basement / foundation / slab on grade project;*
2. *Two projects of **IntegraSpec®** as above grade installations;*
3. *At least one installation containing other than 90 degree corners.*

### Qualifications

*After having successfully completed the Integra-Training Level B requirements, PIC will confirm in writing (along with issuing a file number) that the individual has received the Integra-Training Level B and that he or she may personally install, supervise, and inspect any residential **IntegraSpec®** installations with one level above grade.*

## **Integra-Training Level C**

**Requirements** *Individuals must be Integra-Trained Level A and B, with successful completion of the following:*

1. *An appropriate number / variety of residential installations;*
2. *Two projects of more than two stories above grade.*

**Qualifications** *PIC will issue a file number and confirm in writing that upon achieving the above requirements, the individual(s) has received and met Integra-Training Level C standards and can personally install, supervise, and inspect any residential **IntegraSpec**<sup>®</sup> installations. An approved (by PIC) Integra-Trained Level C may also provide Integra-Training for Level A and B.*

## **Integra-Training Level D**

**Requirements** *Individuals must be Integra-Trained Level C, with successful completion of the following:*

1. *Two or more commercial / institutional / industrial / agricultural projects acceptable to PIC.*
2. *Demonstrate usage of a variety of concrete spacers.*

**Qualifications** *PIC will issue a file number and confirm in writing that upon achieving the above requirements, the individual(s) has received and met Integra-Training Level D standards and can personally install, supervise, and inspect any commercial **IntegraSpec**<sup>®</sup> installations. An approved (by PIC) Level D may also provide Integra-Training for Levels A, B, and C.*

## **Accreditation**

*Once the qualifications have been met, PIC will confirm in writing that the individuals have received one of the above listed Integra-Training Levels. The PIC letter will list the individual's name, Level of Integra-Training along with an assigned file number, which will be duly signed by Phil-Insul Corp.'s Head Office.*

## **Disclaimer**

*Phil-Insul Corp. (PIC) is not responsible or liable on or for any installation of its product **IntegraSpec**<sup>®</sup> performed by any of the trained **IntegraSpec**<sup>®</sup> installers or its crew(s). It is the installers sole responsibility to make sure that **IntegraSpec**<sup>®</sup> is installed correctly and in compliance with PIC's installation manual and the local building code / regulations.*



## 2.0 MATERIAL & TOOLS CHECK LIST

The installation crew should place the appropriate number of **IntegraSpec®** EPS panels, together with sufficient rebar, ICF alignment hardware, and the required tools in a convenient arrangement inside the wall perimeter. Four feet away from the footings is usually best as it allows for ease of access to materials and tools, and less conflict with the alignment system. Placement should also allow for ease of diagonal measurement on the slab or footing(s). Place granular base as soon as footings are stripped; working area must be free of mud and water.

### Material Check List

- Reinforcing steel as required
- \*No. 8 x 1¾" coarse thread screws
- 3" concrete nails and or ¼" hex head concrete screws
- Plastic sleeves for mechanical, plumbing, and electrical service penetrations
- Perforated ¾" metal strapping x 500 ft.
- \*ICF wall alignment system (see appendix "A" for quantities)
- \*Low expanding foam (two cans) and gun
- \*IntegraBucks and / or wood bucks for openings (i.e. doors and windows)
- Cable ties and / or tie wire
- \*Fiberglass reinforced tape (¾"+ wide, 3M recommended - five rolls)
- 2" x bracing material for "T"-walls, short corners, windows, etc.
- \*Anchor bolts, flange bolts
- \*Integra-Steel Channels (when required for fire commercial fire code)
- \*Integra "H"-clip (when required)
- \*IntegraSpec Brick Ledge and / or Taper Top Panels (when required)
- \*Water or damp proofing material / membrane (when required)
- 

### Tools Check List

- Carpenters' fine tooth hand saw*
- Tool belt with hammer
- Power circular saw
- Keyhole saw
- Table saw (optional, for convenience)
- \*Hot knife or electric chain saw
- Cordless drill with magnetic bit extension with assorted screw driver bits
- \*Rebar bender / cutter and / or cut off saw
- 100' steel tape measure
- 6' min. step ladder (two recommended)
- Drywall or utility knife
- 4' spirit level (8' recommended)
- Tripod or laser level
- Plumb line (plumb bob)
- \*External and / or internal vibrator (pencil vibrator recommended)
- String line and chalk line
- 10" miter saw for corners other than 90° (12" sliding miter saw recommended)
- Concrete float (magnesium preferred or wood)
- \*Construction calculator (Master IV) (optional)



**\* Some of the above materials and or tools may not be available locally. Most of the above items are sold and distributed by IntegraSpec associate distributors. Contact your IntegraSpec distributor or PIC to obtain a contact list for these items.**



## 2.1 INTEGRASPEC INSTALLATION CHECKLIST

- Read manual ahead of time. Photo copy or download from [IntegraSpec®](#) website the tool and material checklist 2.0 and pre-pour inspection checklist [17.5](#);
- Gather tools and materials and complete tool and material checklist;
- Check footings for square and level and for proper steps if any;
- Lay out corners and chalk line inside and outside of walls;
- Place all material and supplies inside work area: one bundle of corners at each corner, standards and webs evenly spaced around perimeter;
- Set the first two courses starting from corners as per manual. Mark splice locations on the panel surface with crayon or felt marker;
- Check top of panels for level with laser. Shim or shave the bottom of the panels and foam to footing;
- Install horizontal rebar in second row for wall heights with even numbered courses; start bar in first row for odd numbered courses;
- Mark location of openings and bracing on wall surface;
- Repeat pattern of first two courses for the rest of the wall;
- At 5<sup>th</sup> or 6<sup>th</sup> course, install bracing and bucks - being careful not to strip screws. Never leave wall over 4' high un-braced overnight;
- Plumb bracing with a hand level when first installed;
- Begin to install proper lintel steel as per manual when you reach the top of the bucks;
- Install proper bar at top course;
- Install string line and plumb and straighten walls;
- Install vertical steel;
- Deal with T-wall and short corner bracing;
- Strap all joints that need it as per manual. Strap bucks and support lintels;
- Install penetration sleeves and beam pockets and flange bolts.

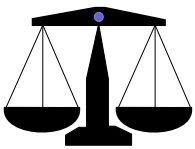
**Complete pre-pouring inspection list. [\(Refer to section 17.5\)](#)**



## 3.0 FOOTING AND OR SLAB

There is no structural difference between an **IntegraSpec®** wall and a conventionally formed concrete wall; therefore, footings or slabs are designed, and formed, as per conventional construction. **Consult local building authorities / codes for footing size / bearing requirements.** (Typical engineered tables for soil bearing capacity and footing size are provided in the IntegraSpec Engineered Manual; **Table [5a](#), [5a cont.](#) and [5b](#), [5b cont.](#), page [B-13](#) to [B-20](#)).**

- 3.1 When lateral support is required at base of **IntegraSpec®** concrete wall; prior or when pouring concrete footing(s) / slab(s), vertical steel reinforcing dowels needs to be placed in the footing / slab at minimum 32" (81.28 cm) on centre, with a minimum 6" (15.2 cm) imbedded in the concrete, and projecting a minimum of forty (40) times the diameter of the steel dowel at top of footing(s) / slab(s). Unless otherwise specified, steel dowels need to be placed at the centre of the IntegraSpec monolithic concrete wall (refer to IntegraSpec typical engineering manual details on page [B-7](#), [B-10](#), [B-21](#), [B-22](#), [B-23](#), [B-28](#) and [B-28b.](#)). Note that, unless specified, L shaped dowels are optional.
- 3.2 The footing or slab should be level and have a smooth top surface (**within a tolerance of +/- ¼"**).
- 3.3 When step footings are required, it is recommended that vertical steps of 12¼" increments be used to correspond with the height of the IntegraSpec form units. Where this is not possible, the form units are adjusted by making horizontal cuts to the EPS panels. **Remember to follow local codes regarding step footings / rise.**
- 3.4 Place granular base material as soon as footings are stripped; working area must be free of mud and water.



**When building on a slab - prior to pouring slab consult your local building codes and / or department to determine if a water stop is required to prevent water from entering at the cold joint between the slab and the wall.**



**A level and smooth footing or slab saves time and money. Spend the extra time it takes to ensure they are level to within a tolerance of +/- ¼".**

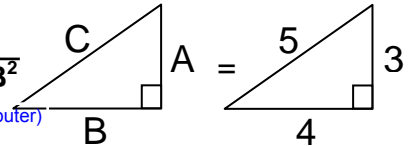


## 4.0 GETTING STARTED

- 4.1 Chalk wall lines (both inside and outside recommended) on footings and or slab prior to placing construction materials inside the work place area. This allows for accurate measurement of the diagonals/hypotenuse.

**Square / Hypotenuse (diagonal) Formula:**  $C = \sqrt{A^2 + B^2}$

(This link will open up an Excel spreadsheet - you must have Excel installed on your computer)



**We recommend the use of red chalk line as it is more resistant to rain water. Once all wall lines have been chalked, it's also recommended to place a small concrete nail in footing(s) / slab(s) on each of the wall corners as preventive measure in case chalk line markings get washed out with excessive rain water.**

- 4.2 For footings or slabs that are out of level, there are two adjustment methods:
- The first method is to place two courses of **IntegraSpec®** form units, complete with reinforcing bars ([see section 7.0 for reinforcing steel placement](#)), and then use foam cuttings as shims to level the wall at each joint. Fill the remaining voids with low expanding polyurethane spray foam. When footing(s) / slab(s) are in excess of 1" (2.5 cm) out of level, shave bottom course of form units at highest point of footing / slab.
  - The second method is to scribe the bottom of **IntegraSpec®** EPS panels to the contour of the footing or slab, and foam in place with low expanding polyurethane foam (gun foam). This method may also be used when building on solid bedrock where footings may not be necessary.

- 4.3 Like most construction sites, it is easier and more accessible to work from the inside wall perimeter. The installation crew should now place the appropriate number of **IntegraSpec®** form units - together with sufficient rebar, the alignment system, and the required tools, in a convenient arrangement inside the wall perimeter - four feet away from the footings or wall layout is usually best, as it allows for ease of access to materials and tools and less conflict with the alignment system



**Clean and good site management not only saves time and money, it also provides a safer and clean working environment for everyone.**

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## 5.0 FIRST COURSE PLACEMENT

- 5.1 Prior to placing any form units, the footing or slab should be swept clean of any dirt, shavings, or debris.
- 5.2 Following the chalk lines, position the **IntegraSpec®** corners and standard form units. Starting in one corner, proceed to center of wall. Set opposite corner and place standard form units to meet your last panel. Orient corner units on the first row so that the long legs are on the same side. Each row will now have a long and short leg facing each other. When horizontal reinforcing steel is not required on the first course, proceed with laying out the first and second course. (Refer to [section 6.0 corners](#), [section 7.0 reinforcing steel placement](#), and [section 8.0 successive course placement](#)).
- 5.3 When laying out an **IntegraSpec®** wall, a vertical seam in the form units should be avoided by staggering the joint which will occur somewhere in the middle of the wall by a minimum of 8" (20.3 cm). If there is a door opening in the wall, locate your splice / cut in the opening. In the event that a vertical joint or minimum overlap of 8" (20.3 cm) cannot be avoided, the joint needs to be strapped with perforated metal strapping or 1" x 3" (2.5 cm x 7.6 cm) wood strapping on center of every course (both sides of wall) to reinforce this weak point in the wall. Screw the strapping to the first and second plastic channels (fastening strips) on both sides of the seam. Often, the vertical alignment of the **IntegraSpec®** spacers will not occur at this joint. When spacers are not directly interlocked one on top of the other, the out-of-alignment spacer needs to be screwed to the plastic channels from the inside (concrete side), to prevent them from sliding down and out of place. **Refer to the Important Note on page 8.0 and fig. 8.2.**
- 5.4 The **IntegraSpec®** plastic channels are located at eight inches on centers. When cutting the panels vertically, the maximum recommended unsupported cut should be no more than four inches from the center of a plastic channel or the inside surface of an end cap.
- 5.5 Once the positions of the first two courses have been set, kicker plates can be fastened to the footing / slab as per [fig. 6.1](#). Alternatively, the bottom panels can be foamed to the footings. This ensures original wall layout.



Fig 6.1  
2" x 4" (5.2 cm x 10.2 cm) kicker  
plate fastened to concrete floor,  
footing, or slab.

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- 5.6 Where it has not been possible for step footings to correspond to the 12¼" (31.1 cm) height of **IntegraSpec**<sup>®</sup> form units, the form units need to be cut to accommodate the required dimension. Cutting the panels to the appropriate height and using half spacers, or cutting the spacers to fit in the assembly, will accomplish this.
- 5.7 When a large number of **IntegraSpec**<sup>®</sup> panels must be horizontally cut, it is recommended that a table or a circular saw be used for both convenience and consistency. For vertical cuts in the panels, use a hand saw and cut along the panel's pre-marked cut lines (located on 1" (2.54 cm) centers. Make sure that cuts are square with panel(s). There is seldom a need to cut **IntegraSpec**<sup>®</sup> spacers; usually snapping them in half is sufficient.



### ***IMPORTANT NOTE***



As an added safety precaution when cutting **IntegraSpec**<sup>®</sup> panel(s) on a table saw, it is recommended to clean and lubricate the saw blade with a silicon spray lubricant. This is to reduce panels from sticking to the saw blade due to friction and melted plastic accumulation on the blade. **Never** remove safety guard from the table saw; the guard keeps the **IntegraSpec**<sup>®</sup> from lifting while cutting.



## 6.0 TYPICAL CORNERS

- 6.1 **IntegraSpec® 4" (10.2 cm) concrete core;** use the **IntegraSpec® 90° 6" (15.2 cm)** preformed exterior corner panel with mitering standard panels for the interior corner (see figure 6.1).

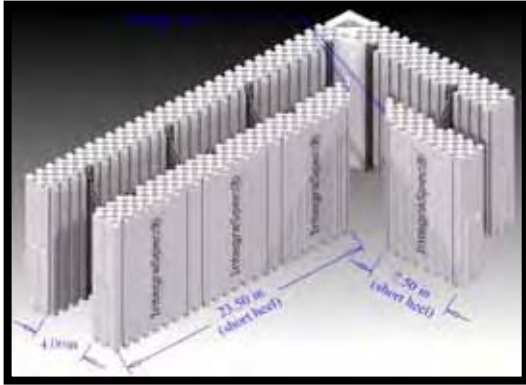


Fig. 6.1

4" (10.2 cm) corner using exterior 6" (15.2 cm) 90° corner panel with mitering inside panels

- 6.2 **Typical IntegraSpec® 6" (15.2 cm) concrete core;** use the **IntegraSpec® 90°** preformed (interior and exterior) corner units ([see corner specifications in Specification section page Spec-2](#)). For best results, corner should be placed long end facing short end of the opposite corner. On consecutive courses, simply rotate corners 180° (upside down) so that they interlock the corner and abutting standard panel by 16" (40.6 cm) directly under. Do this on every course; this will create a staggered and interlocked running bond. Do not cut corner units; although if unavoidable i.e. short corner, [refer to 6.5](#).

- 6.3 **Typical IntegraSpec® 8" (20.3 cm) concrete core;** use the **IntegraSpec® Commercial Corner Unit** and [follow same instructions as in 6.2](#).

- 6.4 **Typical IntegraSpec® 10" (25.0cm) concrete core;** use the **IntegraSpec® Commercial Corner Unit**. Assemble the form unit(s) in same manner as the 8" (20.3cm) wall. Insert the spacers into the panels' plastic channels, even though the first three spacers on the long leg of the corner will be offset by 2" (51mm). On the short leg, one spacer will also be offset by the same amount. Cut 2" (51mm) off the standard panels adjoining the inside panel of the corner, in order to bring the spacer alignment back to 90°. The standard panel(s) adjoining the outside corner are installed in the usual manner. This will result in the spacers creating a crisscross pattern with the interlocking clips always connecting with the spacers below on one side of the block. (see figure 6.1b)

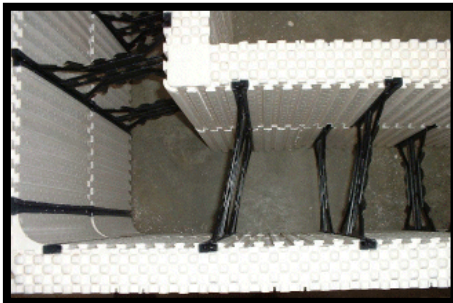


Fig. 6.1b

Top view of assembled 10" corner using **IntegraSpec®'s Commercial** 90° form unit with spacers offset.

- 6.5 For all other corner angles (or for customized wall shapes, e.g. circular walls) use the **IntegraSpec®** standard unit which can be easily mitered or scored to achieve the appropriate angle or curve. ([Refer to appendix "D.2" for angle mitering formula](#)) and (["D.1" for circular walls](#)).

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**6.6** It is recommended that mitered corners be reinforced with perforated metal strapping (plumbers' strapping). A minimum of two metal straps placed at 2.5" (6.35 cm) from bottom and top edge on each horizontal row, screwed into the second and third built-in stud / strapping face on both sides of the corner. Secondly, 1" (2.54 cm) filament fiberglass tape can be used with a minimum of three strips of tape per course [extending a minimum of 1'-0" (30.48 cm) on each side of the corner]. Thirdly, mitered corners can be pre-assembled (on or off site) using hot melt glue.



**NOTE: Fiberglass filament tape adhesion is weather and time sensitive. It may not be suitable for protracted projects.**

- 6.7** For short corners [2 feet (60.96 cm) or less] which are so short that no plastic channels are left for a spacer to be inserted, install a "strong back" on each side of the corner, centered with the concrete wall. Alternately, strap the entire short corner with at least one strap for every two feet (60.96 cm) in height; this is done by extending the perforated metal strap through the wall at every 2' minimum, and then wrapping it tightly around and screwing it to a 2" x 6" (5.1 cm x 15.2 cm) minimum.
- 6.8** Where at least one spacer can still be inserted, secure with polyurethane low expansion foam any vertical joints on the short side, and strap together [perforated metal/plumbers' strapping, ¼" x 1½" (0.6 cm x 3.8 cm) plywood strapping, or other similar method] the plastic channels on either side of the vertical joints. Use a minimum of one strap at every course, screwed into built-in studs. It is recommended to use plumbers' or perforated metal strapping.



Fig 6.2  
*Short corner wood strong backs  
(both sides of wall)*



Fig. 6.3  
*Vertical joint with 1" x 3" (2.5 cm x 7.6 cm) wood strapping*



***IMPORTANT NOTE:***



Where a vertical joint is unavoidably created, it is recommended to bond that joint with low expansion polyurethane spray foam and reinforce it with horizontal perforated metal strapping (plumbers' strapping) or 1" x 3" (2.5 cm x 7.6 cm) wood strips on center of each course where the vertical joint has occurred.

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## 7.0 REINFORCING STEEL

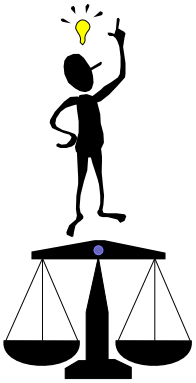
- 7.1 Become familiar with the typical **IntegraSpec®** engineering details and rebar placement tables as provided by PIC - **IntegraSpec®**. Applicable section(s) should be reviewed by your local building authority for code compliance.
- a) **Note that horizontal rebar must be placed as the IntegraSpec® form units are stacked.** This allows for horizontal reinforcing steel spacing at multiples of six, nine, and fifteen inches (15 cm, 23 cm, and 38 cm) on center by utilizing different half and full spacer configurations.
- 7.2 Placing reinforcing steel in the wall(s).
- i) Starting with the first course for which horizontal rebar is specified, place the rebar in the snap-in mounting points (termed "notches") of the spacers closest to the interior or non-backfilled face of the wall (tension side) unless otherwise specified by a design engineer or the local building code. Tying rebar is not required - simply firmly press with a downward pressure and it will lock into place.
- ii) Where two lengths of rebar meet, remember to leave an overlap equivalent to forty (40) times the rod diameter to ensure that the reinforcing strength is continuous in its capability to carry building loads (also called the "developed length"). Tying overlap points with tie wire or lightweight cable tie and as required by local building codes.
- iii) On the second course for which horizontal rebar is specified, stagger the position so that it is placed in notch #2 towards the center of the concrete cavity.
- iv) On the third course for which horizontal rebar is specified, stagger the rebar's position back to notch #1.
- v) Continue to stagger in this pattern ([see figure 7.3](#))
- 7.3 Staggering horizontal rebar in this manner allows vertical rebar to be woven through the horizontal reinforcing after the formwork has been stacked. The vertical rebar will be held in the correct position (without tying) by the horizontal reinforcing.
- 7.4 Vertical reinforcing must be carefully placed without dropping.
- 7.5 If **IntegraSpec®** will be used to continue construction beyond the level of the first concrete pour, follow conventional forming practices by planning for appropriate placement of reinforcing steel reinforcing lap bars in the fresh concrete of the first pour. This will provide shear resistance between cold joints / lifts. The requirements are illustrated in the typical **IntegraSpec®** engineered manual (page [B-7](#), [B-21](#), [B-29](#) and [B-33](#)). Follow the local building code or the requirements indicated by a design engineer.

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- 7.6 Prior to pouring of concrete, the top of the forming panels should be covered with plastic or tape so that concrete does not get between the knobs and prevent the next course of **IntegraSpec®** from easily interconnecting.
- 7.7 Window and door locations should be identified so that steel and concrete placement does not conflict with their installation.
- 7.8 When lintels require stirrups or additional rebar, a pencil vibrator is recommended for proper concrete consolidation around heavy rebar placement.



***IMPORTANT NOTES:***



The **IntegraSpec®** system requires the use of **STRAIGHT** rebar. Good quality reinforcing steel assists in quick construction and professional results.

Reinforcing steel design requirements will vary for specific wall heights and on-site conditions. Refer to **IntegraSpec®**'s standard engineering. Specific designs may require some variation on these generalized requirements. The placement and design of reinforcing steel must be in accordance with ACI 318 (U.S.), CSA A23.1 and CSA A23.3 -94 (Canada). For below grade walls backfilled on one side, rebar must be placed in the snap-in mounting points on the side closest to the non-backfilled face of the wall (opposite at corners re: corner bars) to give proper lateral stress support. In all such cases, the requirements indicated by the design engineer shall take precedence. Refer to [IntegraSpec Typical Engineered Tables and Details manual](#).

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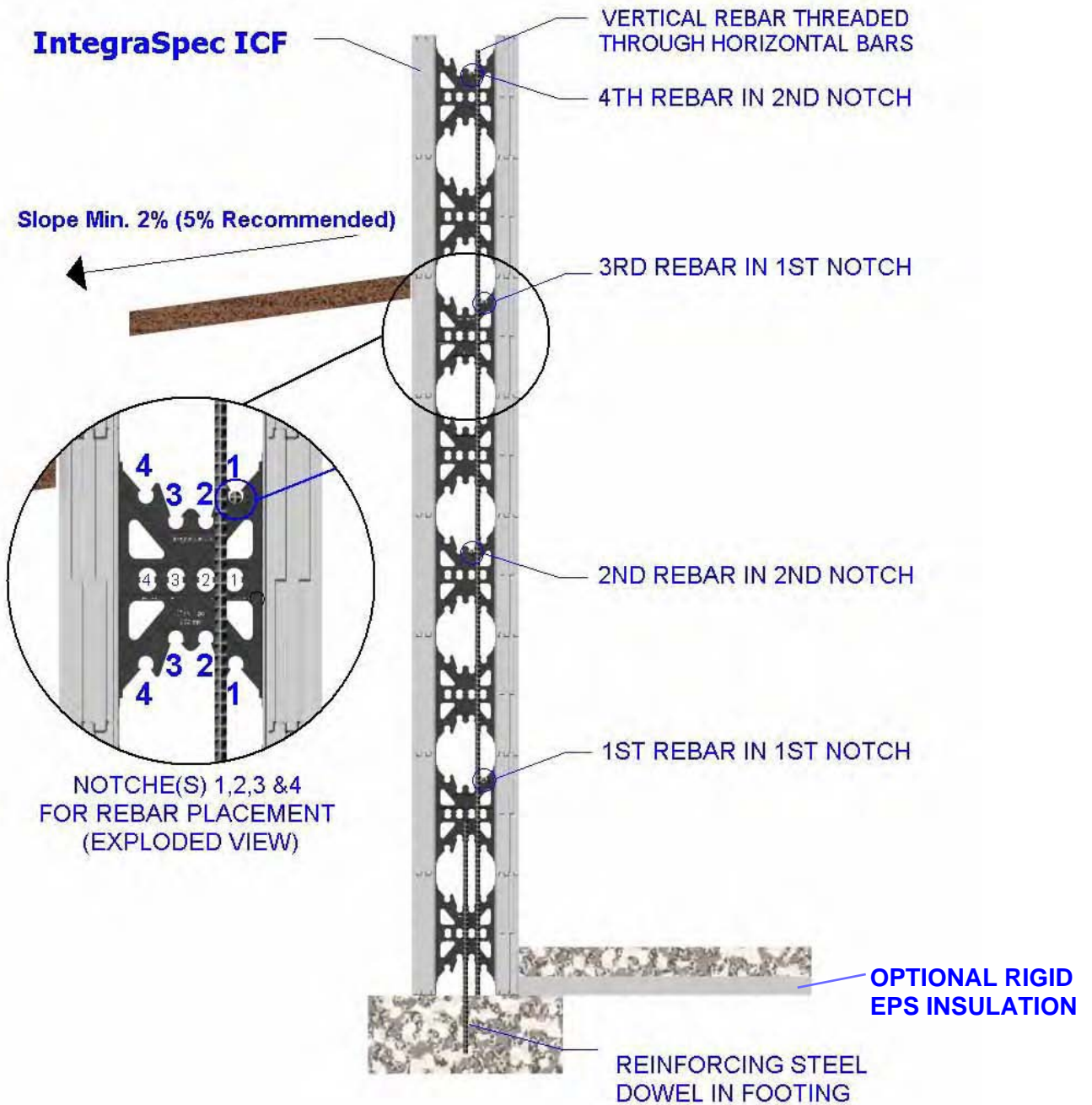


Fig. 7.3  
Example of reinforcing steel standard stacked method for 8' wall.  
[6" (15.2 cm) concrete cavity shown]



**Unless otherwise specified; for even numbered courses, start horizontal rebar at course # 2 in notch # 1. For odd numbered courses start horizontal bars at course # 1 in notch # 1.**

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# 8.0 SUCCESSIVE COURSE PLACEMENT

8.1. After the first course of **IntegraSpec®** form units has been placed, and any specified first course horizontal rebar snapped in place, the next course of form units may be stacked. If horizontal rebar is not required in first course, stack first and second course simultaneously

8.2. For each successive course, reverse the corner units (short and long legs) so that the form units will be stacked in a running, staggered pattern (the same concept as running bond patterns in block and brickwork). (Fig. 8.1)

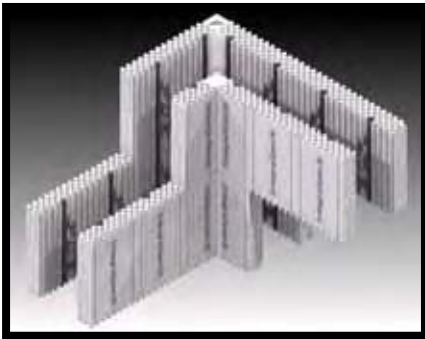


Fig 8.1  
*Standard stack method of corner unit placement by simply reversing the corner unit(s) (upside up or down) [6" concrete core (15.2 cm) shown]*

8.3. With each course, ensure that the spacers have been installed every eight inches (20 cm) in all of the plastic channels and that the spacers are interlocked.

8.4. Proceeding as outlined in subsections 8.1 to 8.3, stack successive courses until five or six courses (five to six feet) have been completed. The alignment and scaffolding system can now be installed. On high wind days, it may be necessary to install it at an earlier course. [See appendix "A" Alignment System](#) (Installation)



## **IMPORTANT NOTE:**



Where spacers do not align on top of each other when inserted in panels, it is necessary to secure the spacers inside the plastic channels. Do this by inserting a screw through the spacer and into the plastic channels. (Fig. 8.2 below)



Fig. 8.2  
*Spacers secured inside plastic channels with screws through spacers and channels where channels do not line up.*

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## 9.0 “T” WALLS

- 9.1 **T-wall using IntegraSpec® “T” Panels:** Assemble T-wall using the Integra “T” panels (same panel as inside 90° corner panels) similar to assembling 90° corners (starting at T-wall and at corner, assembling form units towards the center of wall so that the wall length adjustment (cutting of the form units) is at center of wall. (Fig. 9.1)

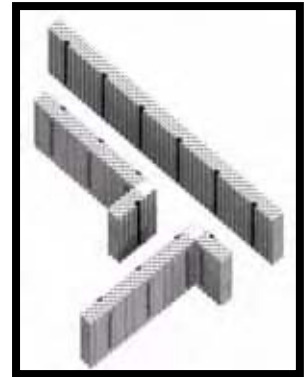


Fig. 9.1

*T-wall layout using the Integra “T”s  
[Inside 90° corner panel(s)]*

- 9.2 Alternatively, as shown in [Figure 9.2](#), T-walls can be simply formed by cutting the IntegraSpec® EPS panel where you wish the T-wall to intersect. The size of the opening which has been cut should measure the exact width of a completed IntegraSpec® forming unit [i.e. 6" (15.2 cm) concrete core requires an 11" (28.0 cm) opening]. The completed IntegraSpec® form unit for the T-wall which is perpendicular to the wall in which the opening has been cut, should be inserted into the opening such that the end of the inserted panel is flush with the interior face of the cut panel. On the next course, the opening cut shall be 5" (12.7 cm) smaller, so that the second course of IntegraSpec® panel overlaps each intersecting EPS panel on the course below by 2½" (6.4 cm). As a result, the completed IntegraSpec® forming unit which is perpendicular to the panels with the cut opening will now abut the outside face of the cut panels. This process should continue whereby every second row is repeated.



Fig. 9.2

*Top view of Standard Panel(s)  
“T” wall assembly*

- 9.3 In areas where a strong back at T-walls is not possible such as above grade wall(s), install a vertical 2" x 10" (5.1 cm x 25.4 cm) x approximately 5' (152 cm) long flat on back side of T-wall prior to or at first coursing of block. Insert a piece of perforated strapping [approximately 3' (91 cm) long] through the inside T-wall vertical joint, and thread the strapping in line and through the exterior panel [make a 1" (2.5 cm) slot / incision to thread the perforated strapping through the exterior panel]. Fastened the perforated strapping onto the outside vertical 2" x 102" (5.0 cm x 25.4 cm) with a minimum of two screws per strap. Do this on both sides of T-wall. Only fasten the perforated strapping to the inside wall (both sides of perpendicular wall) once wall setup is complete and plumbed.



### IMPORTANT NOTE:

**Support / strong back and bracing must be provided on the backside of a T-wall intersection.**



# 10.0 WINDOW/DOOR OPENINGS

10.1 The use of IntegraBucks and IntegraHeaders simplify the construction of rough opening(s) and the installation of windows / door frames. Where openings are required:

- a) Measure an additional 1" (25 mm) to the actual window/door width(s), cut and place the panels accordingly to create a space in the wall;
- b) Install the IntegraBucks by inserting them inside the panel's dovetails on each side of the cut opening, effectively capping the ends. Make sure the visible plastic insert is towards the concrete side. [When IntegraBucks are inserted at more than 4" (100 mm) from the closest spacer(s), install filament tape to secure the IntegraBuck(s) in place];
- c) Install the IntegraHeaders at top of opening(s) (bearing on top of the IntegraBucks);
- d) Support IntegraHeaders / lintel with temporary supports / braces and sufficient uprights (at every 30" maximum span - may be less depending on lintel height / weight);
- e) Bottom sill(s) may also be insulated (after being filled with concrete) by using Integra-Headers, **IntegraSpec**<sup>®</sup> standard panels or scrap pieces of IntegraSpec panels;
- f) Installation of windows and doors is facilitated by shimming and fastening frames directly to the IntegraBucks integral fastening strip(s) with low expanding gun foam (urethane foam) to seal, bond, and insulate openings. Nailing flanges may also be screwed at the top and bottom to the furring strips provided in the wall system. Alternatively, the use of concrete fasteners may be utilized to anchor windows and / or door frames. In the event that rough opening(s) is/are too tight for installing the window/door frame(s), foam can be trimmed from the opening edges.



Fig. 10.1  
Reduce installed costs.  
Improve energy efficiency-  
"stucco friendly" one material  
external substrate.

10.2 Another alternative is the use of wood or plastic bucks to provide the rough openings and fastening for window and door frames. Place window and door frame wood bucks directly on top of the **IntegraSpec**<sup>®</sup> formwork at the elevation required, with successive courses cut to butt the bucks on each side.

10.3 Whenever an opening is within eight feet from a corner, strapping or corner bracing is required to prevent movement between the corner and the opening.

10.4 In all cases, when using wood/plastic bucks, strapping must be installed to hold rough bucks in place.

**When using 2" (5.1 cm) x wood bucks, the bottom of frames should be made using 2" (5.1 cm) x 3" (7.6 cm), leaving the center open to allow concrete to be poured directly into the wall through the window / door sill(s).**



For lintel reinforcing, refer to Engineering [Table 4](#), [Table 4a](#), [Table 7](#), [Table 7a](#), [Table 8](#) and [Table 9](#). Also refer to [Section 11: Window and Door Reinforcement of this Manual](#).

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10.5 When wood bucks are left in place for future fastening of windows / doors, use either minimum 4" (102 mm) spiral nails or anchor bolts to connect the bucking to the concrete wall. Install nail/anchors prior to the pouring walls. Alternately, mechanical concrete fasteners can be installed after the pour - i.e. concrete nails or screws.

10.6 Large window / door lintels should be supported every 30" (76.2 cm) maximum (maybe less depending on lintel height/weight) with temporary wood braces and uprights. Sides also need to be secured for concrete placement with perforated steel strapping and / or wood strapping and braces.

**IMPORTANT NOTE: Make sure that wall length dimensions are maintained / identical at top and bottom of opening(s).**



Fig 10.2  
*Installed windows with IntegraBucks and IntegraHeaders*



Fig 10.3  
*Windows ready to install*

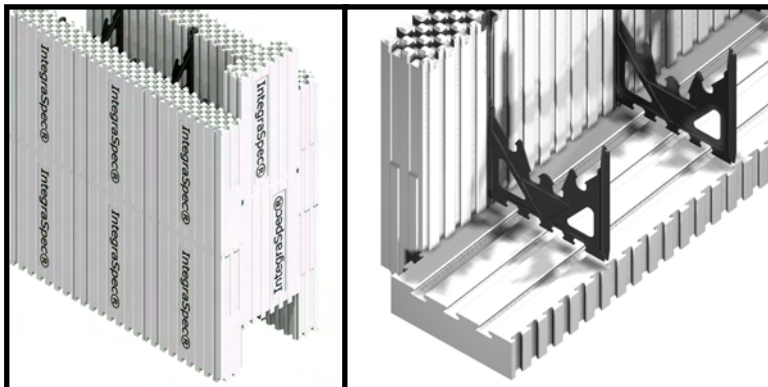


Fig 10.4  
*IntegraBucks (right) IntegraHeaders (left)*



Fig 10.1  
*Sample of window installation*



# 11.0 WINDOW AND DOOR REINFORCEMENT

- 11.1. Shown below is the typical placement of window reinforcement. Refer to [Table 4](#), [Table 4a](#), [Table 7](#), [Table 7a](#), [Table 8](#), and [Table 9](#) for quantity, size of rebar, and stirrups requirements. (All steel must be installed as detailed below and in accordance with the approved engineering).
- 11.2. When required, sill, side, top header, and bottom header steel consists of double steel reinforcement bars placed in spacer notch # 1 and # 4. Reinforcing bars must have a minimum of 1" (25 mm) concrete cover on all sides.
- 11.3. Shear stirrups are installed as either U-shaped or C-hook bent reinforcement to create a bond beam within the **IntegraSpec**<sup>®</sup> wall.

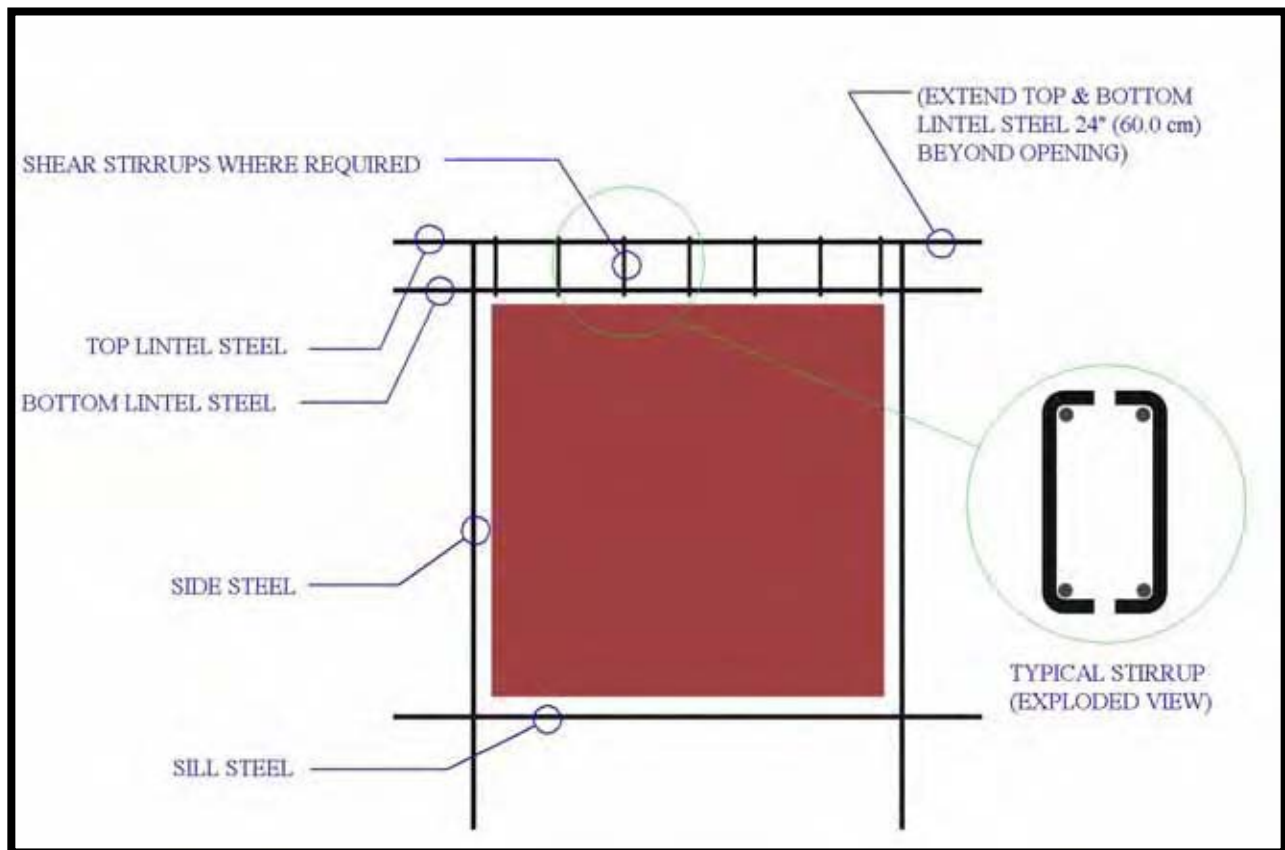


Fig 11.1  
*Typical view / detail of reinforcement placement around window and or door opening(s)*

- 11.4. In doorways, the sill steel and lower crack control steel can be installed where possible.

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Fig 11.2  
*Sill steel installed as wall is constructed*

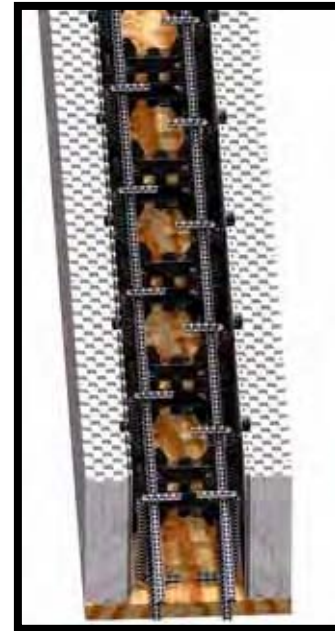


Fig.11.3  
*Lintel reinforcing layout (when required)*



Rebar requirements around openings (e.g. lintels) will vary based upon factors such as seismic zones, the opening size, and the lintel depth. Refer to the [IntegraSpec® typical engineering](#). Rebar requirements should be verified with your local building authority / code for compliance, unless otherwise specified by a local design engineer.

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## 12.0 SERVICE OPENINGS, PLUMBING, AND WIRING

- 12.1 All through wall penetrations, such as electrical and gas lines, pipes for plumbing, and air ducts, should be installed prior to pouring the wall.
- 12.2 Cut the **IntegraSpec**<sup>®</sup> formwork with a keyhole saw to allow correctly sized pipe or box sleeves to be inserted. After positioning the sleeves, spray foam in any gaps.
- 12.3 All pipes and sleeves must clear any reinforcing bars by a minimum of one inch.



Fig 12.1

**Pipe installed at the correct location** – Service cut out centered between spacers [name plates on **IntegraSpec**<sup>®</sup> panel(s)] with minimum 1" (25 mm) clearance from reinforcing steel.



Fig 12.1A

Electrical box cut out with soldering gun and installed in **IntegraSpec**<sup>®</sup> wall.



Fig. 12.1B

Electrical outlets and wiring grooved and installed in **IntegraSpec**<sup>®</sup> wall.

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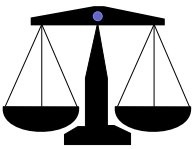


12.4 Wiring and plumbing can be installed in the finished wall using one of the following methods:

- a) **Cable wire and electrical boxes post wiring** - Use a hot knife or electric chainsaw to cut a deep groove in the **IntegraSpec®** ICF wall(s) (for easier installation, groove between horizontal joints and vertical plastic studs). In general, wire needs to be recessed a minimum of 1¼" (3.2 cm) from the finished face of the wall i.e. drywall. Standard electrical boxes may be foamed (glued) in place with polyurethane foam or mechanically fastened (recommended) to the concrete. See figure [12.1A](#) and [12.1B](#). Refer to local electrical code requirements.
  
- b) **Plumbing** - Groove channels ¼" (0.6 cm) larger than any fittings or pipes. The foam panels can accommodate piping up to 2" (5.1 cm) in diameter. Refer to local plumbing code requirements.



To speed up the process, the use of a soldering gun with an attached copper wire shaped to the same size as an electrical box or other outlets makes it easy to cut out the EPS for the insertion of electrical boxes (see figure [12.1A](#)). An electric chainsaw can be used for grooving the electrical wire chase (see figure [12.1B](#)). Using this method, the wires are held in place (at bottom of the narrow chase) by friction.



**Follow all applicable local plumbing and electrical codes and regulations.**

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## 13.0 STACKING TOP COURSES

- 13.1 After installation of the alignment system is complete, the remaining courses of **IntegraSpec®** form units are stacked to the desired pouring height.
- 13.2 When **IntegraSpec®** construction will not continue beyond the level of the first concrete pour, and the stacked height of form units does not correspond to the desired wall height, make appropriate horizontal cuts to the top course. Usually, there is no need to cut spacers, as half portion spacers will ensure the structural integrity of the form units.
- 13.3 If **IntegraSpec®** will be used to continue construction beyond the level of the first concrete pour, do not forget to allow for beam pockets, truss, or joist pockets. Use **IntegraSpec®** end caps to create the various pockets by inserting the end cap(s) in the appropriate location for the pocket.
- Cover the interlocking knobs / recesses with channel runners, plastic, packing tape, or similar means to prevent concrete from filling the hollows.
  - Set lap bars in the fresh concrete at 16" (40.6 cm) so that they protrude the required height, approximately 24" (61 cm) above the concrete wall and a minimum 1" (2.5 cm) from exterior wall or as otherwise specified by a design engineer (refer to engineering manual [fig. 2 page B-21](#)).



Fig 13.2  
*Covering top of **IntegraSpec®**'s interlocking knobs / recesses prior to pouring wall(s) in order to prevent concrete from filling interlocking knobs and recesses for interlocking next level (steel channel runners shown)*

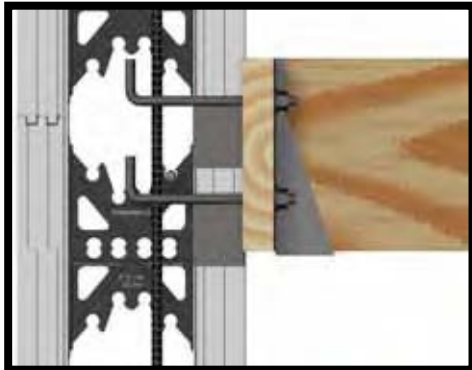


## 14.0 BRICK AND FLOOR LEDGE

14.1 There are several ways of providing a brick ledge with **IntegraSpec®**, and the most common methods are:



a) Providing a masonry wall ledge by reducing concrete wall width by 4" (100 mm) [i.e. 8" (20.3 cm) reduced to 4" (10.2 cm)] above the foundation or frost wall at brick level requires the installation of an **IntegraSpec®** Taper Top panel (as the last course before reducing wall size) on the exterior face (brick side) of wall(s). When utilizing this method, the corners at the brick side can be mitered taper top panels or field modified 90° corners to resemble the taper top profile. (Refer to the engineering manual page [B-29](#) and [B-30](#)).

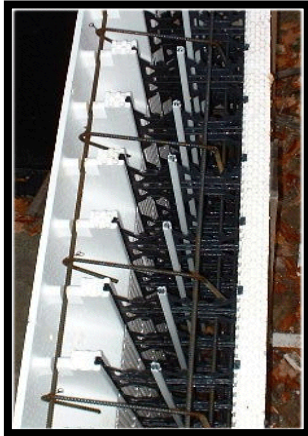


b) Providing a ledge using special flange bolts, which simplifies the installation of floor ledges (refer to the engineering section [B-21](#), [B-31](#), [B-31b](#), [B-32](#), [B-33](#)). (Fastened rim joist and floor joist shown)



c) When continuing above grade with even thickness [minimum 6" (15.2 cm)] **IntegraSpec®** concrete core(s), a masonry wall ledge can be provided by installing a painted or galvanized angle iron bolted to the side on the **IntegraSpec®** wall(s) and at the desired brick and / or floor height. Anchor bolts should be installed prior to pouring the concrete as per engineers specifications (refer to the engineering manual [B-31B](#)).

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- d) The **IntegraSpec® Brick Ledge Unit** provides a 4" (10.2 cm) ledge for stone, brick, concrete pan, and joists. The Brick Ledge Unit can be placed in the **IntegraSpec®** wall(s) at the same level or stepped to correspond with the finished grade or required elevations. (Refer to the **IntegraSpec®** engineering manual, section **B-33** for recommended brick / stone heights and typical reinforcing; also consult with your local building authority / codes for compliance.



Fig. 14.1

*Brick Ledge [6" (15.2 cm) shown] 12.5" (31.8 cm) concrete core with 6" (15.2 cm) concrete core upper walls*



Fig. 14.2

*Combined **IntegraSpec®** Brick Ledge panels / form units when wider concrete surface is required*

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## 15.0 PERFORMING ALIGNMENT

- 15.1 Pre-pouring alignment of the wall is done once all form units and the alignment system has been installed.
- 15.2 Before proceeding, double check to make sure that the bottom course of the formwork is straight with respect to your original chalk lines (may not be required if first course was foamed / glued in place, metal channels or kicker plate installed on both sides of wall).
- 15.3 Plumb and square all corners, T-walls and end walls, and install a mason's line suspended off the top of the wall [preferably 1" (25 mm) above and in line with the exterior or interior edge of the wall(s)].
- 15.4 Once all corners have been plumbed, adjust wall(s) to mason line. Care should be taken to align the walls as plumb and straight as possible prior to pouring the walls.
- 15.5 An alternative method for alignment preparation is to plumb and square all corners, T-walls, and end walls - then tilting all straight walls approx. ¼" (6.4 mm) towards the same side as the alignment system. When alignment of the straight wall is performed during the pour, it is easier to push a poured wall out to align rather than attempt to pull the wall in.
- 15.6 Carefully monitor the corner plumb line and wall alignment during the concrete placement.



**Before performing any wall alignment or attempting to walk on the scaffold platform, make sure that all scaffold uprights and diagonal braces are secured and that scaffold planks and guard rails are installed as per your local safety requirements. [Refer to Appendix "A"](#) for general wall alignment system information.**



## 16.0 CONCRETE SPECIFICATION AND CALCULATION

- 16.1 The required concrete volume for a wall should be calculated in advance of pouring as part of the project management. Use the following formula to calculate either cubic yards (yd<sup>3</sup>) or cubic meters (m<sup>3</sup>):

$$\text{Net Wall ft}^2 \times \text{Cavity size} \div 27 = \text{yd}^3 \times .765 = \text{m}^3$$

(This link will open up an Excel spreadsheet - you must have Excel installed on your computer)

- 16.2 Unless otherwise specified in your local building code or by a design engineer, IntegraSpec recommends the following concrete mix / specifications:
- Minimum 3,000 psi. (20 Mpa) concrete pump mix at 28 days;
  - 3/8" (10 mm) to 1/2" (13 mm) maximum aggregate sizes for 4" (102 mm) and 6" (152 mm) concrete core wall;
  - 3/4" (19 mm) maximum aggregate size for 8" (200 mm) and above concrete core wall;
  - Type 10 (Type 1 in USA) normal Portland cement;
  - Consistent 5 1/2 to 6 1/2 inch (127 mm to 152 mm) slump, (refer to Appendix "B" slump test);
  - No air entrainment required unless specified.
- 16.3 Specific requirements indicated by a design engineer take precedence over these general specifications.
- 16.4 If the concrete supplier uses supplementary cementing materials in the mixture, always obtain proof that the final concrete quality will not be altered.
- 16.5 Excess water reduces concrete strength, check with your concrete supplier for supplemental water reducers / add mixtures to obtain the slump and consistency desired. Never, under any circumstances, add water to the mixture to increase its ability to flow. Doing so may void the concrete supplier's guarantee, and will increase the stress in the wall during the pour.
- 16.6 Refer to local building codes to ensure compliance for cold weather concrete work and remember, **IntegraSpec**<sup>®</sup> forms provide the perfect 28 day curing environment since, unlike traditional forms, our forms remain in place.

**Extra care must be taken when pouring four inch (102 mm) concrete cavity wall(s). The concrete cavity, being narrow, requires a minimum concrete slump of six inches (152 mm), and the use of an internal (preferred) or external concrete vibrator. Extra vibration and pouring attention must be taken around openings and lintels for proper consolidation.**

**Even the most experienced crew can be caught by a bad supply of concrete. An improper concrete mix and / or excessive slump can adversely affect any formwork. Prevent unnecessary problems by ordering the correct mixture (refer to 16.3 to 16.6 above) and verifying slump with a slump test (refer [to Appendix B - concrete slump test](#)); remember to retain a concrete delivery slip for proof of quality and warranty.**



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## 17.0 CONCRETE PLACEMENT AND CONSOLIDATION

- 17.1 An experienced **IntegraSpec**<sup>®</sup> installation crew will install and pour jobs without incident. An inexperienced crew may encounter unforeseen difficulties on even the simplest of jobs. This is one reason training is mandatory and requires all jobs to be signed off by an **IntegraSpec**<sup>®</sup> trained installer Level A to D (dependant on job / application).
- 17.2 The standard method of concrete placement to be used with the **IntegraSpec**<sup>®</sup> system is the concrete pump truck with boom. Where these are not available, a conveyor can be used if access is provided to the entire perimeter. A trailer pump is a third option.

With a concrete pump as shown in (fig. 17.1 and fig. 17.2), pouring speeds of approximately 20 to 26 cubic yards (15 to 20 Cu/M) per hour are achievable with an experienced crew.



Fig. 17.1  
*Concrete Pump Truck  
with boom.*



Fig. 17.2  
*Filling **IntegraSpec**<sup>®</sup>  
Wall using Pump Truck  
boom with double 90.*

- 17.3 For ease of pouring and best results, it is strongly recommended that a smooth concrete pump mix be used. Never pour a soupy mix [over 7 inch (178 mm) slump], **send it back.**

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- 17.4 When using a concrete pump, it is MANDATORY to specify to the pump truck company / operator that two 90° elbows (“S” shape) be installed directly at the pouring end of the boom to reduce concrete fall and segregation. A reducer [4" to 3" (102 mm to 76 mm)] is also required directly before the elbows. Add a 6' (1.83 m) to 8' (2.44 m) piece of 3" (7.6 cm) diameter rubber hose after the elbow. These measures provide a steady flow, help prevent concrete segregation, and ease the pouring task for your crew. Handle(s) on the 90° elbow are also recommended for pouring ease.



Fig 17.3

*Double 90° elbows – “S” shaped with reduced 3 inch hose (7.6 cm) and handle*

- 17.5 When first priming the concrete pump, always dump the “concrete juice” (sludge that first comes out of the boom/hose) outside of the formwork.

It is recommended that concrete be placed with a constant, moderate and steady flow; **avoid aggressive placement into the corners.**

#### 17.6 **Concrete Consolidation:**

**[Refer to section 16.0 of this manual for concrete specifications and calculation.](#)**

- i) For proper consolidation and ease of pouring, use a smooth and fluid concrete mix [approximately 6" (15.2 cm) slump]. The use of a water reducer (additive) in the concrete such as a super plasticizer or a mid range water reducer is strongly recommended. A water reducer makes the concrete more fluid without having to add water (adding water to the mix can be detrimental; ask your concrete supplier for information on types of water reducers and options). Adding a water reducer in the concrete mix makes it easier to place and consolidate the concrete in the walls. It also reduces the need to vibrate. Tapping the wall with a hammer onto a piece of wood may also be used to further consolidate the concrete around openings / lintels or where more reinforcing steel has been placed.
- ii) Using this mix, walls can be filled in one or two passes. Starting at a middle point in the span of a wall [maximum 2' (610 mm) from corner(s)] proceed with concrete placement. **IntegraSpec®**'s unique design enables the walls to self vibrate when concrete is being poured. The vibration effect of the **IntegraSpec®** wall enables the concrete to slope down in a consistent and gradual flow, enabling proper consolidation around reinforcing steel, spacers, and the interior panel dove tails. This pouring method also eliminates concrete segregation, honey combing, and air pockets caused when concrete is dropped from the top down into the wall onto the reinforcing steel and the spacers. Note: The concrete mix / aggregates / temperature differs from one region to another; therefore, pours should be closely monitored, making sure that concrete flows down properly and that proper consolidation is achieved. Consult with your local concrete supplier for an optimal mix design.

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Unless specified by a design engineer, consult your local building authority / code for applicable concrete mix design / strength ([refer to section 16.0](#)).



If not enough workers are on site to perform the wall alignment during the pour, stop the pour and align the partly or filled wall(s). This will only take a few minutes each time you stop and will save you time and trouble. Walls should be checked and aligned before the concrete starts setting (approximately 10 minutes after being poured, depending on concrete mix design and temperature). Always double check wall alignment during and after completion.

- iii) Openings such as those for doors and windows cannot be filled entirely on one side before moving to the other. Both sides should be progressively filled so that the framing is not unduly stressed.
- iv) Ensure that the space below the bottom of any window or door openings and pipe sleeves is completely filled as the pour progresses.
- v) Continue in the same direction, steadily filling the walls. Return to the starting point as quickly as possible to avoid any cold joints.
- vi) [Refer to section 15.0 of this manual for performing wall alignment before, during, and after the pour.](#)

- 17.7 When **IntegraSpec**<sup>®</sup> is to be continued beyond the level of the first concrete pour, end the pour at maximum 1" (25 mm) from the top of the formwork, leaving the top of the concrete unfinished to provide a better bond for the next pour. Unless otherwise specified by a design engineer, insert 4' (1.2 M) vertical reinforcing bars half way into the fresh concrete 1" (2.5 cm) from outside face of wall at 16" (40.6 cm) center spacing (refer to engineering [page B-21, fig. 2](#)).
- 17.8 If there will be conventional construction on top of the **IntegraSpec**<sup>®</sup> wall, finish the exposed concrete at the top of the wall using a concrete float or trowel. Also check and level top of the wall with a laser or tripod level.
- 17.9 Various finishes can be achieved for the sill plate or the floor connection when it sits on the top of the **IntegraSpec**<sup>®</sup> wall either at floor or roof level. The sill plate may also be recessed into the **IntegraSpec**<sup>®</sup> wall by finishing the concrete 1½" (38 mm) lower than the top of block. This is easily done with a screed board [a piece of 2" x 12" (50 mm x 305 mm) with a 2" x 6" (50 mm x 150 mm) centered and nailed on the bottom].



17.10 After finishing, anchor bolts for anchoring the floor / roof sill plate should be placed into the wet concrete as required.



Fig. 17.4  
*Anchor bolts at top of wall for anchoring floor / roof sill plate*

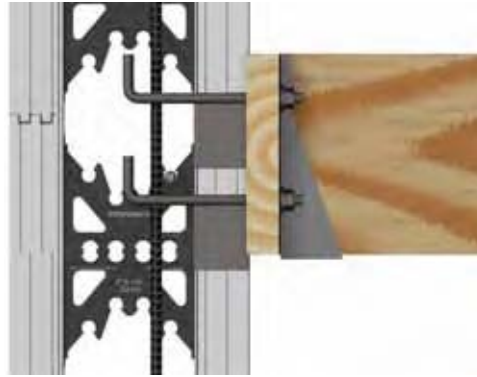


Fig. 17.5  
*Flange bolts for anchoring floor ledger, balcony, deck, or roof overhang*

17.11 **PREVENTIVE MEASURES:**

Always perform a pre-pour inspection (see list following). When pouring, carefully watch the wall for any bulges. If a bulge is noticed in the wall, immediately stop pouring and move further [minimum 15' (4.6 M) from the bulge] or onto another wall. (Refer to 17.12)

17.12 **Handling a bulge:**

- a) A bulge can be quickly fixed (before the concrete sets) by either bracing it from both sides of the wall or by screwing a piece of  $\frac{3}{4}$ " (19 mm) plywood over the bulged area and extending beyond the bulge (on both sides of the wall).
- b) A bulge can also be fixed by inserting a piece of threaded rod through the center of the bulged area (between spacers), and through a piece of 2" x 8" or 2" x 10" (25mm x 200mm or 25mm x 250mm) on both sides of the wall and by slowly tightening the nuts until the bulge is under control (care must be taken when doing this operation so that bulged area does not burst).
- c) Alternatively, the bulge can also be easily fixed the next day by rasping the bulge area down with a coarse rasp paper or similar.

**IntegraSpec, unlike other forming units, provides a warning with a bulge before a more serious problem occurs.**

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### 17.13 **Handling an inaccessible Blowout:**

**(Rare)** Where one side of the wall is inaccessible, the following procedure is to be used in the case of a blowout. It is to be studied and practiced before pouring concrete.

- i) From the accessible side, cut right through the wall. Horizontal cuts will be at panel joints; vertical cuts will span the width of the blow out and will have at least two plastic channels in each of the replacement panels. Ensure that the cutting distance is a maximum of 4" (102 mm) from the panels' plastic channels.
- ii) Remove both the accessible and inaccessible side panels, inserted spacers, and any concrete at or above the exposed cavity.
- iii) If there is rebar in the way, lift the rebar above the top horizontal joint with a rebar hook tied off to the bar immediately above.
- iv) Install spacers in the plastic channels of both panels. Secure spacers to panels with screws and push the panel into the desired position. It is important to achieve a snug fit.
- v) Attach a sufficiently large piece of plywood to overlap the repaired area by at least one plastic channel on both sides. Secure the plywood to the plastic channel adjacent to, but outside, the repaired area with at least two COARSE thread screws per insert.
- vi) For accessible blow outs (rare), simply stop the concrete placement, find the piece that blew out, and reinstall it, proceeding as outlined above in 17.13.v (do this on both sides of the wall).
- vii) Proceed carefully with pouring keeping an eye on the wall for additional movement.



### **IMPORTANT NOTES:**



**IF YOU ARE NOT FIELD TRAINED AND AUTHORIZED BY PIC OR AN AUTHORIZED INTEGRA-TRAINED LEVEL B, C, or D ([see Section 1.0 INTEGRA-TRAINING page 1-1](#)), NEVER ATTEMPT TO POUR UNSUPERVISED. Doing so contravenes all regulations in all jurisdictions and voids [warranty on the product](#).**



## **PRE-POUR INSPECTION CHECK LIST:**

- Carefully check inside the wall for any missing spacer(s) and make sure that all webs / spacers are well inserted into the panels' plastic channels and not into the foam panels' dove tail (it is critical that the entire crew understand this from day one of the project); and that spacers which are not in line with another spacer below have been secured in place with a screw;
- Check "T"-walls and short corners for proper bracing ([review section 9.0](#));
- Check for cut joints [panel cut over 4" (100mm) from spacers] and strap;
- Check vertical joints; they must be secured with wood strapping and / or perforated steel band (plumber's strap) and the joint preferably foamed;
- Make sure that short distance corners and walls at a step footing / floor are properly braced;
- Check that the wall alignment and scaffolding system are secured and diagonal braces are well anchored to ground, slab / floor, footing, etc. Ensure that uprights are well secured to the wall. Also verify that all scaffold planks are safe and secured in place (follow wall alignment system manufacturer's requirements);
- Check level and alignment of all walls and corners;
- Verify that all reinforcing steel in walls and lintels has been installed as specified;
- Check the plumb line of all corners, "T"-walls and buttress walls;
- Verify that all wall openings (i.e. doors and windows) have sufficient bracing / supports (lintels and sides), and that they are in alignment within and with the wall(s) ([review section 10.0](#));
- Check that all beam pockets and service penetrations through wall (i.e. well, septic, electrical, HRV, hose bibs, dryer, etc.) have been provided;
- Check that all floor, deck, and false roof ledger bolts are in place and as required (it may be necessary to straighten bolts when pouring);
- Check brick ledge reinforcing (as per engineering specs.);
- Check that knobs and recesses on top of panels have protection against clogging from concrete for interconnection with the next level;
- Check that additional braces are available should they be required;
- Remind pouring crew of their duties; concrete placing, consolidation / vibrator, alignment, etc.

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## 18.0 BACKFILL / LATERAL SUPPORT

- 18.1 The alignment system is not to be removed until sufficient concrete strength has been achieved; normally 24 hours for standard walls. Increase the time for walls over 40' long, over 9' high, and for freezing conditions.
- 18.2 As per building code(s), never backfill an **IntegraSpec®** wall prior to laterally supporting the top of the walls (such as installing the first floor or other satisfactory wall bracing) or prior to adequate curing of the concrete. If a requirement exists for backfilling at an earlier stage, the wall alignment system must be left in place, and additional lateral support / bracing must be installed until installation of the first floor and lateral wall support is complete.
- 18.3 Once sufficient concrete curing has been achieved and the above mentioned requirements have been met, the alignment system may be removed and construction can continue.
- 18.4 All subsequent floors / lifts mirror the procedures outlined in the previous sections.



**As per building code(s), where the height of the foundation wall(s) is such that lateral support is required, or where the required concrete strength has not been reached, the wall(s) shall be braced or laterally supported before backfilling. Refer to your local building code for lateral support and backfill requirements. Concrete compressive strength should be close to 100% at 7 days and 100%+ at 28 days. Refer to backfill height engineering manual page [B-2](#), [B-3a](#), [B-3b](#), [B-3c](#) and [B4](#).**

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## 19.0 DAMP PROOFING / WATERPROOFING

- 19.1 Various EPS compatible material can be applied such as peel and stick membrane, 6 mil polyethylene, water base foundation coatings, sprayed or brushed applied rubber membrane, drainage board, etc. [Refer to local building code for requirements and approved method or product.](#)
- 19.2 When applying the various membranes, an overlap (including at footing and / or slab) must be achieved to ensure the effectiveness of the product and proper seal.
- 19.3 Application of a waterproof membrane does not eliminate the requirement for free draining backfill material, free of debris, which might puncture the membrane.
- 19.4 Where parging or exterior finishes meet the damp proofing and or waterproofing material [preferably 2 inches (50 mm) above grade], provide a minimum 2" (50 mm) overlap.

**Note: In all cases where products are being applied to the IntegraSpec® wall system, installation must follow the manufacturers' instructions / recommendations.**



Fig. 19.1  
*Peel and stick waterproofing membrane  
(below grade application)*

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## 20.0 VAPOUR AND AIR BARRIER

- 20.1 **VAPOUR BARRIER:** **IntegraSpec**<sup>®</sup> is constructed from Type 2 EPS with the capillarity of zero, resulting in a vapour transmission tested at 39.8 na/pa.s.m<sup>2</sup>, which is within the acceptable parameters for low permeance foamed plastic insulation with no additional vapour barrier requirements (please check your local building code).
- 20.2 **AIR BARRIER:** **IntegraSpec**<sup>®</sup> incorporates a monolithic even thickness concrete wall; therefore, the concrete wall itself serves as an air barrier. The **IntegraSpec**<sup>®</sup> ICF wall system does not require the installation of an air barrier for the following reasons:
- a) **IntegraSpec**<sup>®</sup> construction does not allow infiltration or ex-filtration of air through the monolithic / even thickness concrete wall structure;
  - b) The five inches of Type 2 EPS used in **IntegraSpec**<sup>®</sup> construction provides a sufficient air leakage characteristic (0.0214 L/(s.m<sup>2</sup>)) at 75 Pa per 25 mm to function as an air barrier by itself with no vapour barrier requirements;
  - c) As recommended by code, the foamed plastic (Type 2 EPS) insulation of **IntegraSpec**<sup>®</sup> panels is installed in **CONTINUOUS** contact with the monolithic concrete wall structure. The built-in dovetails on the concrete side of the **IntegraSpec**<sup>®</sup> EPS panels provide permanent mechanical bonding / fastening between the **IntegraSpec**<sup>®</sup> EPS insulation and the concrete wall, which therefore eliminates any air stack effect and / or air gaps that could develop over time.
- 20.3 **IntegraSpec**<sup>®</sup> construction eliminates any air leakage due to any air pressure differential between the inside and outside caused by wind, mechanical equipment, or buoyancy of warm air (stack effect).
- 20.4 **IntegraSpec**<sup>®</sup> monolithic concrete walls are also designed to prevent moisture from collecting in the exterior wall assembly, which would reduce the insulating value of the wall, as well as cause deterioration of the structure. Due to the composition of **IntegraSpec**<sup>®</sup>, damage or lack of performance from the presence of any condensation / moisture is avoided.



# 21.0 INTERIOR FINISHING AND FIRE RESISTANCE

## 21.1 RESIDENTIAL

- i) Drywall is installed as per conventional construction onto the built-in vertical studs / strapping of the **IntegraSpec®** form units.
- ii) The built-in studs / strapping provide a premium 1 $\frac{5}{8}$ " (4.1 cm) fastening width and are recessed  $\frac{3}{4}$ " (1.9 cm) inside **IntegraSpec®** panel(s). This eliminates thermal bridging, water / air infiltration, and / or ex-filtration. The built in studs / strapping strips are located on eight inch (203 mm) centers, and are well indicated by and are of the same dimension as the name plates on the face of the **IntegraSpec®** panels.
- iii) We recommend coarse threaded, minimum 1 $\frac{5}{8}$ " (4.1 cm) long drywall screws to fasten  $\frac{1}{2}$ " (1.3 cm) drywall sheets.
- iv) **IntegraSpec®**'s complete wall assembly has a fire resistance of three hours with a 6" (15 cm) concrete cavity.  $\frac{1}{2}$ " drywall adds another fifteen minutes. [See engineer's Memo page B-12 A.](#)

### 21.1.1 **Installation of kitchen and bathroom cabinets**

Kitchen / bathroom cabinets can be fastened to **IntegraSpec®**'s built-in stud / strapping. Use only coarse threaded screws on 16" (40.6 cm) centers for regular cabinets and 8" (20.3 cm) centers for heavier cabinetry. Alternatively, substitute the drywall behind the cabinets with  $\frac{1}{2}$ " (1.3 cm) plywood and fasten cabinet(s) to the plywood.

### 21.1.2 **Installation of wood decoration / trim**

Fasten wood decoration / trim to **IntegraSpec®**'s built-in stud / strapping with either screws, power, or ring nails. When using power or ring nails, always do a test sample before proceeding. Alternatively, glue the wood decoration / trim with construction adhesive, latex caulking, or hot melt glue (for shorter pieces).

### 21.1.3 **Installation of picture frames, curtain poles, or other decorations**

There are many types of fasteners / anchors / hardware for installing picture frames, curtain poles / brackets, and other decorations which can be attached to the drywall and built-in stud strapping. When the location coincides with built-in stud / strapping, the best fastener is a coarse thread screw of the proper length. Ask your hardware supply store for various types available and suitable for your application.



## 21.2 COMMERCIAL / INSTITUTIONAL

- a) To meet extended fire ratings for commercial / institutional construction, prior to pouring concrete, insert 1 $\frac{5}{8}$ " (4.1 cm) drywall steel "U" channels in the pre-formed grooves located at 8" (20.3 cm) centers on the face of the **IntegraSpec**<sup>®</sup> EPS panels ([refer to engineering manual's memorandum page B-12 & B-12a](#)).
- b) Use minimum four inch (102 mm) non-corrosive long wood or concrete screws / fasteners to anchor the "U" steel channels through the **IntegraSpec**<sup>®</sup> panel(s) and into the concrete cavity prior to the pour.
- c) The protrusion of the screws or spiral nails needs to be a minimum of 1" (25 mm) into the concrete cavity and spaced at 12" (2.5 cm) centers to provide sufficient mechanical fastening of the drywall steel channels to the concrete. Fasten drywall directly to the steel channels instead of the built-in studs / strapping.
- d) Fasten decoration / trim to steel channels and or **IntegraSpec**<sup>®</sup>'s built-in stud / strapping with course threaded screws or with a power nailer (always perform a test sample before proceeding). Alternatively, glue the decoration / trim with compatible construction adhesive.

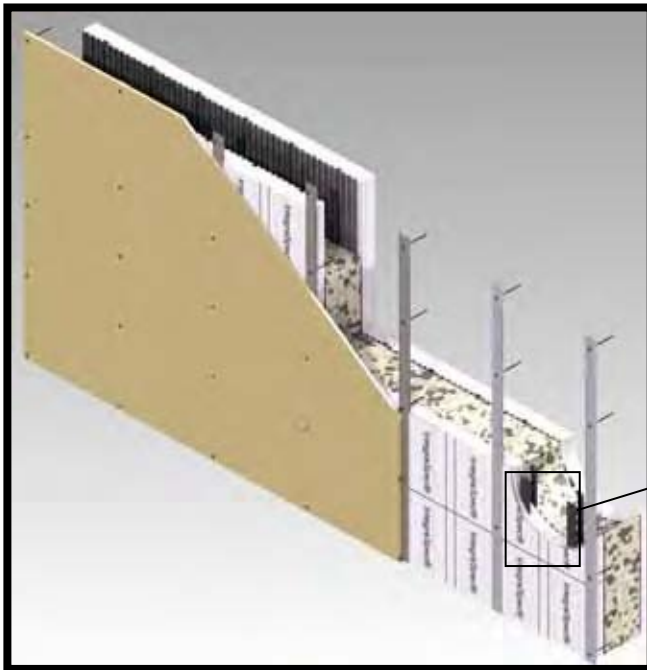


Fig. 21.2

View of optional steel "U" channel(s) anchored to the concrete core, for meeting commercial fire codes. Steel channels are installed into the grooves provided on the **IntegraSpec**<sup>®</sup> panels [grooves are located at every 8 inch (20 cm) on center].

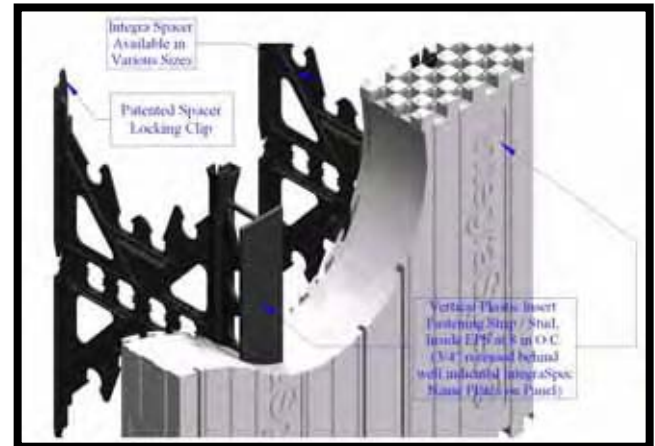


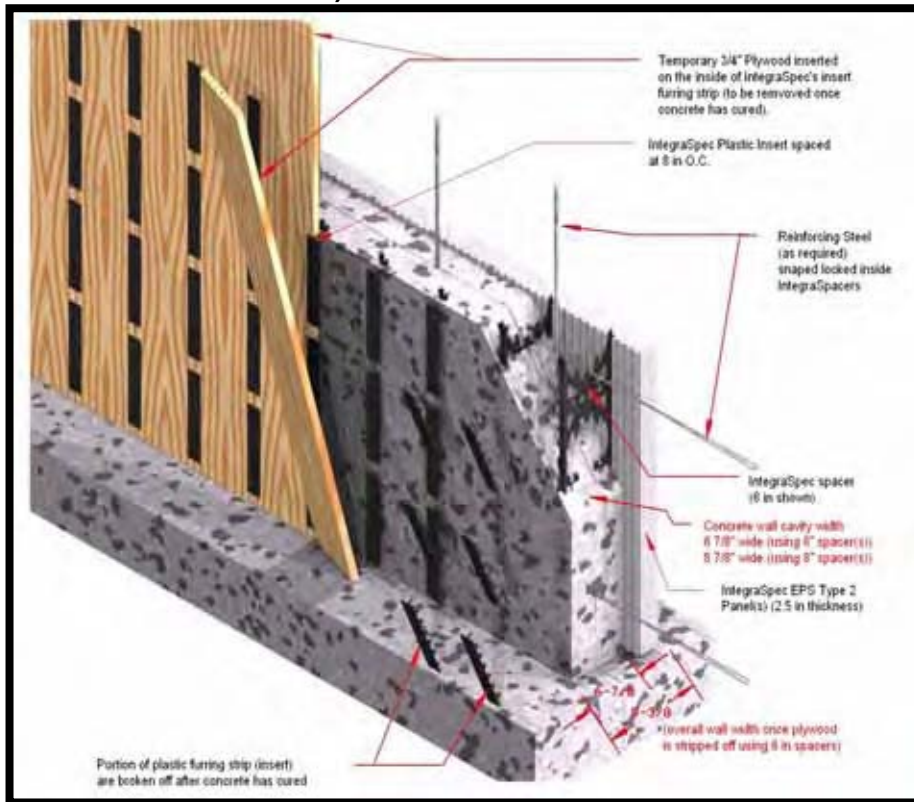
Fig. 21.1

**IntegraSpec**<sup>®</sup> section showing fastening strip(s) and grooves for steel channel insertion. Both the fastening strip and the grooves are located at every 8 inch (20 cm) on center.



### 21.3 **INTEGRAECF (EXPOSED CONCRETE FACE)**

**IntegraSpec®** offers the option of providing an exposed concrete wall face in required commercial application use such as: elevator shaft(s), public parking garage, public stair way, close to property line construction, etc. This is done with the use of **IntegraSpec®** panel on one side of the wall and a temporary plywood form and **IntegraSpec®** plastic inserts on the other side. Once the wall has been poured and cured, the **IntegraSpec®** plastic inserts are then broken off and the plywood is removed. The end result is a solid concrete wall on one side and **IntegraSpec®** ICF on the other. (See figures [21.1](#), [21.2](#) and [21.3](#) below.)



**Fig. 21.3**  
**IntegraSpec®** panel  
with temporary 3/4"  
plywood forms





## 22.0 EXTERIOR FINISHES

**IntegraSpec**<sup>®</sup> wall(s) need to be covered from the sun's UV rays within a few months with most exterior finishes.

- 22.1 Exposed foundation walls should be finished using any parging material that is EPS compatible. Follow manufacturers' directions for skim coat and application. Parging should be applied with a minimum 2" (50 mm) overlap on the top edge of the waterproofing membrane.
- 22.2 **IntegraSpec**<sup>®</sup> is 100% compatible with acrylic stucco(s). It may be necessary to slightly rasp the surface of the **IntegraSpec**<sup>®</sup> wall to remove any dirt or powder surface for proper adhesion of acrylic stucco(s). Follow the stucco manufacturers' instructions for proper application. **IntegraSpec**<sup>®</sup> is stucco friendly, no exposed webs, monolithic concrete core, and its surfaces are protected by white plastic during shipping and on site.
- 22.3 Siding is installed by using pan head screws (preferred) or electro galvanized roofing nails screwed or nailed into the built-in studs / strapping of the **IntegraSpec**<sup>®</sup> form units. The built-in studs / strapping are standard 1<sup>5</sup>/<sub>8</sub>" (41 mm) in width and are located every eight inches (203 mm) on center. They are outlined by the name plate on every **IntegraSpec**<sup>®</sup> panel. The studs / strapping continue to within 4" of the outside corner panel. Please note that as the **IntegraSpec**<sup>®</sup> corner units are installed, steel angles, wood chamfers, or plastic strips may be inserted into the preformed holes located in the exterior corner units. This allows for additional fastening areas for wood, vinyl, or steel siding in the panels. Refer to the siding suppliers' recommended fastening methods. (As an alternative, pieces of 90° metal flashing may also be attached / screwed to the corner's closest built-in stud / strapping to enable fastening of exterior / interior vinyl corners).
- 22.4 Masonry / stone finishing product are installed as per conventional construction. Due to the versatility of the **IntegraSpec**<sup>®</sup> independent panel system, alternate brick support configurations can be achieved as per [section 14 of this manual](#). Brick ties are mechanically fastened with coarse threaded screws into the built-in studs / strapping of the **IntegraSpec**<sup>®</sup> form units as per conventional requirements. Alternatively, in commercial applications, adjustable brick ties may be placed and cast in the concrete as specified.

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## 23.0 RETROFITS / ADDING TO EXISTING

- 23.1 **Connecting IntegraSpec® Wall(s) to an existing poured concrete wall or filled concrete block wall:** When abutting an IntegraSpec® wall to an existing poured concrete wall, remove insulation (if any) where the IntegraSpec® wall will connect with the existing concrete wall. Drill into the existing concrete wall a minimum of 6 inches deep and secure 5/8" (15 mm) reinforcing steel (dowels) in place, extending out a minimum of 2'-0" and at every 2'-0" (610 mm) on center so that the dowel extends into each course of IntegraSpec® form units. The next day or thereafter, install a waterproofing membrane (peel and stick preferred) onto the IntegraSpec® wall, extending a minimum of 2'-0" onto the existing concrete wall. Note: for proper adhesion to the existing concrete wall, install the membrane on a clean and dry surface.
- 23.2 **Connecting IntegraSpec® wall(s) to an existing concrete block (unfilled) wall:** When abutting an IntegraSpec® wall to an existing unfilled concrete block wall, remove insulation (if any) where the IntegraSpec® wall will connect with the existing concrete block wall. With a hammer knock out holes [approximately 4" (100 mm) in diameter] in the existing blocks (every second or third course); care must be taken when doing this not to destroy the integrity of the masonry wall. Remove all loose concrete inside the block wall. When assembling the IntegraSpec® wall and abutting it to the existing masonry wall, extend reinforcing steel into the concrete block holes. Care must be taken when pouring to ensure the concrete blocks are filled with concrete during the pour. The next day or thereafter, install a waterproofing membrane (peel and stick preferred) onto the IntegraSpec® wall and extending it a minimum of 2'-0" onto the existing masonry wall. Note: for proper adhesion to the existing block wall, install the membrane on a clean and dry surface.
- 23.3 **Adding an Opening:** Adding an opening to an IntegraSpec® wall can be easily done after the concrete has set in the walls. The main aspect to be considered before cutting out an opening is the width of the opening and the load on the top of the new opening's lintel. If necessary, pockets can be cut out to receive a steel, wood, or concrete beam. Consult a design engineer prior to cutting an opening to obtain loads and lintel design.
- 23.4 **Deleting / Blocking Opening:** When an opening needs to be blocked or is no longer required, remove the wood buck or IntegraSpec® end cap(s) so that the concrete on all sides of the opening is exposed. Drill holes approximately 6" (152 mm) in depth to insert reinforcing steel dowels every 12" (305 mm) on center at the bottom and sides of the opening. Secure steel dowels in place. Install IntegraSpec® with reinforcing steel to fill the opening. Using a key hole saw or core drill, make holes approximately 4" (100 mm) in width every twelve inches at the very top of the IntegraSpec® form unit for concrete placement access. Note: Keep the hole cuttings as plugs to seal the openings after the concrete is poured into the wall. Use filament tape or 1" x 3" strapping to hold the plugs in place. After the concrete has set for a few days check with a piece of wire to see if there is a void at the top of the former openings. If there is a small void, inject either urethane low expanding foam or non shrink grout to seal the gap.



# IntegraSpec Properties

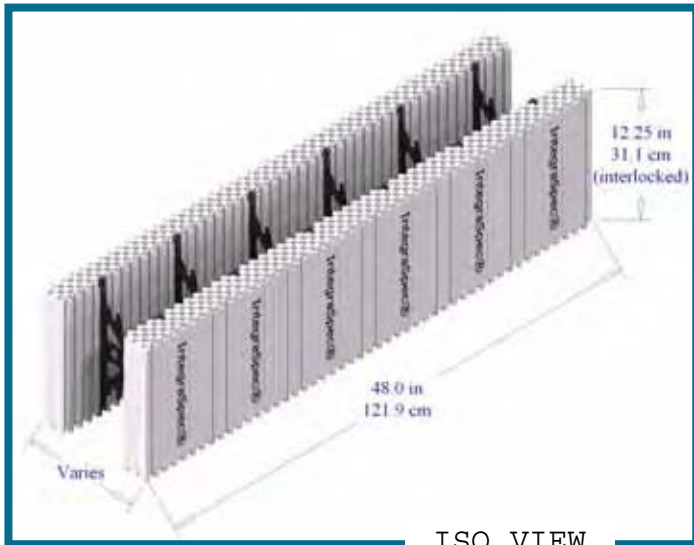
Test / Description	Results	Pass / Fail Criteria	Referenced Standard Test Method
R-Value (Thermal Resistance per inch (per 25.3mm))	R 4.13 (RSI 0.72) EPS Type 2	Min. R 4.00 (RSI 0.70)	ASTM C518
Water Absorption	0.17%	Max. 4%	ASTM 2842
Water Vapor Permeance	0.69 perm-in (39.8 ng/Pa-s-m <sup>2</sup> )	Max. 3.5perm-in. (201 ng/Pa-s-m <sup>2</sup> )	ASTM E96
Compressive Strength	26.1 psi (180 kPa)	15 psi(103.44 kPa)	ASTM D1621 & ASTM C165
Flexural Strength	56 psi (386.1 kPa)	35 psi (241.38 kPa)	ASTM C203
Density	1.68 lbs/ft <sup>3</sup> (26.9 Kg/m <sup>3</sup> )	1.35 lbs/ft <sup>3</sup> (21.63 Kg/m <sup>3</sup> )	ASTM C1622 & ASTM C303
Dimensional Stability – Thermal & Humid Aging	0.4% Max.	Max. 2.0%	ASTM D2126
Capillarity	None	None	-
Dimensions	Max. length variation = 1/16”(1.5mm) Max. Height variation = 1/16”(1.5mm) Max. width variation = 1/16”(1.5mm)	N/A	ASTM C303
Flame Spread Rating	EPS Type 2 X 2.5” < 25	N/A	ASTM E84
Smoke Developed Rating	EPS Type 2 X 2.5” < 450	N/A	ASTM E84
Wall Assembly Fire Endurance Test	2hrs - 4” (100mm)Concrete 3hrs - 6” (152mm) Concrete 4hrs - 8” (200mm) Concrete	N/A	ASTM E119 CAN/ULC S101
Standard Room Fire Test	Test stopped at 15 min.	Pass - 15 minutes requirements	UBC 26-3
Concrete Pour-in-place Form Deflection	Observation of deflection < 1/8” (3mm)	N/A	N/A
Sound Transmission	STC 57 - 6”(152mm) Concrete Wall STC 58 - 8” (203mm)Concrete Wall	N/A	ASTM E90 - HUD
UPITT Toxicity	LC50 < 19.7g	Pass	University of Pittsburgh Toxicity test
Pull Test (No. 8 coarse threaded Screws)	Withdrawal = 357lbs(1.589 kN) Lateral = 306 lbs (1.36 kN)	N/A	ASTM 1761
EPS Material 100% Recyclable	95% New material 5% Recycled (when available)	N/A	LEED COMPLIANT
HIPS Plastic Material 100% recyclable	95% Post industrial Feedstock 5% Consumer Feedstock	N/A	LEED COMPLIANT
ICF Form Wastes	< 3% overall	N/A	LEED COMPLIANT

Note: All tests / references are available upon request; the above applies to all IntegraSpec product line.

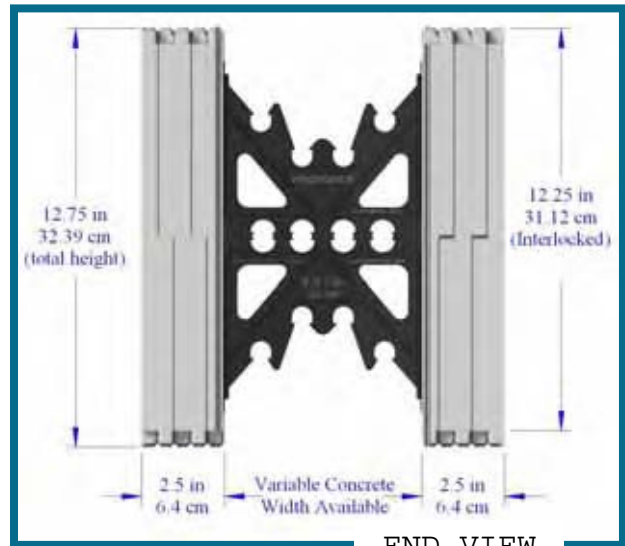
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# IntegraSpec® - STANDARD PANEL(S)



ISO VIEW



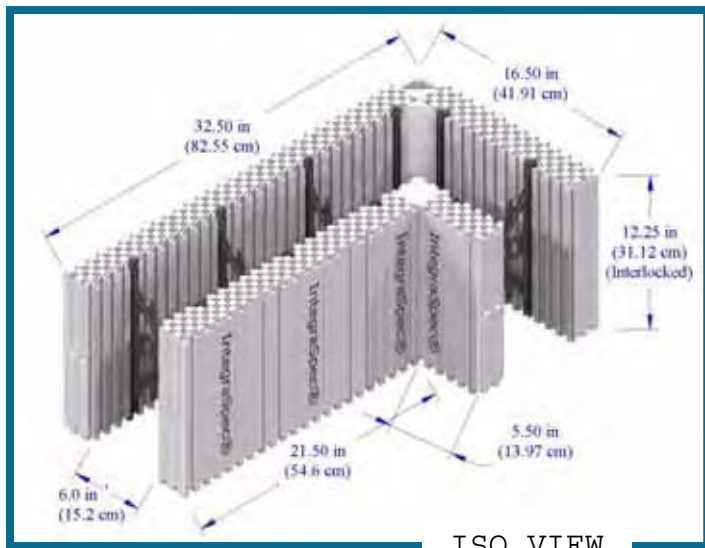
END VIEW

<b>Typical Standard Panel Dimension(s)</b>		Length 48.0 in x Width 2.5 in x Height 12.25 in (interlocked) (Length 122 cm x Width 6.35 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>				
<b>Standard Concrete Cavity / Core</b>	<b>4 in (10.2cm)</b>	<b>5 in (12.7 cm)</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>	<b>10 in (25.4cm)</b>	<b>12 in (30.5cm)</b>
<b>Total Wall Width (2 Integra Panels + Conc. Core)</b>	9 in (22.9 cm)	10 in (25.4 cm)	11 in (27.9 cm)	13 in (33.0 cm)	15 in (38.1 cm)	17 in (43.2 cm)
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5+ Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )					
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (100% recycled material)					
<b>Unique and Special Interlocking Features of the Panels</b>	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster and accurate installation with eliminating wastes)					
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks					
<b>Typical Fastening Studs/Strapping Exterior Surface Area</b>	Vertical 1 5/8 in (4.13 cm) Wide Located every 8 in (20 cm) O.C.					
<b>Concrete Volume w/ 4”(10.16cm) Wall</b>	0.05 yd <sup>3</sup> (0.039 m <sup>3</sup> ) / Standard Form Unit					
<b>Concrete Volume w/ 5”(12.70cm) Wall</b>	0.06 yd <sup>3</sup> (0.048 m <sup>3</sup> ) / Standard Form Unit					
<b>Concrete Volume w/ 6”(15.24cm) Wall</b>	0.08 yd <sup>3</sup> (0.058 m <sup>3</sup> ) / Standard Form Unit					
<b>Concrete Volume w/ 8”(20.32cm) Wall</b>	0.10 yd <sup>3</sup> (0.077 m <sup>3</sup> ) / Standard Form Unit					
<b>Concrete Volume w/ 10”(25.40cm) Wall</b>	0.12 yd <sup>3</sup> (0.094 m <sup>3</sup> ) / Standard Form Unit					
<b>Concrete Volume w/ 12”(30.48cm) Wall</b>	0.151 yd <sup>3</sup> (0.11 m <sup>3</sup> ) / Standard Form Unit					
<b>Qty's / Sq/feet / Meters per Bundle</b>	18 Standard Panels (9 Blocks)		36.72 Sq/ft. (3.42 Sq/M) of wall area (incl. both sides of wall)			
<b>Packaging</b>	Poly-wrapped					
<b>Bundle's Weight</b>	Approximately 43 lbs (19.5 Kg)/bundle					
<b>Bundle Size</b>	25.0 in (63.5 cm) wide x 48.0 in (121.9 cm) long x 22.5 in (57.1 cm) high					

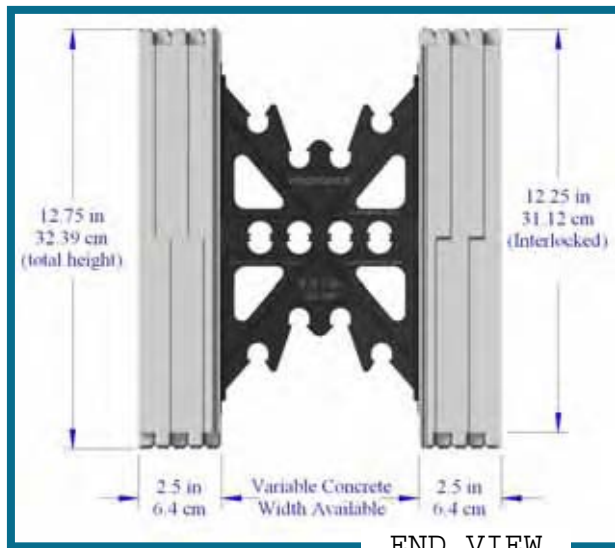




# IntegraSpec® - 90° CORNER UNIT 6”(15.2cm)



ISO VIEW

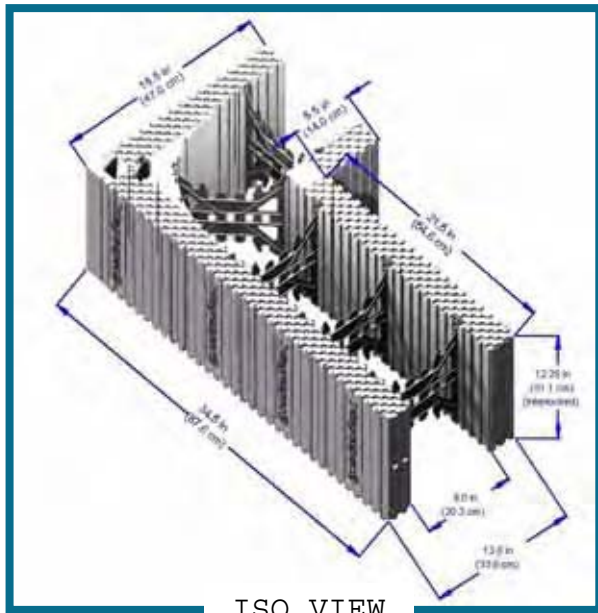


END VIEW

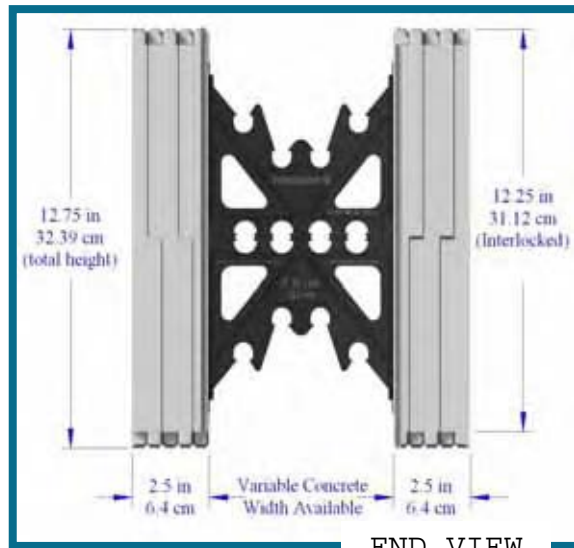
<b>Typical Exterior Panel Dimension(s)</b>	Length 32.5 in x Width 16.5 in x Height 12.25 in (interlocked) (Length 82.6 cm x Width 41.91 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Typical Interior Panel Dimension(s)</b>	Length 21.5 in x Width 5.5 in x Height 12.25 in (interlocked) (Length 54.6 cm x Width 14 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Concrete Volume per Corner Unit</b>	0.056 yd <sup>3</sup> (0.043 m <sup>3</sup> )	
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )	
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (recycled material)	
<b>Unique and Special Interlocking Features of the Panels</b>	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster and accurate installation with eliminating wastes)	
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks	
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) Wide Located every 8 in (20 cm) O.C.	
<b>Exterior Surface Area</b>	4.16 ft <sup>2</sup> (0.40 m <sup>2</sup> ) (interlocked)	
<b>Qty's / Sq/feet / Meters per Bundle</b>	8 Corner Units (16 Panels)	33.28 ft <sup>2</sup> (3.1 m <sup>2</sup> ) of wall area (incl. both sides of wall)
<b>Packaging</b>	Poly-wrapped	
<b>Bundle's Weight</b>	Approximately 31 lbs (14 Kg)/bundle	
<b>Bundle Size</b>	21.0 in (53.34 cm) wide x 42.0 in (106.7 cm) long x 25 in (63.5 cm) high	



# IntegraSpec® - 90° COMMERCIAL CORNER UNIT



ISO VIEW

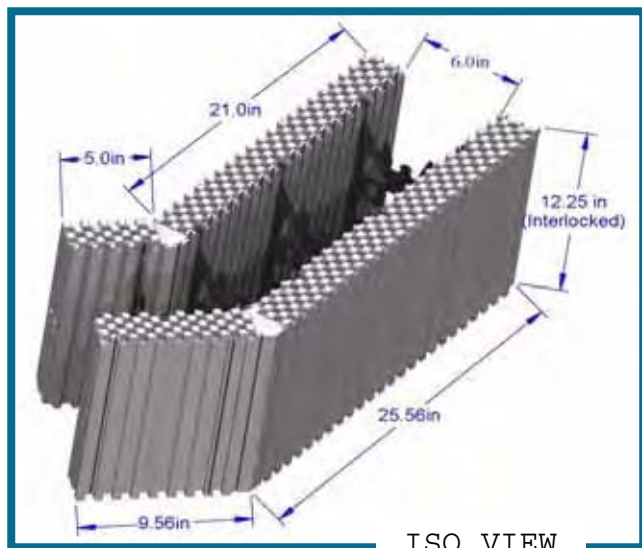


END VIEW

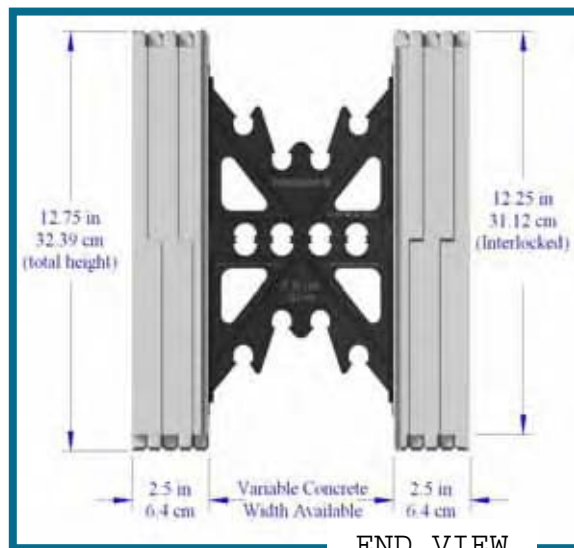
<b>Typical Exterior Panel Dimension(s)</b>	Length 34.5 in x Width 18.5 in x Height 12.25 in (interlocked) (Length 87.6 cm x Width 47 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Typical Interior Panel Dimension(s)</b>	Length 21.5 in x Width 5.5 in x Height 12.25 in (interlocked) (Length 54.6 cm x Width 14 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Concrete Volume per Corner Unit</b>	0.067 yd <sup>3</sup> (0.051 m <sup>3</sup> )	
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )	
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (recycled material)	
<b>Unique and Special Interlocking Features of the Panels</b>	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster and accurate installation with eliminating wastes)	
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks	
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) Wide Located every 8 in (20 cm) O.C.	
<b>Exterior Surface Area</b>	4.51 ft <sup>2</sup> (0.42 m <sup>2</sup> ) (interlocked)	
<b>Qty's / Sq/feet / Meters per Bundle</b>	8 Corner Units (16 Panels)	36.08 ft <sup>2</sup> (3.35 m <sup>2</sup> ) of wall area (incl. both sides of wall)
<b>Packaging</b>	Poly-wrapped	
<b>Bundle's Weight</b>	Approximately 32 lbs (14.5 Kg)/bundle	
<b>Bundle Size</b>	25.5 in (64.77 cm) wide x 45.0 in (114.3 cm) long x 25 in (63.5 cm) high	



# IntegraSpec® - 45° CORNER UNIT 6”(15.2cm)



ISO VIEW

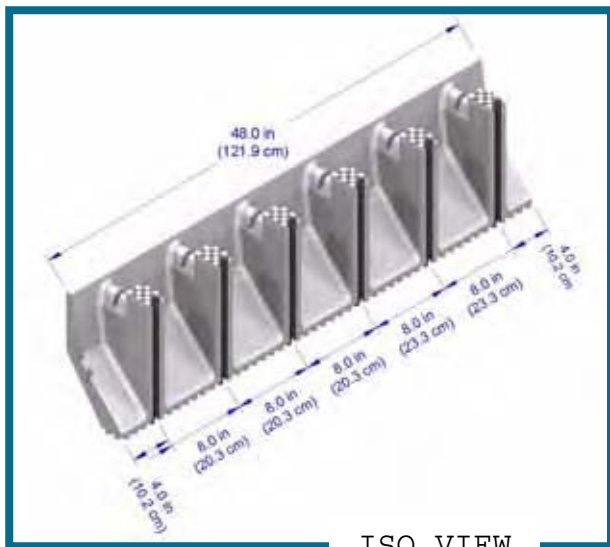


END VIEW

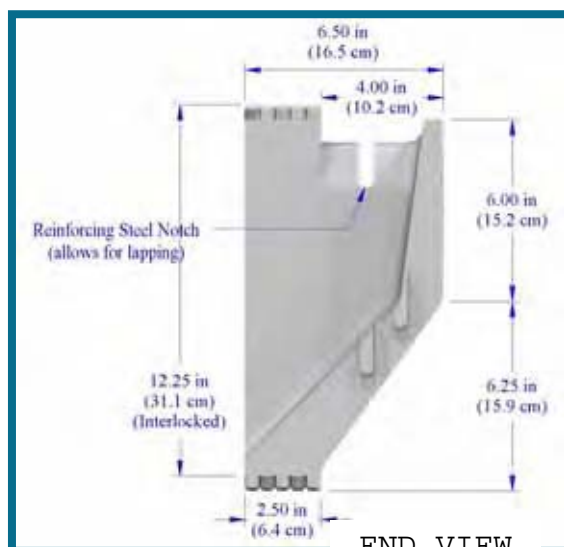
<b>Typical Exterior Panel Dimension(s)</b>	Length 25.56 in x Length 9.56 in x Height 12.25 in (interlocked) (Length 64.92 cm x Width 24.28 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Typical Interior Panel Dimension(s)</b>	Length 21.0 in x Width 5.0 in x Height 12.25 in (interlocked) (Length 53.34 cm x Length 12.7 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Concrete Volume per Corner Unit</b>	.048 yd <sup>3</sup> (0.036 m <sup>3</sup> )	
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )	
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (recycled material)	
<b>Unique and Special Interlocking Features of the Panels</b>	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster and accurate installation with eliminating wastes)	
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks	
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) Wide Located every 8 in (20 cm) O.C. (with an additional located at exterior corner)	
<b>Exterior Surface Area</b>	2.99 ft <sup>2</sup> (0.28 m <sup>2</sup> ) (interlocked)	
<b>Interior Surface Area</b>	2.21 ft <sup>2</sup> (0.20 m <sup>2</sup> ) (interlocked)	
<b>Qty's / Sq/feet / Meters per Bundle Exterior Corner Panels</b>	16 Panels / Bundle	47.84 ft <sup>2</sup> (4.48 m <sup>2</sup> of wall area (Exterior face of wall (one side))
<b>Qty's / Sq/feet / Meters per Bundle Interior Corner Panels</b>	16 Panels / Bundle	35.36 ft <sup>2</sup> (3.20 m <sup>2</sup> of wall are Interior face of wall (one side))
<b>Packaging</b>	Poly-wrapped	
<b>Bundle's Weight and Size Exterior Panels</b>	Weight = Approximately 28 Lbs (12.7 Kg)	Size = H 25 ½ in x L 45 ½ in x W 23 in (H 65 cm x L 116 cm x W 58 cm)
<b>Bundle's Weight and Size Interior Panels</b>	Weight = Approximately 26 Lbs (11.8 Kg)	Size = H 25 ½ in x L 21 ½ in x W 34 in (H 65 cm x L 55 cm x W 76 cm)



# IntegraSpec® - BRICK LEDGE PANEL 4”(10.0cm)



ISO VIEW



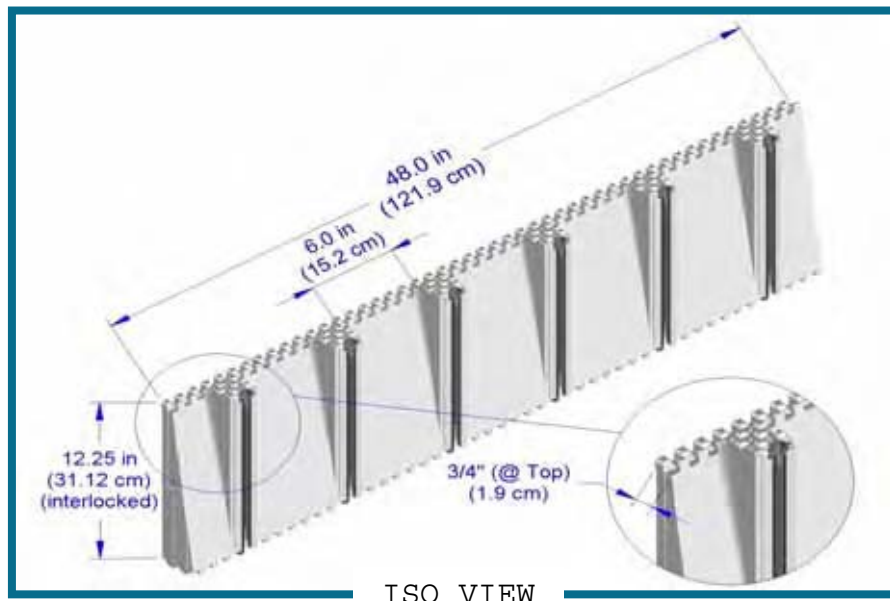
END VIEW

<b>Typical Brick Ledge Panel Dimension(s)</b>		Length 48.0 in x Width 6.5 in x Height 12.25 in (interlocked) (Length 122 cm x Width 16.51 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>				
<b>Concrete Projection</b>		4 in (10.2 cm) (from face of wall)				
<b>Concrete Core Size</b>	<b>4 in (10.2cm)</b>	<b>5 in (12.7 cm)</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>	<b>10 in (38.1cm)</b>	<b>12 in (30.5cm)</b>
<b>Overall Wall Width (1 Brick Ledge Panel)</b>	13 in (33.0cm)	14 in (35.6 cm)	15 in (38.1cm)	17 in (43.1cm)	19 in (48.3cm)	21 in (53.3cm)
<b>Overall Wall Width (2 Brick Ledge Panels)</b>	17 in (43.1cm)	18 in (45.7 cm)	19 in (48.3cm)	21 in (53.3cm)	23 in (58.4cm)	25 in (63.5cm)
<b>Integra Foam Panel Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5+ Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )					
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (recycled material)					
<b>Unique Panels' Features</b>	Interlocking Tongue and Grooves on Panel's ends; can be place any where in the wall(s) and at different elevation(s); interlocks consecutive row(s) on top; incorporate rebar notch					
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks					
<b>Design Principal</b>	Insulated monolithic structural concrete ledger (Brick/Floor)					
<b>Exterior Surface Area</b>	4.08 ft <sup>2</sup> (0.38 m <sup>2</sup> ) (interlocked)					
<b>Concrete Required per Brick Ledge Panel</b>	0.0286 yd <sup>3</sup> (0.022 m <sup>3</sup> ) / Panel					
<b>Qty's / Sq/feet / Meters per Bundle</b>	8 Brick Ledge Panels	32.64 Sq/ft. (3.03 Sq/M) (1 side of wall)				
<b>Packaging</b>	Poly-wrapped					
<b>Bundle's Weight</b>	19 lbs (8.6 Kg)/bundle					
<b>Bundle Size</b>	25.0 in (63.5 cm) wide x 49.0 in (124.46 cm) long x 26.5 in (67.3 cm) high					

[Return to Table of Contents](#)



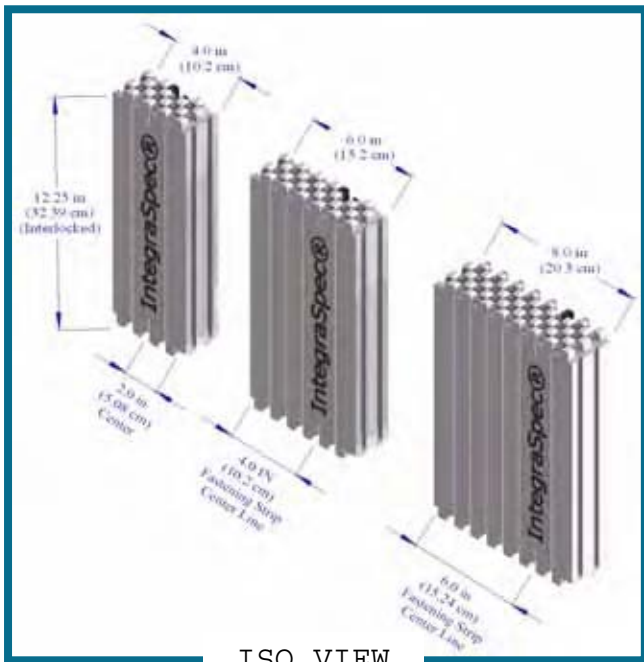
# IntegraSpec® - TAPER TOP PANEL



<b>Typical Taper Top Panel Dimensions</b>	Length 48.0 in x Width 2.5 in x Height 12.25 in (interlocked) (Length 122 cm x Width 6.4 cm x Height 31.12 cm) <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>					
<b>Additional Concrete at Top</b>	1.75 in (4.5 cm)					
<b>Concrete Core Size</b>	<b>4 in (10.2cm)</b>	<b>5 in (12.7cm)</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>	<b>10 in (38.1cm)</b>	<b>12 in (30.5cm)</b>
<b>Overall Concrete Wall Width at Top (1 Taper Top Panel)</b>	5.75 in (14.6cm)	6.75 in (17.15cm)	7.75 in (19.7cm)	9.75 in (24.8cm)	11.75 in (29.9cm)	13.75 in (34.9cm)
<b>Overall Concrete Wall Width at Top (2 Taper Top Panels)</b>	7.5 in (19.1cm)	8.5 in (21.6cm)	9.5 in (24.1cm)	11.5 in (29.2cm)	13.5 in (34.3cm)	15.5 in (39.4cm)
<b>Integra Foam Panel Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )					
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (recycled material)					
<b>Unique Panels' Features</b>	Interlocking Tongue and Grooves on Panel's ends; can be place any where in the wall(s) and at different elevation(s); interlocks consecutive row(s) on top;					
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks					
<b>Design Principal</b>	Increases concrete thickness/strength at top of wall					
<b>Exterior Surface Area</b>	4.08 ft <sup>2</sup> (0.38 m <sup>2</sup> ) (interlocked)					
<b>Concrete Required per Taper Top Panel Qty's / Sq/feet / Meters per Bundle</b>	0.0083 yd <sup>3</sup> (0.0064 m <sup>3</sup> ) / Panel					
	18 Standard Panels (9 Blocks)		36.72 Sq/ft. (3.42 Sq/M) of wall area (incl. both sides of wall)			
<b>Packaging</b>	Poly-wrapped					
<b>Bundle's Weight</b>	Approximately 35 lbs (15.88 Kg)/bundle					
<b>Bundle Size</b>	25.0 in (63.5 cm) wide x 48.0 in (121.9 cm) long x 22.5 in (57.1 cm) high					



# IntegraSpec® - IntegraBucks 4”(10.2cm), 6”(15.2cm), 8”(20.3cm)



ISO VIEW



Staggered Integra-Bucks Shown

<b>Integra Bucks Dimension</b>	<b>4” (10.2 cm) long x 2” (5.1 cm) wide x 12.25” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>		
	<b>6” (15.2 cm) long x 2” (5.1 cm) wide x 12.25” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>		
	<b>8” (20.3 cm) long x 2.5” (6.4 cm) wide x 12.25” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>		
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5 + Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )		
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (recycled material)		
<b>Unique and Special Interlocking Features of the Panels</b>	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); Slides in panel’s dove tails Enables faster and accurate installation of rough openings and includes strapping to fasten window and or door frame(s).		
<b>Interlocking Design</b>	Unique Special patented friction and dove tail interlock(s)		
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) wide; located inside bucks		
<b>Integra Buck Sizes</b>	<b>4 in (10.2cm)</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>
<b>Quantity</b>	80 pcs	80 pcs	80 pcs
<b>Packaging</b>	Box	Box	Box
<b>Approximately Box Weight</b>	23 Lbs (10.4 Kg)	27 Lbs (12.25 Kg)	35 lbs (13.15 Kg)
<b>Box Size</b>	20.5 in x 19 in x 26 in (52 cm x 48.3 cm x 66.1 cm)	26 in x 20.5 in x 26.5 in (66.1 cm x 52.1 cm x 67.3 cm)	34.5 in x 25.5 in x 26 in (87.6 cm x 64.8 cm x 66.1 cm)



# IntegraSpec® - IntegraHeaders 4”(10.2cm), 6”(15.2cm), 8”(20.3cm)

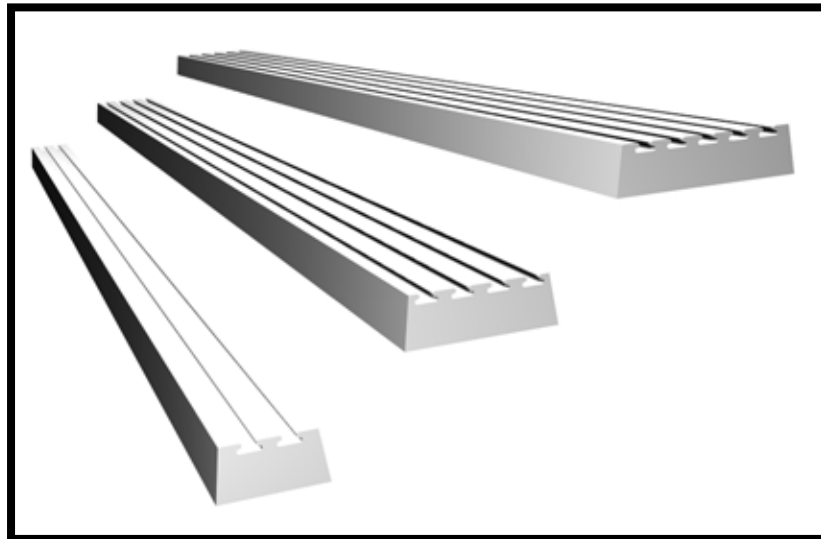


Fig. S-8.0

IntegraHeader [4”(10.2 cm), 6”(15.2 cm), and 8”(20.3 cm) shown]



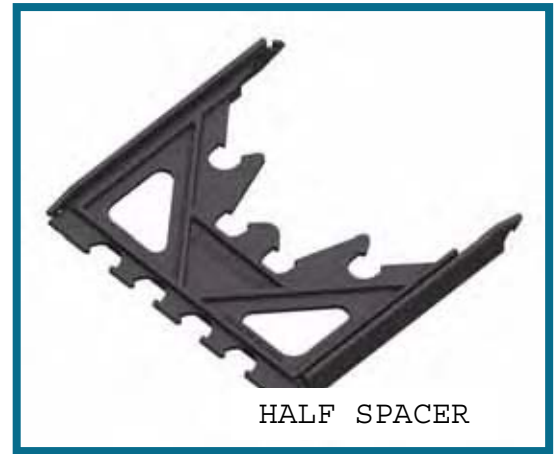
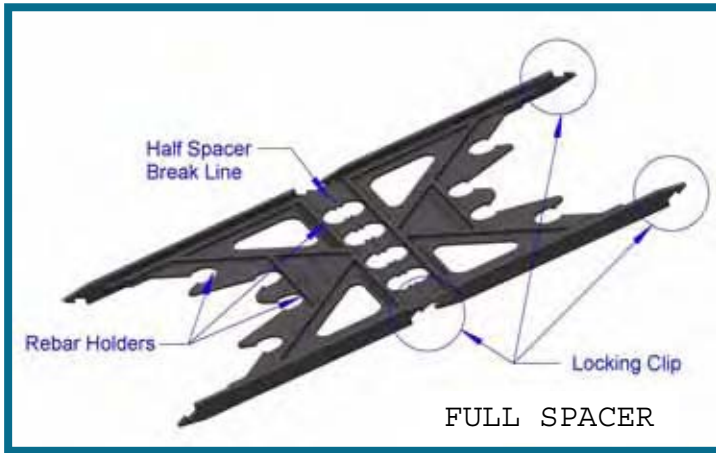
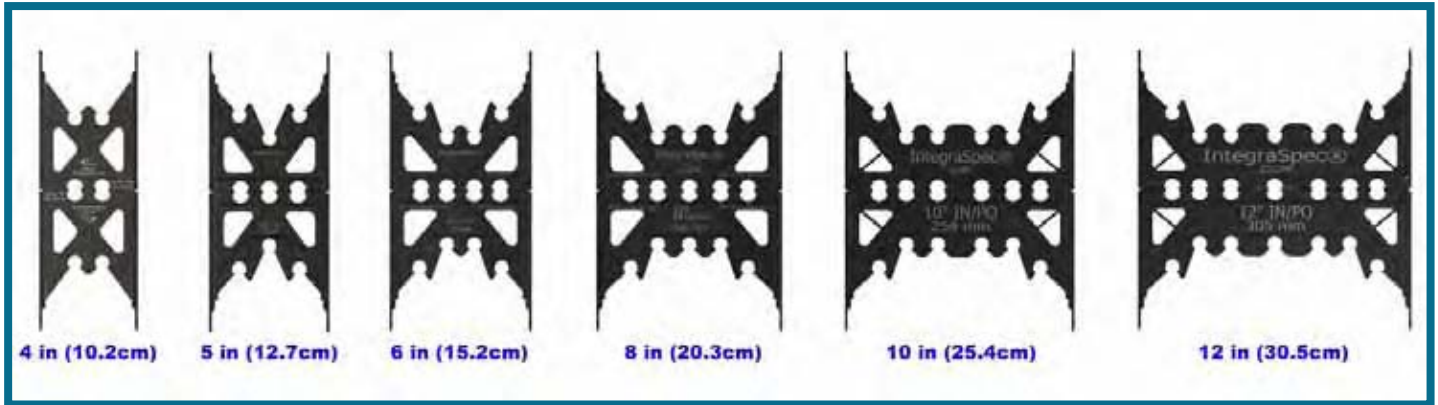
Fig. S-8.1

IntegraHeader (top) and  
IntegraBuck (sides)  
(optional steel (header) channel shown)

<b>IntegraHeaders Dimension</b>	<b>4” (10.2 cm) wide x 1.5” (3.8 cm) thick x 8’ (244 cm) long</b>			
	<b>5” (12.7 cm) wide x 1.5” (3.8 cm) thick x 8’ (244 cm) long</b>			
	<b>6” (15.2 cm) wide x 1.5” (3.8 cm) thick x 8’ (244 cm) long</b>			
	<b>8” (20.3 cm) wide x 1.5” (3.8 cm) thick x 8’ (244 cm) long</b>			
	<b>10” (25.4 cm) wide x 1.5” (3.8 cm) thick x 8’ (244 cm) long</b>			
	<b>12” (30.5 cm) wide x 1.5” (3.8 cm) thick x 8’ (244 cm) long</b>			
<b>IntegraHeader Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5+ Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )			
<b>Incorporated Dove Tail</b>	Perfect Concrete Bonding with EPS			
<b>IntegraHeader Details</b>	<b>4 in (10.2 cm)</b>	<b>5 in (12.7 cm)</b>	<b>6 in (15.2 cm)</b>	<b>8 in (20.3 cm)</b>
<b>Quantity</b>	30 pcs	30 pcs	30 pcs	30 pcs
<b>Packaging</b>	Shrink Wrap	Shrink Wrap	Shrink Wrap	Shrink Wrap
<b>Approximately Box Weight</b>	50 Lbs (22.7 Kg)	tba Lbs ( Kg)	56 Lbs (25.4 Kg)	62 Lbs (28.1 Kg)
<b>Bundle Size</b>	96 in x 15 in x 12 in 244 cm x 38.1 cm x 30.5 cm	96 in x tba in x tba in 244 cm x tba cm x tba cm	96 in x 15 in x 17 in 244 cm x 38.1 cm x 43.2 cm	96 in x 15 in x 24 in 244 cm x 38.1 cm x 61 cm



# IntegraSpec® - Spacers



<b>Integra Spacer(s) Plastic Material</b>	High Impact Polystyrene (HIPS) (recycled material)					
<b>Unique and Special Spacer Features</b>	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side). Incorporates assorted rebar holders. Breakable in two halves. Can also be cut for custom applications.					
<b>Interlocking Design</b>	Slides in panel's inserts and interlocks one on top of the other.					
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) wide; located inside bucks					
<b>Spacer Sizes</b>	<b>4 in (10.2cm)</b>	<b>5 in (12.7cm)</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>	<b>10 in (25.4 cm)</b>	<b>12 in (30.5 cm)</b>
<b>Packaging</b>	Box	Box	Box	Box	Box	Box
<b>Quantity</b>	216/box	216/box	216/box	216/box	108/box	108/box
<b>Weight per Box</b>	35 lbs (16 Kg)	38 lbs (17.2 Kg)	41 lbs (18.6 Kg)	48 lbs (21.8 kg)	27 Lbs (12.3 Kg)	38 Lbs (17 Kg)
<b>Bundle Size</b>	20 in x 13.5 in x 17.5 in (51 cm x 34 cm x 45 cm)	25 in x 11.5 in x 17.5 in (64 cm x 29 cm x 45 cm)	25 in x 13.5 in x 17.5 in (64 cm x 34 cm x 45 cm)	35 in x 13.5 in x 17.5 in (89 cm x 34 cm x 45 cm)	22 in x 13.5 in x 18.5 in (56 cm x 34 cm x 45 cm)	25 in x 13.5 in x 17.5 in (64 cm x 34 cm x 45 cm)





# IntegraSpec® - "H" Clip



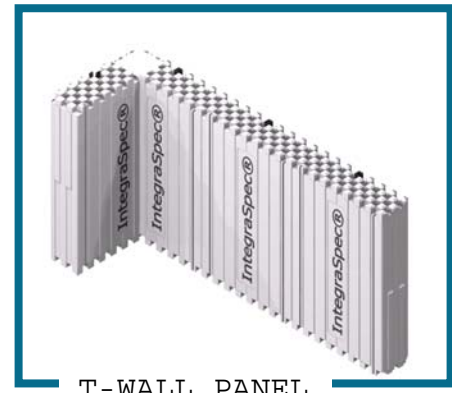
<b>"H" Clip Plastic Material</b>	High Impact Polystyrene (HIPS)
<b>Unique and Special "H" Clip Features</b>	Joins two or more IntegraSpec Spacers together (for wider concrete wall(s) and more structural requirements)
<b>Packaging</b>	Poly-wrapped
<b>Quantity</b>	216 linear feet/bundle (54 pieces x 4 ft. (122 cm) length /bundle)
<b>Weight per Bundle</b>	27.5 Lbs (12.5 Kg)
<b>Bundle Size</b>	48 in (243.8 cm) High x 5.5 in (14 cm) Long x 8 in (20.0 cm) Wide



# IntegraSpec® “T”- WALL



**ASSEMBLED T-WALL**  
2 T-wall panels per course  
(8" (20.3 cm) shown)

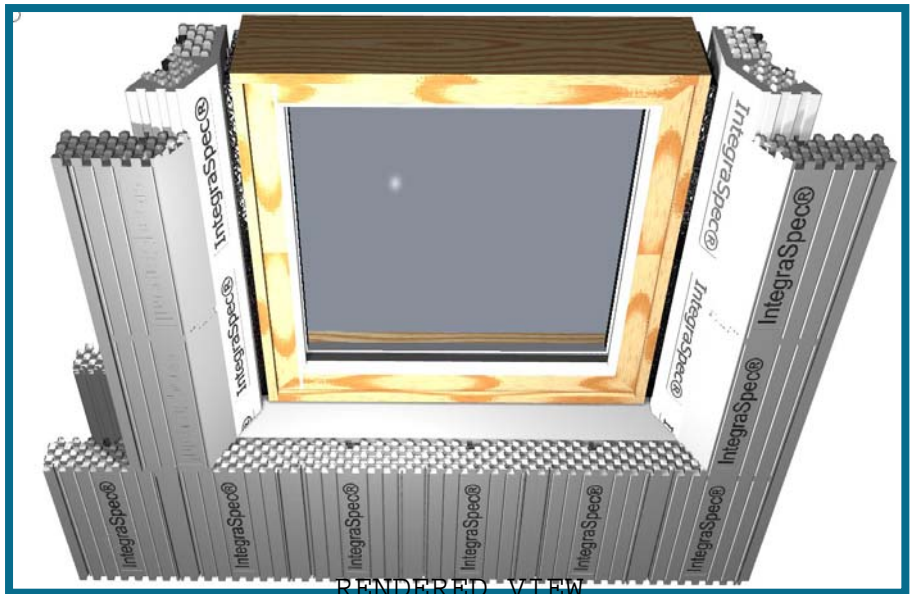
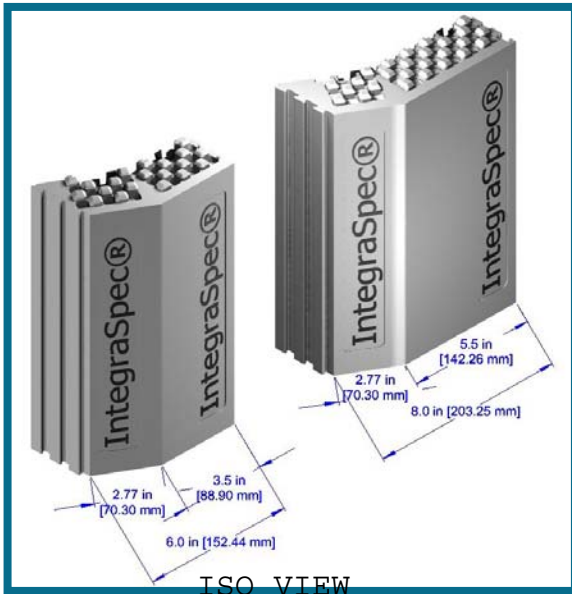


**T-WALL PANEL**  
(same as interior corner panel)

<b>Typical T-Wall Panel Dimension(s)</b> (Standard panel(s) not included in this table)		Length 21.5 in x Width 5.5 in x Height 12.25 in (interlocked) (Length 54.6 cm x Width 14 cm x Height 31.12 cm)				
<i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>						
<b>Standard Concrete Cavity / Core</b>	<b>4 in</b> (10.2cm)	<b>5 in</b> (12.7 cm)	<b>6 in</b> (15.2cm)	<b>8 in</b> (20.3cm)	<b>10 in</b> (25.4cm)	<b>12 in</b> (30.5cm)
<b>Total Wall Width</b> (2 Integra Panels + Conc. Core)	9 in (22.9 cm)	10 in (25.4 cm)	11 in (27.9 cm)	13 in (33.0 cm)	15 in (38.1 cm)	17 in (43.2 cm)
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5+ Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )					
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (100% recycled material)					
<b>Unique &amp; Special Interlocking Features of the Panels</b>	Patented Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); (Enables faster & accurate installation with eliminating wastes)					
<b>Interlocking Design</b>	Unique Special patented friction and mechanical interlocks					
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) Wide Located every 8 in (20 cm) O.C.					
<b>Surface Area</b>	2.30 ft <sup>2</sup> (0.21 m <sup>2</sup> ) (interlocked) = T-Wall panel (X 2)					
<b>Concrete Volume w/ 4"(10.16cm) Wall</b>	0.028 Cu/yd <sup>3</sup> (0.0215 Cu/m <sup>3</sup> ) = T-Wall panel (X 2)					
<b>Concrete Volume w/ 5"(12.70cm) Wall</b>	0.0355 Cu/yd <sup>3</sup> (0.027 Cu/m <sup>3</sup> ) = T-Wall panel (X 2)					
<b>Concrete Volume w/ 6"(15.24cm) Wall</b>	0.0426 Cu/yd <sup>3</sup> (0.0325 Cu/m <sup>3</sup> ) = T-Wall panel (X 2)					
<b>Concrete Volume w/ 8"(20.32cm) Wall</b>	0.0568 Cu/yd <sup>3</sup> (0.0434 Cu/m <sup>3</sup> ) = T-Wall panel (X 2)					
<b>Concrete Volume w/ 10"(25.40cm) Wall</b>	0.071 Cu/yd <sup>3</sup> (0.054 Cu/m <sup>3</sup> ) = T-Wall panel (X 2)					
<b>Concrete Volume w/ 12"(30.48cm) Wall</b>	0.085 Cu/yd <sup>3</sup> (0.065 Cu/m <sup>3</sup> ) = T-Wall panel (X 2)					
<b>Qty's / Sq/feet / Meters per Bundle</b>	16 T Wall Panels		18.37 ft <sup>2</sup> (1.71 m <sup>2</sup> ) of wall area (incl. both sides of wall)			
<b>Packaging</b>	Poly-wrapped					
<b>Bundle's Weight</b>	Approx. 26 lbs (11.82 Kg)/bundle					
<b>Bundle Size</b>	35 in (89 cm) wide X 21.5 in (54.6 cm) long X 25 in (63.5 cm) high					



# SantaFe IntegraBucks 6”(15.2cm) & 8”(20.3cm)

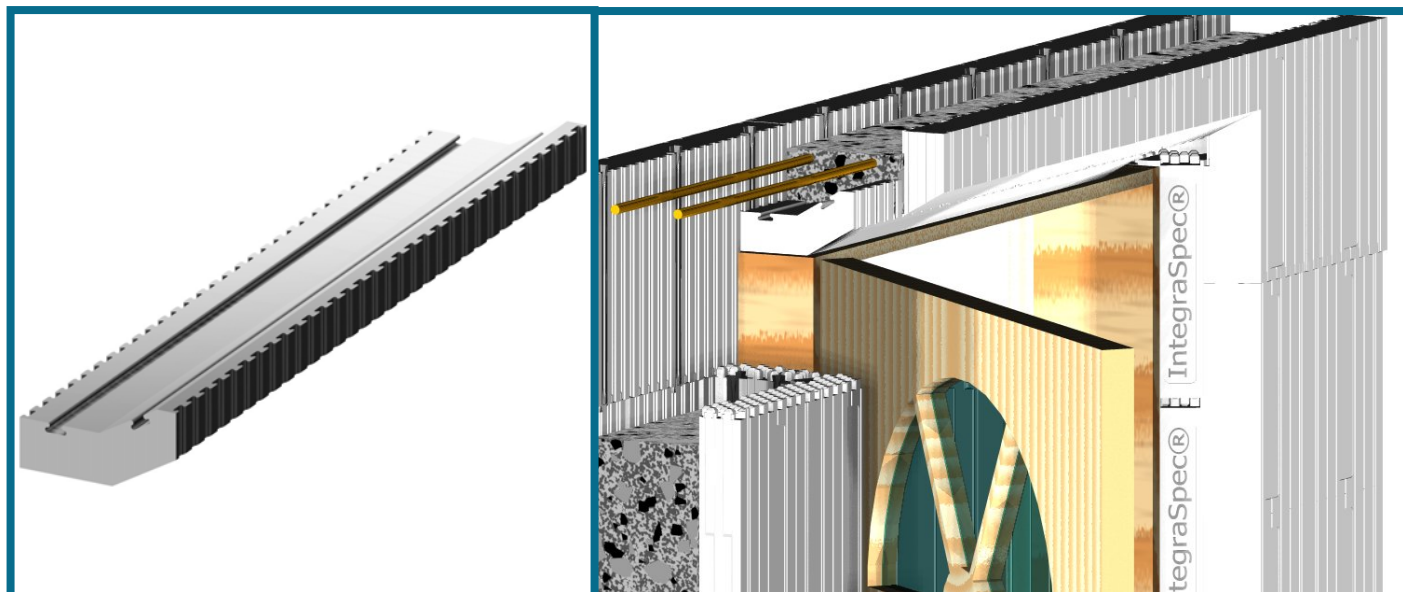


<b>SantaFE IntegraBuck Dimensions</b>	<b>6” (15.2 cm) long X 2” (5.1 cm) wide X 12.25” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
	<b>8” (20.3 cm) long X 2.5” (6.4 cm) wide X 12.25” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5+ Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )	
<b>Integra Plastic Insert(s) Material</b>	High Impact Polystyrene (HIPS) (100% recycled material) (2 imbedded insert on each angles)	
<b>Unique &amp; Special Interlocking Features of the Panels</b>	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); Slides in panel’s dove tails Enables faster & accurate installation of rough openings and includes strapping to fasten window and or door frame(s).	
<b>Special Features &amp; Benefits</b>	a) Provides 30 degree more view angle on both side of window openings (adds 2+ LEED points for additional day light entering the building) b) Provides 30 degree more opening for door swing and handicap access.	
<b>Interlocking Design</b>	Unique Special patented friction and dove tail interlock(s)	
<b>Typical Fastening Studs/Strapping</b>	Vertical 1 <sup>5</sup> / <sub>8</sub> in (4.13 cm) Wide; located inside bucks	
<b>Integra Buck Sizes</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>
<b>Quantity</b>	80 pcs	80 pcs
<b>Packaging</b>	Box	Box
<b>Approx. Box Weight</b>	50 Lbs (22.68 Kg)	55 lbs (24.95 Kg)
<b>Box Size</b>	28 in X 28 in X 25.5 in (71.1 cm X 71.1 cm X 64.8 cm)	28 in X 36 in X 25.5 in (71.1 cm X 91.4 cm X 64.8 cm)

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# SantaFe IntegraHeaders 6”(15.2cm) & 8”(20.3cm)



ISO VIEW

RENDERED VIEW

<b>SantaFE IntegraBuck Dimensions</b>	<b>6” (15.2 cm) long X 2” (5.1 cm) wide X 96” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
	<b>8” (20.3 cm) long X 2.5” (6.4 cm) wide X 96” (31.1cm) high</b> <i>Note: Part dimensions may vary slightly due to EPS material shrinkage (100% recyclable)</i>	
<b>Integra Foam panel(s) Material</b>	Flame Retardant Type 2, Expanded Polystyrene (EPS), Density = 1.5+ Pounds/Cubic/Feet (pcf) (24.14 kg/m <sup>3</sup> )	
<b>Unique &amp; Special Interlocking Features of the Panels</b>	Bi-Directional and or Reversible (No Top, Bottom, Left or Right Hand Side); Slides in panel’s dove tails Enables faster & accurate installation of rough openings and includes strapping to fasten window and or door frame(s).	
<b>Special Features &amp; Benefits</b>	a) Provides 30 degree more view angle on both side of window openings (adds 2+ LEED points for additional day light entering the building) b) Provides 30 degree more opening for door swing and handicap access.	
<b>Interlocking Design</b>	Slides into panel’s dove tail groves	
<b>Santa Fe IntegraHeader Sizes</b>	<b>6 in (15.2cm)</b>	<b>8 in (20.3cm)</b>
<b>Quantity</b>	12 pcs	12 pcs
<b>Packaging</b>	Shrink wrapped	Shrink wrapped
<b>Approx. Bundle Weight</b>	18 Lbs (8.16 Kg)	23 lbs (10.43 Kg)
<b>Bundle Size</b>	19.5 in X 13 in X 96 in (49.53 cm X 33.02 cm X 243.84 cm)	25.5 in X 13 in X 96 in (64.77 cm X 33.02 cm X 243.84 cm)

## **APPENDIX “A”**

### **ALIGNMENT SYSTEMS**

- Wall Alignment System General Installation Information....**A - 1**
- Typical Alignment Cross Section.....**A - 2**

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## **ALIGNMENT SYSTEM(S) GENERAL INSTALLATION**

***IntegraSpec® has been designed to work with most ICF approved alignment systems. Please consult local safety regulations before commencing any project.***

***PIC is not responsible for safety infractions or injury as a result of absence of or usage or installation of alignment or scaffolding systems used with its product.***

*Starting from the footing installation is recommended as follows:*

- 1) Alignment system installation is most often achieved from the inside of the structure.*
- 2) Number of alignment units required will vary based upon the site / project specifications; however a general rule dictates brace placed 24" in from every corner spaced thereafter approximately every 5 to 6.5 feet (1.5 to 2 meters).*
- 3) Choice of brace length is dependent on the height of the wall to be supported. It is recommended and preferable to have the brace no longer than and within a foot of the top of the wall(s).*
- 4) Most alignment systems require fastening of the upright strong backs to the footing. Sufficient space for this must be accommodated in the layout of forms on the footings.*
- 5) Depending upon the installation crew, the alignment system can be erected at the completion of four to six courses of **IntegraSpec®** forming units. Please note that weather conditions may warrant the installation of the alignment system at an earlier stage.*
- 6) Verticals should be secured to each horizontal course of the **IntegraSpec®** forming unit. It is preferred and recommended to use course threaded pan head screws or similar. Do not over tighten screws or strip screw(s) in plastic inserts when fastening verticals.*
- 7) Verticals should be installed plumb in relation to the 1" (2.5 cm) cut lines on the **IntegraSpec®** forming units.*
- 8) Attach diagonal braces on every vertical upright and to ensure that upright is plumb with the use of a six foot level.*
- 9) Complete installation of scaffolding as per safety requirements.*



### **IMPORTANT NOTE:**



**It is imperative that diagonal brace(s) be solidly anchored to the native soil, footing, slab, or floor, as they will bear the workers' and concrete weight.**

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## IntegraSpec® Insulating Concrete Forms (ICF)

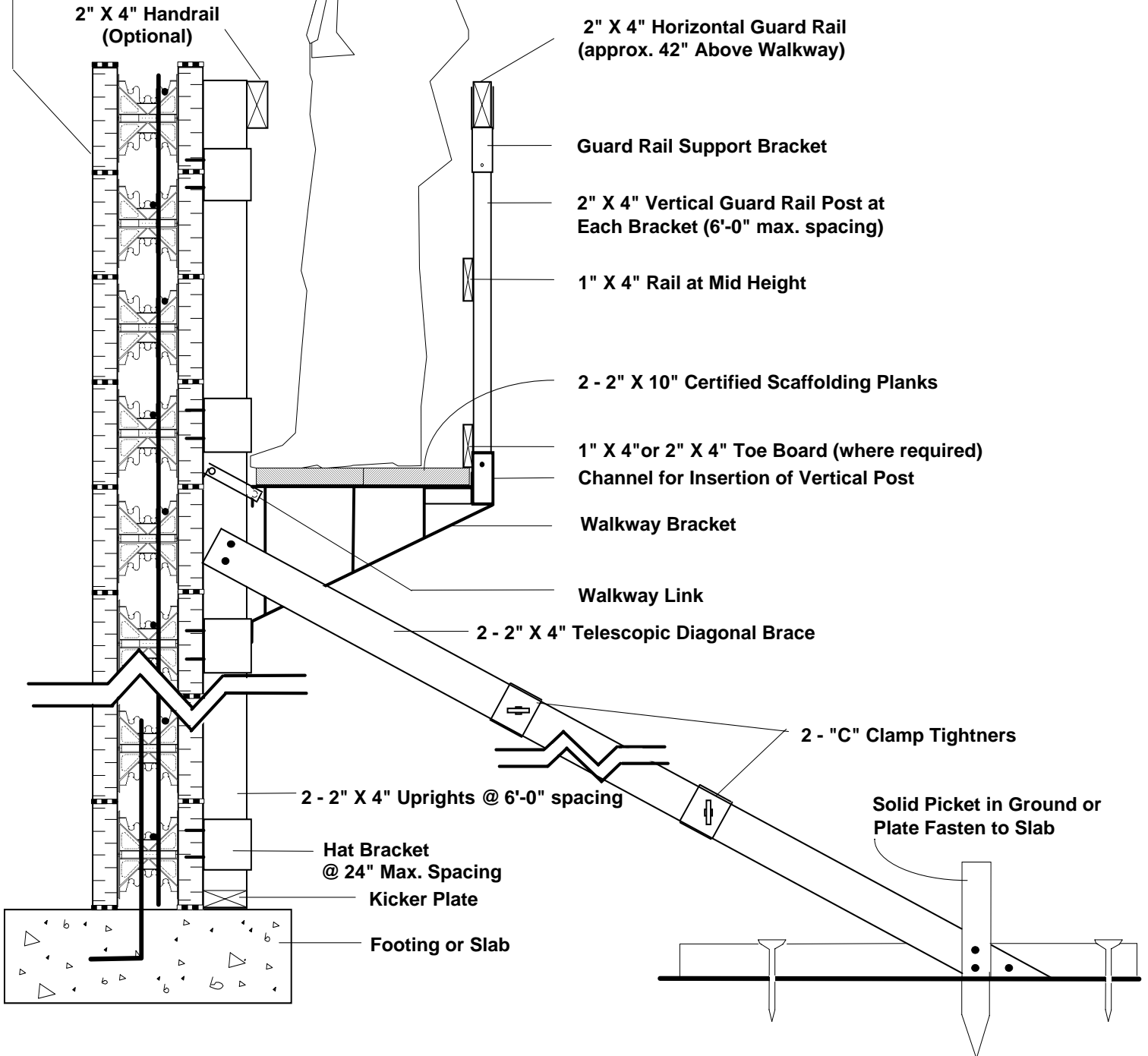


Fig. A.3.1

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## APPENDIX “B”

- **SLUMP TEST ..... B - 1**

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# CONCRETE SLUMP TEST

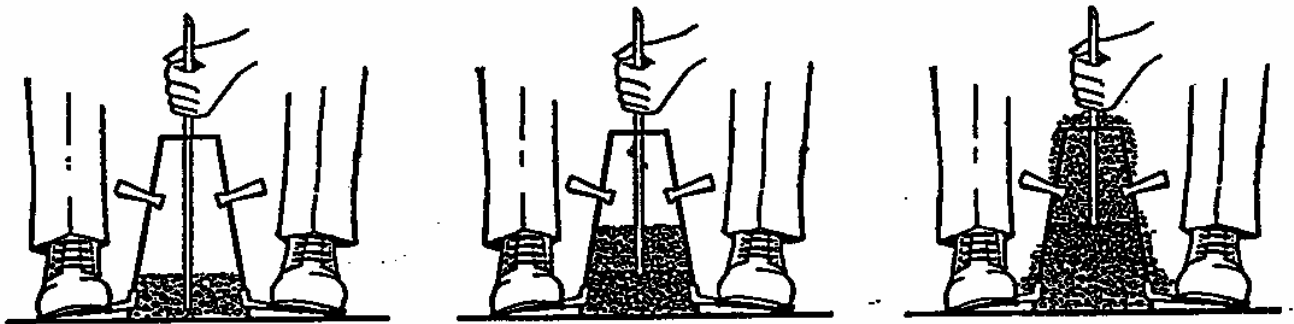
**PURPOSE OF TEST:** To determine the consistency of fresh concrete and to check its uniformity from batch to batch. This test is based on ASTM C143-74: Standard Test Method for Slump of Portland Cement Concrete.

Take two or more representative samples – at regularly spaced intervals – from the middle of the mixer discharged; do not take samples from the beginning or end of discharge. Obtain samples within fifteen minutes or less.

*Important:* Slump test must be made within five minutes after taking samples.

Combine samples in a wheelbarrow or appropriate container and remix before making test.

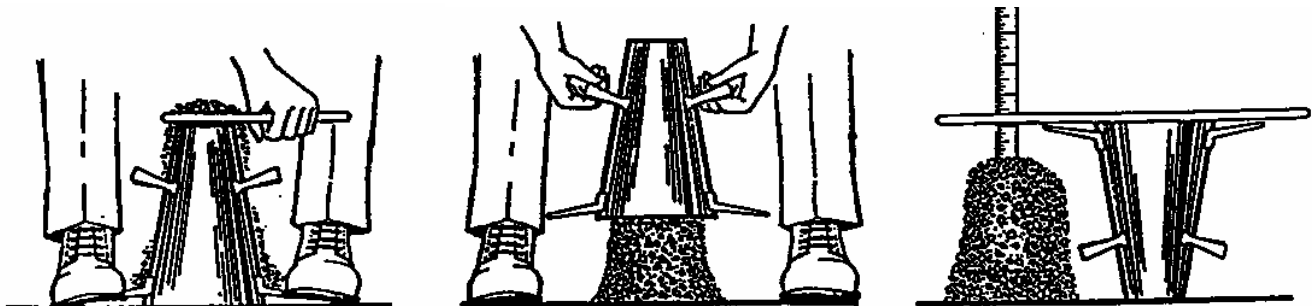
Dampen slump cone with water and place it on a flat, level, smooth, moist, non-absorbent, firm surface.



1. Stand on the two foot pieces of the cone to hold it firmly in place during steps 1 through 4. Fill cone mold  $\frac{1}{3}$  by volume [ $2\frac{1}{2}$ " (67 mm) high] with the concrete sample and rod it with 25 strokes using a round, straight steel rod of  $\frac{5}{8}$ " (16 mm) diameter x 24" (600 mm) long. Distribute rodding strokes evenly over entire cross section of the concrete by using approximately half the strokes near the perimeter (outer edge) and then progressing spirally toward the center.

2. Fill cone  $\frac{2}{3}$  full by volume (half the height) and again rod 25 times with rod just penetrating into, but not through, the first layer. Distribute strokes evenly as described in Step 1.

3. Fill cone to overflowing and again rod 25 times with rod just penetrating into, but not through, the second layer. Again, distribute strokes evenly.



4. Strike off excess concrete from top of cone with the steel rod so the cone is exactly level full. Clean the overflow away from the base of the cone mold.

5. Immediately after completion of Step 4, the operation of raising the mold shall be performed in  $5 \pm 2$  seconds by a steady upward lift with no lateral or torsional motion being imparted to the concrete. The entire operation from the start of the filling through the removal of the mold shall be carried out without interruption and shall be completed within the elapsed time of  $2\frac{1}{2}$  minutes

6. Place the steel rod horizontally across the inverted mold so the rod extends over the slumped concrete. Immediately measure the distance from the bottom of the steel rod to the original centre of the top of the specimen. This distance, to the nearest  $\frac{1}{4}$ " (6 mm), is the slump of the concrete. If a decided falling away or shearing off of concrete from one side or portion of the mass occurs, disregard the test and make a new test on another portion of the sample.

## **APPENDIX "C"**

- **Various Concrete Width Options with IntegraSpec® "H" Clip ..... C - 1 to C - 3**

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# VARIOUS CONCRETE WALL WIDTHS USING THE H-CLIP

**Introduction:**

**IntegraSpec®** has the unique ability to provide variable concrete wall thickness by changing spacer size. When wider concrete cores are required in excess of 12 inches, and for greater structural capability or load bearing capacity, **IntegraSpec®** spacers can be combined with an **IntegraSpec®** H-clip. This is done by inserting two spacers into the H-clip channels, which then form a wider spacer to achieve the desired concrete wall width. (Refer to the Table below for various spacer combinations and the resulting concrete core widths).

**Table C-1.1: Variable concrete wall widths (2 or more spacers combined with H-Clip)**

Spacers Combined with an H-Clip	Concrete Core Width	Overall Wall Width
4" (102 mm) + 6" (152 mm) + H-Clip	10 <sup>5</sup> / <sub>8</sub> " (270 mm)	15 <sup>5</sup> / <sub>8</sub> " (397 mm)
4" (102 mm) + 8" (203 mm) + H-Clip	12 <sup>5</sup> / <sub>8</sub> " (321 mm)	17 <sup>5</sup> / <sub>8</sub> " (448 mm)
6" (152 mm) + 6" (152 mm) + H-Clip	12 <sup>5</sup> / <sub>8</sub> " (321 mm)	17 <sup>5</sup> / <sub>8</sub> " (448 mm)
6" (152 mm) + 8" (203 mm) + H-Clip	14 <sup>5</sup> / <sub>8</sub> " (371 mm)	19 <sup>5</sup> / <sub>8</sub> " (498 mm)
8" (203 mm) + 8" (203 mm) + H-Clip	16 <sup>5</sup> / <sub>8</sub> " (422 mm)	21 <sup>5</sup> / <sub>8</sub> " (549 mm)
3 x 6" (152 mm) + 2 H-Clip	19 <sup>1</sup> / <sub>4</sub> " (489 mm)	24 <sup>1</sup> / <sub>4</sub> " (616 mm)
10" (254 mm) + 10" (254 mm) + H-Clip	20 <sup>5</sup> / <sub>8</sub> " ( 524 mm)	25 <sup>5</sup> / <sub>8</sub> " (651 mm)
12" (305 mm) + 12" (305 mm) + H-Clip	24 <sup>5</sup> / <sub>8</sub> " ( 626 mm)	29 <sup>5</sup> / <sub>8</sub> " (753 mm)

- C.1 When utilizing the **IntegraSpec®** H-Clip, usage of the preformed 90° corner panels may not be possible. There are several options available for usage of either the inside or the outside panel of the 90° preformed set, where the panel not utilized is replaced by a mitered standard panel.
  - a. An alternate method of forming your 90° corners when using the **IntegraSpec®** H-Clip is to overlap and abut the **IntegraSpec®** standard panels to create a 90° corner.
- C.2 Starting with **IntegraSpec®** 12<sup>5</sup>/<sub>8</sub>" (321 mm) concrete core as an example, a table is provided to assist you with the standard panel 90° corner assembly.

**C.2.1 Instructions for 12<sup>5</sup>/<sub>8</sub>" (321 mm) concrete core width**

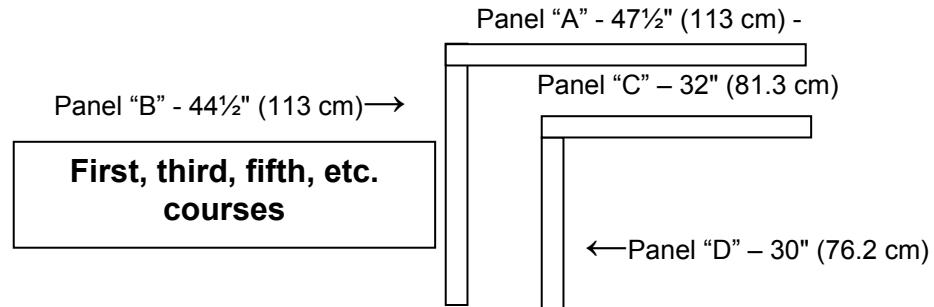
The assembly of a 12<sup>5</sup>/<sub>8</sub>" (321 mm) concrete core requires a combination of two spacers [either a 4" (102 mm) + 8" (203 mm) or 6" (152 mm) + 6" (152 mm)] with an H-clip. This is done either by pre-assembling the spacers into the H-clip and then inserting the assembled unit (2 spacers and H-clip) into the IntegraSpec panels or by assembling all components when building the wall.

- a) **First Course:** Cut an **IntegraSpec®** standard panel (Panel "A") to 47<sup>1</sup>/<sub>2</sub>" (120.65 cm).

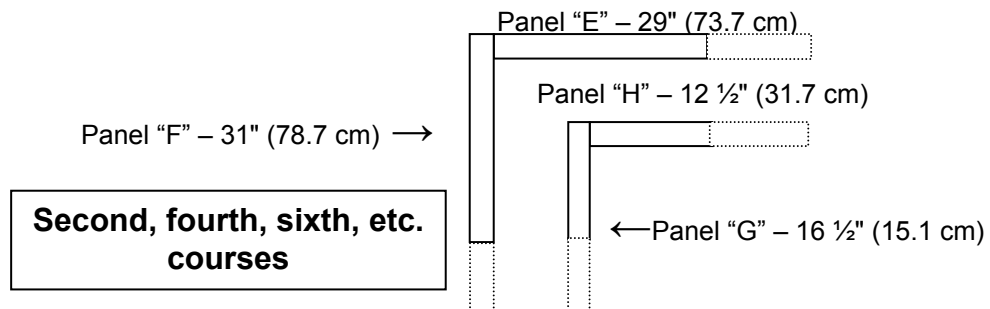
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- b) For the outer (long side) corner. Cut a second standard panel (Panel “B”) to 44½” (113 cm) [note that the cut on panel “B” will be ½” (1.3 cm) into the plastic insert located inside the panels] for the outer short side corner. Butt the cut side of Panel “B” perpendicular (90°) flush against the end / cut side of panel “A”. For the inside corner, cut an **IntegraSpec®** standard panel (Panel “C”) to 32” (81.3 cm) and place the cut side toward the corner, parallel with Panel “A” for the inner corner. Cut a fourth **IntegraSpec®** standard panel (Panel “D”) to 30” (76.2 cm) and butt the cut end against panel “C” (parallel to panel “B”). Insert webs / spacers and “H” clip. This forms the 90° corner (first course). See figure below.



- c) **Second Course:** For the outer corner, cut a standard panel (Panel “E”) to 29” (73.7 cm) and place it (cut end at corner) to interlock on top of panel “A” and corner portion of Panel “B” (outer corner). Cut another standard panel (Panel “F”) to 31” (78.7 cm), and place it (cut end at corner) to interlock with panel “B” and abutted against panel “E”. Insert webs / spacers and “H” clip. For the inner corner, cut standard panel (Panel “G”) at 16½” and place on top of panel “D”, interlocking at the corner with the panel. For the other inner corner, cut the standard panel (Panel “H”) at 12½” (31.7 cm) and place it on top of panel “C”, interlocking at the corner with the panel. This forms the 90° corner (second course).



**For the third, fifth, seventh, etc. courses repeat step a). and for the fourth, sixth, eight, etc. courses repeat step b).**



- C.3 **Corner Bracing:** Once all courses have been installed, a 2" x 8" (50 mm x 203 mm) or 2" x 6" (50 mm x 152 mm) strongback on both sides of the outer corner is required to prevent the custom corners from bulging. Before placing the strongbacks, nail down a 2" x 4" x 3' minimum (50 mm x 100 mm x 1,000 mm) kicker plate onto the footing and / or slab directly in the corner so that the corner is well anchored in place. Then install three well anchored diagonal braces; the first at 12" to 18" from the bottom, the second at half way, and the third at 18" from the top of the wall (do this on both strongbacks). Check plumb line of all corners (both ways).
- C.4 **When Pouring Corners:** When pouring near the corners, we recommend that you pour in lifts of two to three feet (do not pour directly in the corner). While pouring, if movement is seen in the wall, stop pouring, realign the wall, and allow the concrete to set. Within fifteen minutes the concrete should have sufficiently set to continue your pour.

**Table C-4 Panel / corner sizes different wall width**

Corner Panel Size(s)	10 <sup>5</sup> / <sub>8</sub> " (27cm)	12 <sup>5</sup> / <sub>8</sub> " (32.1cm)	14 <sup>5</sup> / <sub>8</sub> " (37.1cm)	16 <sup>5</sup> / <sub>8</sub> " (42.2cm)	19 <sup>1</sup> / <sub>4</sub> " (48.9 cm)
Panel "A"	45 <sup>1</sup> / <sub>2</sub> " (115.6cm)	47 <sup>1</sup> / <sub>2</sub> " (120.7cm)	49 <sup>1</sup> / <sub>2</sub> " (125.73cm)	51 <sup>1</sup> / <sub>2</sub> " (130.81cm)	53 <sup>3</sup> / <sub>8</sub> " (134.9cm)
Panel "B"	42 <sup>1</sup> / <sub>2</sub> " (107.96cm)	44 <sup>1</sup> / <sub>2</sub> " (113cm)	46 <sup>1</sup> / <sub>2</sub> " (118.11cm)	48 <sup>1</sup> / <sub>2</sub> " (123.19cm)	50 <sup>1</sup> / <sub>8</sub> " (127.2cm)
Panel "C"	30" (76.2cm)	32" (81.28cm)	34" (86.36cm)	36" (91.44cm)	38" (96.5cm)
Panel "D"	28" (71.12cm)	30" (76.2cm)	32" (81.28cm)	34" (86.36cm)	36" (91.44cm)
Panel "E"	27" (68.58cm)	29" (73.7cm)	31" (78.7cm)	33" (83.82cm)	35" (88.9cm)
Panel "F"	29" (73.7cm)	31" (78.7cm)	33" (83.82cm)	35" (88.9cm)	37" (94.0cm)
Panel "G"	14 <sup>1</sup> / <sub>2</sub> " (36.83cm)	16 <sup>1</sup> / <sub>2</sub> " (41.27cm)	18 <sup>1</sup> / <sub>2</sub> " (46.35cm)	20 <sup>1</sup> / <sub>2</sub> " (52.07cm)	22 <sup>1</sup> / <sub>8</sub> " (55.9cm)
Panel "H"	10 <sup>1</sup> / <sub>2</sub> " (26.67cm)	12 <sup>1</sup> / <sub>2</sub> " (31.7cm)	14 <sup>1</sup> / <sub>2</sub> " (36.83cm)	16 <sup>1</sup> / <sub>2</sub> " (41.91cm)	18 <sup>1</sup> / <sub>8</sub> " (46.0cm)

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## APPENDIX “D”

- **Mitering Circular / Radius Wall Formula.....D - 1**
- **Mitering Formula for Various Wall Angles.....D - 2**

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[Interactive Mitering Circular / Radius Wall Formula](#)

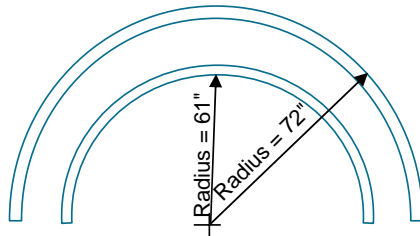
(This link will open up an Excel spreadsheet - you must have Excel installed on your computer)

**IntegraSpec® CIRCULAR WALL WITH 72.0 INCH RADIUS & 6 INCH CONCRETE CORE (Bottom of page)**

**DESCRIPTION**

When assembling a circular wall, the IntegraSpec panels on the interior side of the wall (inside arc) needs to be cut vertically and a piece (wedge) of panel removed between each spacers (every 8") to match the exterior arc length.

**EXAMPLE FOR A 72 INCH RADIUS WALL WITH 6" CONCRETE CORE:**



Step 1: Find the outer Circumference (Radius X 2 X 3.1415833 = C1 (Outer Circumference))  
 i.e.  $C1 = 72" \times 2 \times 3.1415833 = 452.3879"$

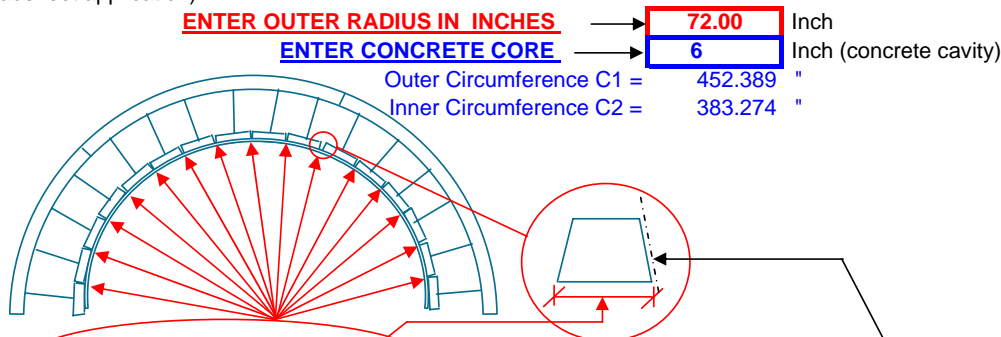
Step 2: Find the inner Circumference (Radius x 2 - (overall wall thickness X 2) X 3.1415833 = C2 (Inner Circumference))  
 i.e.  $C2 = 72" \times 2 - (11" \times 2) \times 3.1415833 = 383.27316"$

Step 3: Divide the outer circumference by 8" (C1/8" = N1) = No. of Spacers in Circumference  
 i.e.  $N1 = 452.3879" / 8" = 56.548487$

Step 4: Subtract the Inner circumference from the outer circumference (C1 - C2 = D1) = Outer & Inner Arc length difference  
 i.e.  $D1 = 452.3879" - 383.27316" = 69.11474"$

Step 5: Divide D1 by N1 = D2 (D2 = length for the section of panel to be removed between spacers on interior radius panels)  
 i.e.  $D2 = 69.11474 / 56.548487" = 1.2222" = 1 \frac{1}{4}"$  wide piece to remove in the center, between spacers

(Excel Spreadsheet application)



**REMOVE A WEDGE PIECE OF 1 1/4" WIDE, CENTER & BETWEEN EACH SPACERS OF THE (INTERIOR ARC) PANELS**

The interior cut piece measurement is **6 3/4"**. Set miter saw at **3.2 Degrees** (to cut wedge(s))  
 Will require **57 pieces per row (full circle)**  
**28 pieces per row (half circle)**  
**14 pieces per row (quarter round)**

**Important Note:** For sharper radius (60 inches or less); to allow panels to bend more easily, it will be necessary to perform cut lines part way through the panel's inside face (concrete side), of the exterior arc. This is done by cutting the panel(s) vertically and part way (half to two third) into the EPS (concrete side). Do this once or as required and keep cut(s) centered between spacers.

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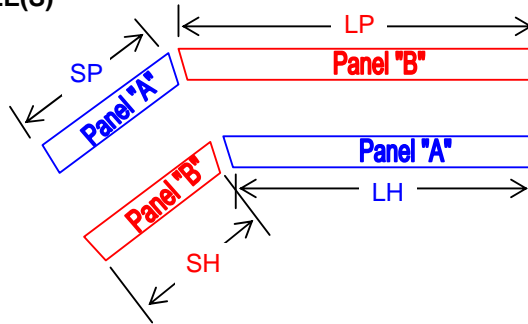
## Interactive Mitering Formula for Various Wall Angles

(This link will open up an Excel spreadsheet - you must have Excel installed on your computer)

### MITERING IntegraSpec® WITH STANDARD PANELS WITH **6.0** INCH CONCRETE CAVITY FOR **45** DEGREE CORNERS / ANGLE(S)

#### DESCRIPTION

LH = Long Heel (1st part of panel "A")  
 SP = Short Point (2nd part of panel "A")  
 SH = Short Heel (1st part of panel "B")  
 LP = Long Point (2nd part of panel "B")



1st Panel cuts = SP + LH = Panel "A"  
 2nd Panels cuts = LP + SH = Panel "B"

NOTE: Two Mitered Standard IntegraSpec® Panels ("A" & "B") as per Formula provided below = One Angled Corner Complete Block (no wastes). \*\*\*For best results, use a sliding miter saw\*\*\*

### MITERING FORMULA EXAMPLE FOR 6" CONCRETE WALL:

$d = \text{TAN}(\text{Degree}/2) \times 11"$  (overall wall width)  
 $SP = d/2 - 1/8" + 16"$   
 $SH = SP - d$   
 $LP = SP + 16"$   
 $LH = LP - d$

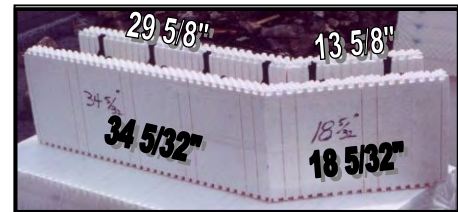


Fig. E.1  
45 Degree Mitered Corner

### 45 Degree CORNER MITER CUT EXAMPLE

Cutting Angle = 22.5 Degree

$d = \text{TAN } 22.5^\circ \times 11" = 4.56$   
 $(.4142) \times (11) = (4.56)$

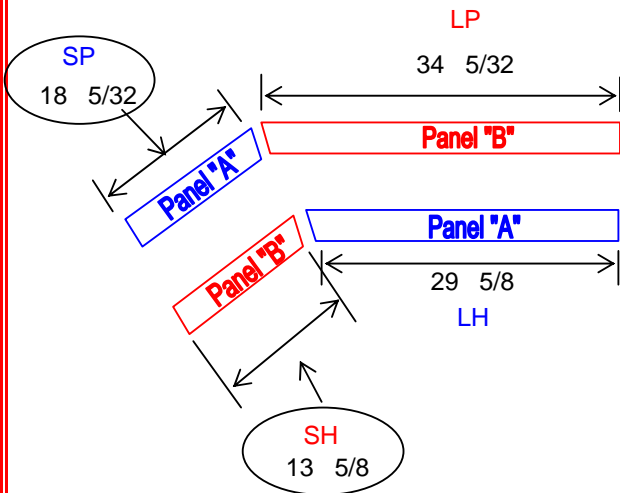
$SP = 4.56/2 - 0.125 + 16" = 18.153" = 18 \frac{5}{32}"$   
 $SH = 18.153" - 4.56 = 13.59" = 13 \frac{5}{8}"$   
 $LP = 18.153" + 16" = 34.15" = 34 \frac{5}{32}"$   
 $LH = 34.15" - 4.56 = 29.59" = 29 \frac{5}{8}"$

(Excel Spreadsheet application)

**ENTER DEGREE OF ANGLE / CORNER BLOCK DESIRED IN BOX** →  Degree (angle)

**ENTER CONCRETE CORE / CAVITY SIZE IN BOX** →  Inch (concrete cavity)

(Panel "A") SP = 18.153" = 18 5/32"  
 (Panel "B") SH = 13.597" = 13 5/8"  
 (Panel "B") LP = 34.153" = 34 5/32"  
 (Panel "A") LH = 29.597" = 29 5/8"



#### CUTTING PROCEDURES:

Set Miter Saw @  Degree

1st Panel: Cut at measurement intersection of SP with your saw set at cutting angle shown above. Piece remaining = LH.

2nd Panel: Cut at measurement intersection of LP with your saw set at cutting angle shown above. Piece remaining = SH.



## APPENDIX “E”

- **Warranty..... E - 2**

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## PHIL - INSUL CORPORATION

### *30 Year Materials Limited Warranty on IntegraSpec Insulating Concrete Forms*

Phil - Insul Corporation gives the following Product Warranty to the first owner of a structure in which Phil - Insul Corporation's Product, "IntegraSpec" (the "Product") has been installed in Canada and the United States by an IntegraSpec field-trained authorized installer of the appropriate installation level. This Warranty is transferable to the first subsequent owner of the structure upon receipt of a written request for Warranty transfer by the original owner.

#### **A. Extent of Limited Warranty**

If the Product, or portions thereof, as a result of a manufacturer's defect in workmanship or materials (as determined by Phil - Insul Corporation) fails to provide insulation to the R-value level of R22 due to deterioration as a result of normal soil pressures or normal climatic conditions, Phil - Insul Corporation will pay, when the claim under this Warranty is made within 30 years from the date of installation of the Product, 100% of the Product purchase price.

For the purposes of this Warranty, the purchase price of the Product is the price at the time the claim is accepted by Phil - Insul Corporation which is normally charged by the authorized distributor of IntegraSpec to installing contractors in the territory where the Product which is the subject of the Warranty claim is purchased and shall be exclusive of all other costs, including labour, to remove existing Product and replace with new Product.

**IMPORTANT: FOR THIS WARRANTY TO BE EFFECTIVE, ALL THE FOLLOWING CONDITIONS MUST BE SATISFIED, AS REASONABLY DETERMINED BY PHIL - INSUL CORPORATION:**

- a) The Product must have been purchased from Phil - Insul Corporation or an authorized Distributor for installation in Canada or the United States;
- b) The first owner of the structure must register this Warranty within 120 days after installation. Registration is completed by sending to Phil - Insul Corporation, at the address indicated below, a completed Warranty Registration Card;
- c) This product must be properly installed in accordance with applicable Building Code Standards and Phil - Insul Corporation's installation procedures; and
- d) Defects in the Product must not result from misuse, abuse, improper storage, improper installation or repair, alteration or modification to the Product, defects in the surface coverings, including waterproofing membranes, or due to unusual physical elements including climatic conditions.

Claims made under this Warranty must be made in writing to Phil - Insul Corporation at the address below within the life of the Warranty for a particular claim as described above. Phil - Insul Corporation shall be permitted a reasonable opportunity to inspect the site with respect to which a claim is made in order to determine if this Warranty is applicable.

#### **B. Limitations of Warranty**

PHIL - INSUL CORPORATION DOES NOT MAKE ANY OTHER WARRANTY OF ANY KIND, WHETHER EXPRESS OR IMPLIED, WITH RESPECT TO THE PRODUCTS AND PHIL - INSUL CORPORATION SPECIFICALLY DISCLAIMS THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE.

To the extent allowed by law, the remedies provided by this Warranty are the customer's sole and exclusive remedies. No distributor or dealer is authorized to expand or enlarge upon this Warranty.

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**C. Limitations of Liability**

EXCEPT FOR THE OBLIGATIONS SPECIFICALLY SET FORTH IN THIS WARRANTY, IN NO EVENT SHALL PHIL - INSUL CORPORATION BE LIABLE FOR ANY DIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, WHETHER BASED ON CONTRACT.

**PHIL – INSUL CORPORATION  
11U - 735 ARLINGTON PARK PLACE  
KINGSTON, ONTARIO, K7M 8M8  
CANADA**

Detach and return bottom portion of warranty. Form must be completely filled in to be valid

\* The IntegraSpec system is comprised of interlocking Expanded Polystyrene panels connected by High Impact Polystyrene spacers and filled with concrete.

**This Section To Be Completed By Approved Installer**

**This Section To Be Completed By Building Owner**

Installer Name: \_\_\_\_\_

Name: \_\_\_\_\_

Date of Project Completion: \_\_\_\_\_

Address: \_\_\_\_\_

Phil – Insul Corp Distributor: \_\_\_\_\_

City: \_\_\_\_\_

Address of project: \_\_\_\_\_

Prov./ State: \_\_\_\_\_ Postal / Zip: \_\_\_\_\_

Number of Levels of IntegraSpec: \_\_\_\_\_

Approved Installer's Signature \_\_\_\_\_

Building owner's signature \_\_\_\_\_

MAIL TO:  
Phil - Insul Corporation, 11U - 735 Arlington Park Place, Kingston, Ontario, Canada K7M 8M8

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