



The PolyPro®4000 Flat Wall Insulating Concrete Form (ICF) is an expanded polystyrene and polypropylene composite form for the construction of concrete walls that provide superior strength, durability, and energy efficiency over other methods of construction. Its core design creates a solid reinforced concrete wall of uniform thickness, and the stay-in-place expanded polystyrene insulation and integrated composite studs provides a stable foundation for the secure attachment of wall coverings, in addition to providing a superior effective R-value rating.

The standard Pro4000 ICF is a full 24" tall by 48" long and is held together with eight unique composite cross ties reinforced on both ends with a 1-1/2" wide by 23" tall composite furring studs for attaching interior and exterior finishes. They are recessed 1/2" below the surface of the form and are identified by vertical lines that run the full height of the form on each side of the studs, which are spaced every 6" on center. In the completed wall system, each attachment stud is rigidly anchored to the concrete.

The PolyPro®4000 is manufactured in 4", 6" and 8" core sizes and with the addition of the 6" tie extender, virtually any core size (in 2" increments) can be achieved. The PolyPro Panels are each 2 1/2" thick making the overall width of the form the core size plus 5" (see page 11). Molded 90° corners are available in 6" and 8" core sizes and others can be field assembled from straight panels using the table on page 12.

This Installation Guide for the PolyPro®4000 Insulating Concrete Form is intended to provide a basic overview of the steps necessary for an experienced construction professional to successfully install PolyPro walls using this stay-in-place forming system. For more detailed and complete instructions, design assistance, and construction tips and techniques, the installer is advised to refer to the Installation Manual for the Pro4000, the Prescriptive Method for Insulating Concrete Forms in Residential Construction, ("Prescriptive Method") a trained and experienced PolySteel/ PolyPro Distributor and/or a licensed Structural Engineer. American PolySteel, LLC reserves the right to change, update, modify, or otherwise alter the techniques outlined in this guide, without notice, and the installer is advised to consult with a PolyPro Distributor or American PolySteel directly



for the latest information available on the proper design and installation of these Forms.

The procedures in this guide are designed to be in compliance with all building codes and the installer is advised to determine which codes have jurisdiction over the project to be constructed and to consult with the appropriate agency(ies), evaluation reports, and code officials to ensure compliance with these codes.

For more information on all PolySteel products, technical services and support, contact your local PolySteel/PolyPro Distributor or American PolySteel directly at 6808 Academy Parkway East NE, Building C-2, Albuquerque, NM 87109, (800) 977-3676. You can also visit our web site at www.polysteel.com.

Your Local PolySteel Distributor:



GETTING STARTED

Plan Ahead. You will need the proper tools, supplies, forming materials, concrete, and rebar to complete the job successfully. Below is a list of recommended items to consider before starting your project.

Tools. Most of the tools needed to install PolyPro Forms are the same as those used in other construction applications. The list below is designed to supplement a basic set of construction tools (hammers, saws, levels, pliers, tape measures, ladders, etc.) to make the installation of PolyPro go more smoothly.

- | | |
|---------------------|------------------------|
| Circular Saw | 4-Foot Level |
| Reciprocating Saw | String Line |
| Blades | Electric Hot Knife |
| Plumb Bob | Drywall (keyhole) Saw |
| Sledge Hammer | Cordless Drill |
| Deck Screws | Drill Bits |
| Extension Cords | Rebar Bender/Cutter |
| Nails | Chalk Line |
| Framing Square | Transit or Laser Level |
| Concrete Hand Tools | Wall Alignment System* |
| Top Rail | Rebar Twist Tool |

* Lumber, turnbuckles, or the ReechCraft Panel Jack Wall Alignment System.

Supplies. Some of the supplies you will need are unique to working with expanded polystyrene and/or concrete, in addition to the typical supplies you might find in your vehicle for any job.

- | | |
|--------------------------|---------------------|
| Rebar Saddles | Sun Screen |
| Nylon Electrical Ties | Rebar Twist Ties |
| Tie Wire | Permanent Markers |
| Foam2Foam Adhesive | Foam Applicator Gun |
| Reinforced Filament Tape | |

Forming Materials. Forming the walls requires PolyPro Forms, materials for window and door rough openings, and sleeves for utility penetrations. To estimate the number of

PolyPro Forms needed, complete the Estimating Worksheet in the back of this guide. (See page 13)

We recommend VBuck® for forming the rough openings for windows and doors, and the Estimating Worksheet indicates how to calculate the material requirements for this product. You may also use pressure-treated, or felt-protected, lumber for this application and should estimate accordingly for the lumber, screws, and anchors required.

PVC or metal pipe should be used to form and line the wall penetrations for utility access.

Concrete and Rebar. The number of PolyPro Forms and the structural design of the walls will determine the amount of concrete and rebar required. The Estimating Worksheet includes calculations for the proper amounts of these items.

THE ARC OF SUCCESS

Throughout the installation process, it is important to keep in mind three key elements of the PolyPro building system and how they relate to each and every procedure you execute.

Alignment. From aligning the stud markings on the outside of the forms as you stack them, the cuts you make in fitting the walls together, keeping things level as you progress, and plumbing the walls with your alignment system, keeping things in alignment both horizontally and vertically is critical to your overall success.

Reinforcement. Reinforcing the cuts made in the forms is as important as the proper selection, spacing, and placement of reinforcing steel in your PolyPro walls, with particular emphasis on openings and lintels.

Concrete. Proper design strength, slump, placement and consolidation of the concrete you use will ensure that all of your efforts result in the superior structural performance of your PolyPro project.



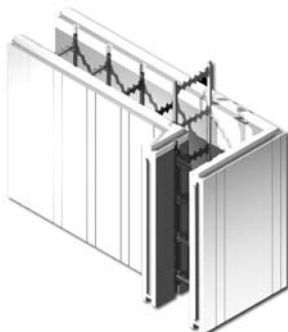
FOOTINGS

Install standard footings as required by site-specific soil conditions and in accordance with local codes. Footings should be level within 1/4" all directions. The PolyPro Installation Manual provides a general table of footing designs for a range of soil load-bearing capacities. At a minimum, #5 vertical dowels 16" in length, should be placed 8" into the footing every four feet to connect the footing to the PolyPro wall.

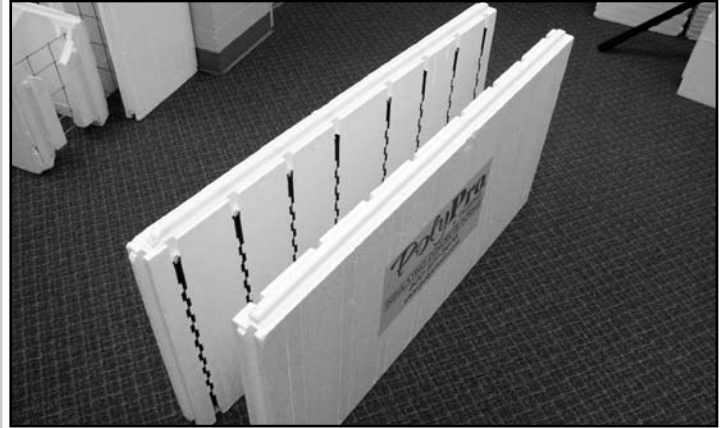


There should be at least 3" of concrete coverage between the soil and the bottom of the dowel. Although there may be conditions that require less rebar for this connection, this is the minimum recommended practice for PolyPro. Additional rebar may be required in high seismic areas and/or where severe lateral loads will be placed on the wall from soil, hydrostatic or wind pressure. Be sure to mark door openings to avoid placing dowels in these open spaces.

Snap a chalk line on the footing (or slab) to mark the outside of the PolyPro wall. Be sure to mark the location of window and door openings, including the height at which the bottom of the window rough openings is to be located.



FORM ASSEMBLY



Place two PolyPro panels upright on a flat level surface or in a pre-designed jig. Insert the end ties first, then slide in the remaining ties making sure they lock into place.

For PolyPro forms 10" and wider, slide the extender onto the tie prior to inserting them into the panels.



FORM PLACEMENT

Start placing forms at the corners and work towards the center of the wall or to the nearest window or door opening, which is the best location to place forms that need to be cut to fit. Shim or shave forms, as necessary, to adjust for the footing and level the first course of forms. Apply a foam adhesive (such as Foam2Foam) to the bottom of each form to secure it to the footing and to fill in any spaces that required adjustment to level.



FORM PLACEMENT (CONTINUED)

Set corner braces in place as soon as possible.

We recommend the ReechCraft® Panel Jack® Alignment System, however, the stability of PolyPro Forms allows you to use lumber for your bracing without concern for wall compression. See Bracing and Alignment below for proper installation and spacing. Check corners for plumb at regular intervals as the walls go up.

Forms that have been cut to fit have potentially been weakened (depending on the distance between ties) and should be braced by placing a piece of plywood, OSB, or similar material, across the cut and screwing it to the furring strips on either side of the cut to reinforce it.

As you stack additional courses, be sure that the markings for the attachment studs line up so that there is a visible and continuous line that runs the entire height of the wall to provide for the easy attachment of wall coverings and finishes.

Apply a 1/4" bead of foam adhesive to the inside tongue of the form below to secure the forms together. Connecting the forms together improves the wall's stability, and helps minimize the bracing required.

Cut the forms as required to fit the dimension of the wall and/or to reach into the buck of the window or door opening. Cut the forms at least 3/8" less than required to avoid forcing the cut form into place. Forcing oversized forms into the wall can push the entire wall out of alignment. Any gap in the formwork of 1" or less can be easily filled with Foam2Foam, or a similar approved adhesive, without risk of a breach.

After the second course of PolyPro Forms is in place, and unless additional rebar is required by design, a horizontal band of reinforcing steel should be placed at 48" and below all window openings. See Rebar Placement below for the proper method of placement and attachment of this reinforcement.

PolyPro can easily be cut to accommodate any size or shape of the window or door desired. To form the rough openings for windows and doors, "bucks" (rough opening forming frames) should be built in advance to allow them to be placed into the

wall at the same time the forms are being placed.

WINDOW, DOOR & OTHER OPENINGS

We recommend using VBuck® for forming the block outs for doors and windows. VBuck® is a vinyl forming material designed specifically for PolyPro and other ICF's and is a self-squaring, stay-in-place buck system that eliminates a significant amount of labor and waste and significantly improves the look of your project and the ease of installing your doors and windows. VBuck® is readily available for the 4", 6", 8", and 10" PolyPro. Larger sizes are available by special order.

If you choose to use lumber to form your openings, it may be required to use wood that is pressure treated or covered with a felt material to prevent direct contact with the concrete. You must also use lag screws, ring shank nails, or anchor bolts to secure the buck back to the concrete.

Window and door bucks should be constructed to the rough opening dimensions required for the windows and doors, measuring from the inside face of the buck material used. Be sure to consult the manufacturer's specifications for the dimensions required. Place the bucks around the perimeter of the job site so that they are readily available for installation at the proper location.





WINDOW, DOOR & OTHER OPENINGS (CONT.)

All bucks require internal bracing to support the weight and movement of the concrete. VBuck® utilizes a triangular brace (the VBrace), which is secured on both sides of each corner with screws in pre-drilled holes. These braces also help ensure that the buck is square. For larger openings, additional vertical and/or horizontal bracing may be required.

Wood bucks require the same type of bracing, which can be constructed with an internal angled piece of lumber, or an external diagonal piece of 2x4 running across the face of the buck to hold it in place. Larger openings will also require additional vertical and/or horizontal internal bracing.

At this time, all openings for utility access into the building should be cut and sleeved with PVC or steel pipe. Large openings will also require additional vertical and/or horizontal internal bracing.

REBAR PLACEMENT

Rebar is placed in PolyPro walls for reinforcement of the entire concrete structure. Rebar is placed horizontally every 48" (or more often, as may be required), above and below every window opening, and at the top of the wall in the rebar cradles incorporated in the crossties. Rebar is placed vertically at specific intervals, depending on the structural design of the wall, and on the sides of all window and door openings.

Additional rebar is often required in the lintels over door and window openings, and may include supplemental stirrups to reinforce the concrete beam formed in these lintels.

The PolyPro Installation Manual and the Prescriptive Method both contain design tables for a variety of applications and can generally be used for projects within the scope of these tables without further design engineering.

All codes require that rebar be restrained from movement during the placement of concrete to ensure that it is cast in the proper location in the wall to achieve the desired structural objective. Tying rebar together with pre-looped

wire or nylon zip ties is one method of achieving this objective.

The rebar cradles molded into the crossties of the Pro4000 Forms are ideal for the placement of horizontal rebar. It is also possible to secure horizontal rebar in place by utilizing a steel "saddle" designed for PolyPro Forms. Staggering the placement of the horizontal rebar at each level creates a vertical box, which can capture the vertical rebar placed from the top of the wall and hold it in place during the concrete pour.

You may secure the bottom of the vertical rebar within a 1-1/2" tall "ring" of 1-1/2" diameter or larger, if required, PVC pipe collared over the dowel protruding from the footing or slab. If there is no dowel that corresponds to the vertical rebar being installed, create an impression in the concrete (with a funnel or piece of rebar) at the time it is poured, or drill a hole in the poured concrete which will allow the vertical bar to rest securely in place.

When the top of the vertical rebar is tied to the horizontal rebar and the bottom is secured as suggested above, you have met the code requirements of the rebar and the labor traditionally used to tie all of the rebar together is eliminated.

For doors and windows, the minimum rebar required is a #4 bar within 12" of all sides of an opening. Depending on the load being carried by the opening, additional rebar is often required and should be placed in accordance with the proper design.

A continuous, or galloping, stirrup is also available through your PolyPro Distributor to replace the time, expense, and aggravations of tying multiple stirrups in lintels requiring this additional reinforcement.

If the walls will be continuing up beyond the level of the concrete pour, be sure to extend the vertical rebar sufficiently enough to provide for the required overlap (40 times the diameter of the rebar being used) or be sure to have sufficient rebar on hand to place overlapping dowels into the wet concrete at the time of the pour.

PolyPro Forms using the 6" extender, beginning with the 10" PolyPro, will be less stiff than the 4", 6", or 8" PolyPro Form.



REBAR PLACEMENT (CONT.)

The 6" extender connection to the insert creates a hinge. To counter the side-to-side movement of the assembled cross-tie during placement of concrete, it is recommended that the horizontal rebar be tied to the cross-ties at 24" o.c. in the 10" and larger PolyPro Forms.

TRIMMING THE TOP OF THE WALL

When you reach the top course of forms on the wall, and before placing your top piece of rebar, do not glue the forms into place. Set them to the top of the wall and re-confirm the plate height desired by the person doing the interior framing. Establish the desired plate height, snap a chalk line across the top of the forms to match, then remove the forms and cut them so that the wall will be perfectly level and at the height desired. This one step will earn you many friends in the framing community and make the rest of the project go as smoothly as possible.

BRACING



Proper bracing will ensure straight walls. A variety of wood, steel, and aluminum bracing systems and methods are available and, as mentioned above, we recommend the ReechCraft® Panel Jack® Alignment System for builders who use PolyPro frequently. Whatever bracing system is used, we recommend one that utilizes an adjustable turnbuckle that allows for adjustment of the bracing to properly align the walls.

As mentioned above, corner braces should be installed as soon

as possible and checked periodically to ensure that the walls remain plumb. Once the walls are fully formed, intermediate vertical bracing should be placed at intervals of 8 to 10 feet. If bracing is also to be used for scaffolding, braces may need to be placed closer together (e.g. every 6 feet) to meet OSHA guidelines. If a top rail or in-wall brace is used (see below) to straighten the wall at the top, this is all the vertical bracing that is required. If no top rail is used, both sides of each opening should also have a vertical brace attached and secured.

Once the bracing is in place, set a string line at each corner and adjust the bracing so that the wall is plumb from end to end.

To ensure that the wall is straight from end to end, corner to corner, we also recommend the installation of a top rail, or an internal brace ("in-wall brace"), that will keep the wall from moving out of alignment. The top rail can be constructed with 2x4 lumber, bridged across the top of the wall with 1x2 "ladder steps," or, more effectively, with sections of 1/8" angle iron placed on both sides of the wall and clipped together every 4-6 feet to secure the forms together. Consult with your PolyPro Representative on the use and availability of an internal brace for this purpose.

The addition of this top rail system eliminates the need to add vertical bracing to each end of the window and door openings.

FINAL CHECKLIST

Before ordering your concrete, it is strongly recommended that you develop and use a checklist of items to review to make sure that the project is ready to pour. This list should include such items as:

- ✓ The forms are properly secured to the footing.
- ✓ All corners are securely braced.
- ✓ All rebar is properly installed.
- ✓ All cut and/or structurally modified forms are properly reinforced.
- ✓ All window and door openings are braced,



- plumb, and square.
- ✓ All penetrations for plumbing, electrical, and other utilities are in place and properly located.
- ✓ All anchor bolts are installed, or marked.
- ✓ All walls are plumb and all bracing is secured.

Your checklist should also include any and all items unique to your project that may be affected by being improperly cast in concrete, and/or any other items you have developed in your own installation experience. The key is that you calmly walk around your job to ensure that it is ready.

CONCRETE ORDERING & PLACEMENT

A successful concrete pour for a PolyPro project is a direct result of proper planning and preparation (which you have already done), ordering and receiving the proper concrete mix, placing it in the walls and ensuring good consolidation.

Concrete Mix Design. The best mix design for a typical PolyPro project is as follows:

Strength:	2,500 psi.
Aggregate:	3/8" to 3/4"
Slump:	5-6 inches out of the pump.

Fly ash can be used, as well as super-plasticizers, although they are not required.

The volume of concrete you order is determined by the amount you calculated on the Estimating Worksheet.

Slump Test. Once ordered, you must ensure that the



concrete you require has been delivered by performing a slump test on each and every truck that arrives on the job. The PolyPro Installation Manual provides

detailed instructions on how to conduct a slump test.

Concrete Placement. CAUTION! All water, ice, or debris must be removed from the forms before placing concrete. This includes the tools, pencils and sandwich wrappers you may have dropped in the walls during construction.

Concrete can be placed in PolyPro walls in a variety of ways:

- Directly from the chute of the concrete truck. An elephant trunk can be attached to end of the chute to better direct the flow of concrete into the walls.
- Lifted and delivered with a conveyor truck, if the job site allows for complete access.
- Pumped through a hose from a trailer pump, which provides a smooth flow of concrete, but requires sufficient labor and/or the guard rail of a roll-around scaffold to move the hose around.
- A boom pump, which can extend the full range of the project and provide a regulated and direct flow of concrete to the walls on demand. This method requires a reduction in the velocity of the concrete through the hose by attaching a double-90° bend in the hose with a fixture designed to slow the concrete and/or a reducer hose that slows the concrete as it reduces the hose dimension to 3" diameter.

CAUTION! You should always dump the initial solution used to prime the pump, as it is highly liquid and could cause a bulge or blow out in your initial pass.

Whatever method is used, concrete should be placed in the PolyPro walls at a rate of 4 feet per hour, with multiple passes being used to reach a typical 8 to 12-foot wall height. The concrete should be placed uniformly along the wall avoiding the tendency to force the concrete to flow through the crossties. The crossties are plastic and if too much side-to-side pressure is applied the crossties could break causing the form to bulge or blow out.



CONCRETE ORDERING & PLACEMENT (CONT.)

The space under windows will be partially filled with the flow of concrete into the walls on both sides. The space directly below the windows should be done after the walls are filled.

Consolidation. Placement of the concrete should begin at a corner and, while working around the perimeter of the project, consolidated by the crew by:

- ✓ Tapping on the wall with a block of wood, or
- ✓ Using an orbital sander directly over the attachment studs, without paper attached, or
- ✓ Utilizing a 1” “pencil” vibrator, cordless or standard.

Whichever method is used, two people should be walking the wall below the person placing concrete to communicate the status of the consolidation and to move the placement forward.

Care should be taken to clean the concrete off of the rebar above the level of the pour to minimize the possibility of voids on the next pass. Extreme care should also be given to achieving good consolidation around doors and windows, as these areas are prone to voids and are structurally dependent on good consolidation.

If the wall is going to continue beyond the initial pour, stop the pour 4-5 inches below the top of the wall and leave the finish rough, so as to provide a good bond with the next level of concrete.

If the wall is complete to the top plate, level the top of the wall with a trowel and place anchor bolts, or hurricane straps, into the concrete at the required intervals.

Be sure to take the time to clean up your job site when you are finished, including any loose concrete that is left on the surface of the walls. A few minutes spent at this task will go a long way towards improving your image and satisfying your customer.

INTERMEDIATE FLOORS

To install ledgers for an intermediate floor system, we recommend using the Simpson ICF Ledger Connection System (Model #'s ICFVL, ICFVL-W, ICFVL-CW). This system includes a bracket that is placed through the foam into the concrete, and is cast in place to provide a secure anchor for the joist hanger which is attached with an engineered screw pattern of manufactured anchors. This system eliminates the removal of foam, extends the required distance between hangars, and is backed by Simpson engineering.

Alternative methods of anchoring floor ledgers to PolyPro walls require the removal of foam every 12 inches to accommodate the installation of one or two anchor bolts, depending on the span of the floor and its load requirements, and the installation. Details of these methods can be found in the PolyPro Installation Manual or the Prescriptive Method.

INSTALLATION OF UTILITIES

Electrical and plumbing lines install easily, and in accordance with code requirements, into PolyPro walls by simply cutting a channel into the foam after the concrete is placed and placing the wiring or piping into the channel. As there is fully 2-1/2” of foam insulation in the finished wall, you can fit a 2-1/2” O.D. diameter pipe or electrical conduit into the wall without any additional preparation.

The channel is cut into the foam using a hot knife, or a router, which provides the necessary depth to meet code requirements. Electrical offset boxes can be cut in a like manner and screwed to the attachment stud with mechanical security, or glued into the wall with a foam adhesive.



EXTERIOR FINISHES

Virtually any finish material can be attached to PolyPro walls through either a mechanical or adhesive bonding method.

If the PolyPro walls have been exposed to the sunshine for an extended period of time, they may develop a coating of oxidation that must be removed prior to applying any finish that requires physical bonding to the foam. This coating is powdery to the touch and often yellow in color, but does not reflect a defect in the forms. It is simply removed with a stiff brush and can be washed off with water to provide a clean substrate for the finish material to be applied.

Waterproofing. PolyPro is not waterproof and must be waterproofed for below grade applications. Accordingly, we recommend a 60-mil peel-and-stick waterproofing membrane, such as Protecto Wrap®, which provides an overlapping seam and a uniform barrier for waterproofing PolyPro basements.

We also recommend the Platon® foundation protector, a dimpled high-density polyethylene sheeting material that is mechanically attached to the PolyPro wall with their patented clips.

Other waterproofing coatings may be applied to PolyPro walls as long as they are compatible with polystyrene and do not have mineral spirits in sufficient quantities to erode the foam. Check with the manufacturer before applying any of these coatings.

Whatever waterproofing system is used, it is important that it is protected during backfilling so as not to breach the system.

Siding. Any type of vinyl, wood, metal, or cement board siding can be attached to PolyPro walls directly to the attachment studs.

Brick, Stone, and Masonry. Brick and other masonry ties can be mechanically attached directly to the attachment studs to allow for the secure attachment of any type of brick, stone, or masonry veneer. There are a variety of methods to create and incorporate a brick ledge into a PolyPro wall

that will support a complete veneer of any size. Refer to the Installation Manual or consult with a PolyPro Representative to determine the best method for your project.

Stucco and EIFS. Traditional stuccos are attached to PolyPro walls by attaching the lath directly to the attachment studs and adding whatever additional coatings are required by the manufacturer.

PolyPro also provides the ideal substrate for synthetic acrylic coatings, also known as EIFS (exterior insulating finishing systems), as our walls do not have wood, or the cavities that collect the damaging moisture so common to the problems associated with EIFS and wood-framed structures.

INTERIOR FINISHES

Drywall. The most common material used in finishing interior walls, drywall, can be attached (screwed) directly to the attachment studs in our PolyPro walls, located every 6" on center.

Plaster, paneling, or any other interior finish can be applied to PolyPro with an ease and efficiency not common to other wall systems.

Cabinets. While we recommend the attachment of 1/2" plywood behind heavy cabinets for the convenience of the cabinet maker, you can also attach a sheet of 24 to 26-gauge sheet metal to the Polypro Forms before the installation of the drywall behind the cabinets to provide an unrestricted attachment surface for large cabinets.



SUPPLEMENTAL APPLICATIONS

There are a number of additional tips and techniques available to assist you in the installation of the PolyPro 4000 ICF.

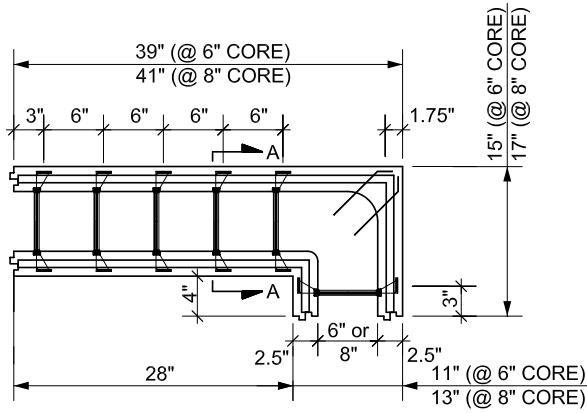
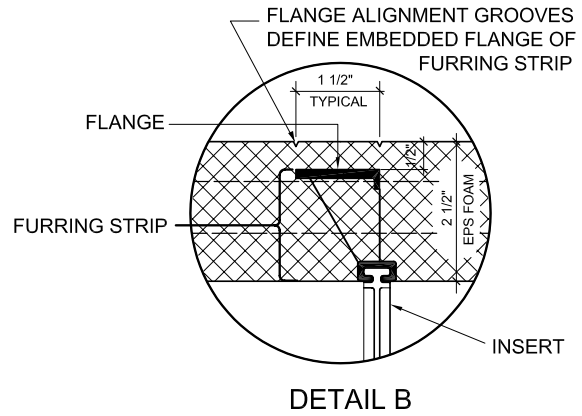
A few of the topics not covered in this Installation Guide are:

- | | |
|-------------------------------------|--------------------|
| Cutting Special Angles | Crawl Space Vents |
| Forming Intersecting Walls | Blow Out Repair |
| Transitioning Forms | Basement Design |
| Termite Treatments and Applications | Brick Ledge Design |

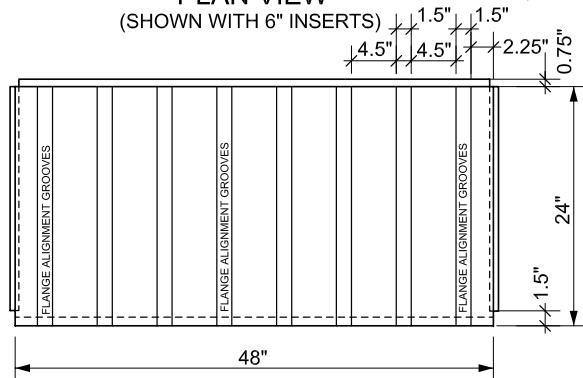
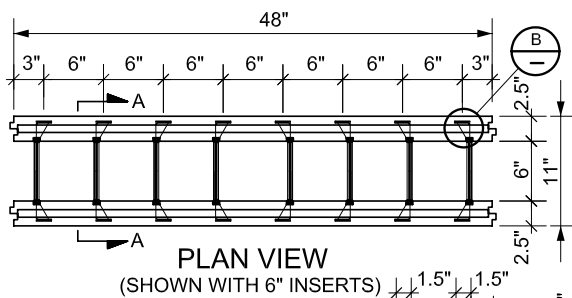
For these and other topics of interest, and a more detailed explanation of the topics covered in this Installation Guide, consult your Distributor, the Installation Manual, or the Prescriptive Method discussed above.

PRODUCT DESCRIPTION & ITEM NUMBERS

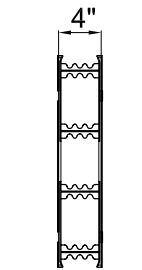
Product Item Number	Product Description	Outside Length	Sq. Ft. Outside Wall Area	Forms per Yard of Concrete	Sq. Ft. Wall Area per Yard of Concrete	Forms per Bundle
Pro-4000	PolyPro Panel	48"	8.00	N/A	N/A	5
Pro-4690	6" 90 Corner	54"	9.00	7.50	67.50	24
Pro-4890	8" 90 Corner	58"	9.67	5.50	53.00	24
PolyPro 4"	4" Straight	48"	8.00	10.125	81.0	5
PolyPro 6"	6" Straight	48"	8.00	6.75	54.0	5
PolyPro 8"	8" Straight	48"	8.00	5.0625	40.5	5
PolyPro 10"	10" Straight	48"	8.00	4.05	32.4	5
PolyPro 12"	12" Straight	48"	8.00	3.375	27.0	5



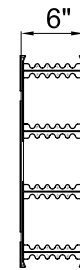
PLAN VIEW @ 90° CORNER
(RIGHT-HAND SHOWN)



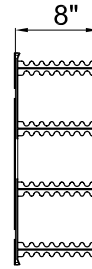
SIDE VIEW



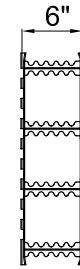
4" INSERT



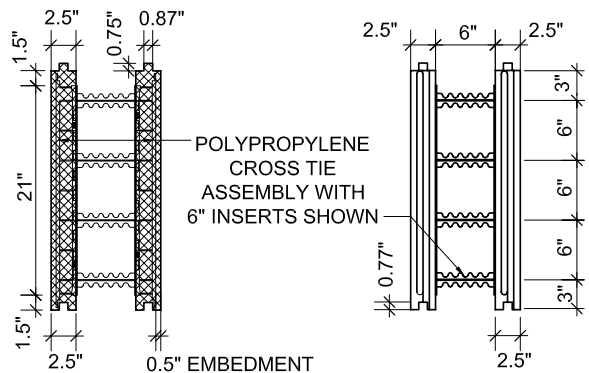
6" INSERT



8" INSERT



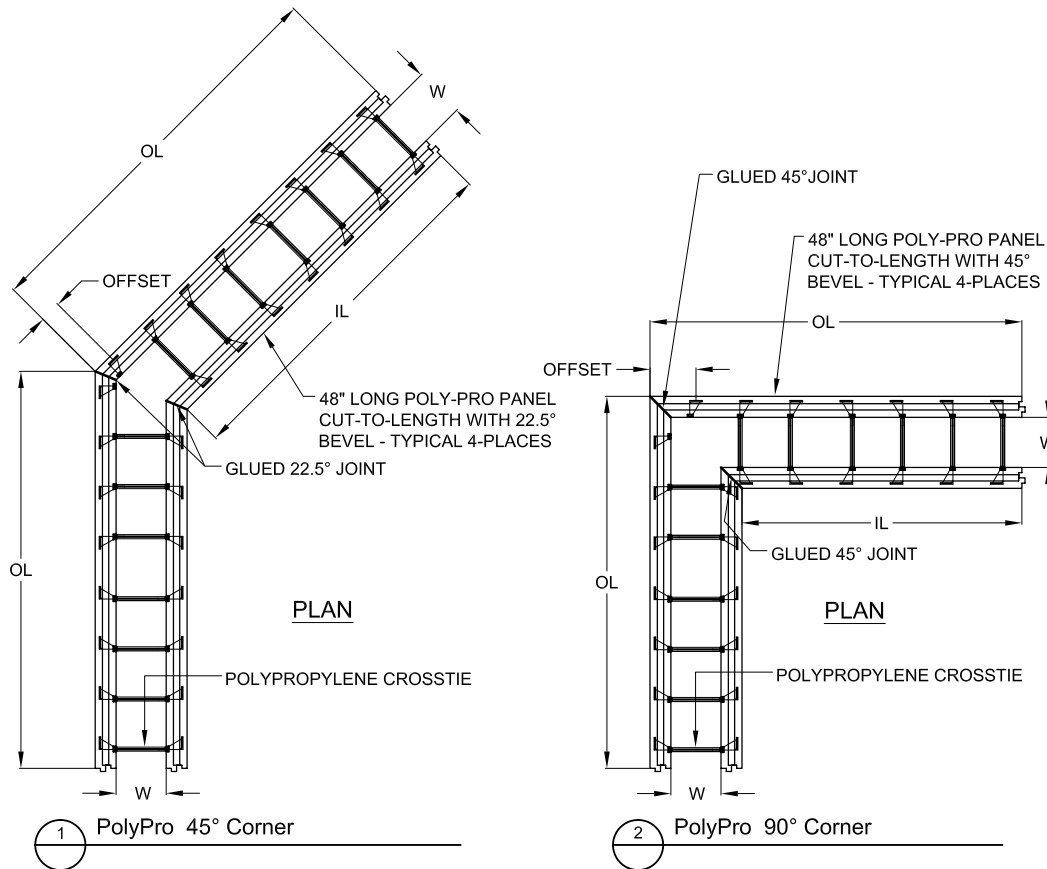
6" EXTENDER



SECTION A-A

END VIEW

(SHOWN WITH 6" INSERTS)



FIELD ASSEMBLED 45° AND 90° CORNERS

PolyPro Corner	Core Width (W)	Outside Leg (OL)	Inside Leg (IL)	Offset	Sq. Ft. Outside Wall Area	Forms per Yard of Concrete	Sq. Ft. Wall Area per Yard of Concrete
4" - 45°	4"	47.5"	43.75"	2.5"	15.83	5.33	84.37
6" - 45°	6"	47.5"	43"	2.5"	15.83	3.58	56.67
8" - 45°	8"	47.5"	42"	2.5"	15.83	2.72	43.06
10" - 45°	10"	47.5"	41.25"	2.5"	15.83	2.19	34.67
12" - 45°	12"	47.5"	40.5"	2.5"	15.83	1.84	29.13
4" - 90°	4"	43"	34"	4"	14.33	6.31	90.42
6" - 90°	6"	44.5"	33.5"	5.5"	14.83	4.15	61.54
8" - 90°	8"	43"	30"	4"	14.33	3.33	47.72
10" - 90°	10"	43"	28"	4"	14.33	2.74	39.26
12" - 90°	12"	44.5"	27.5"	5.5"	14.83	2.25	33.37



ESTIMATING WORKSHEET

FORMS

1. _____ Total Wall Lengths Divided by 4 = _____ Forms per course
 2. _____ Forms Per Course X _____ Courses = _____ Gross Wall Forms
 3. _____ Gross Wall Total – _____ Window and Door Area Forms* = _____ Net Wall Forms
 4. _____ Corners X _____ Courses = _____ Corner Total
 5. _____ Net Wall Forms - _____ Corner Forms = _____ Straight Form Total
 6. _____ Straight Form Total x 2 = _____ Pro 4000 Straight Panels
 7. _____ Straight Form Total x 8 = _____ PolyPro Ties for Straight Panels
 8. _____ Corner Total x 2 = _____ Pro corner Panels (only available in 6" and 8")
 9. _____ Corner Total x 6 = _____ PolyPro Ties for Corner Panels
- * Take window and door opening area X 80% then divide by 8 to determine forms to be deducted for openings.

REBAR

1. Horizontal. Perimeter length divided by 16 x number of horizontal rebar runs
2. Vertical. Perimeter length divided by foot spacing

CONCRETE

To calculate the amount of concrete needed for the project complete the following formula:

$$\text{Net wall forms} * * \times (\text{wall thickness}) \div 2 \times .05 = \text{Total Yards of Concrete}$$

V-BUCK

Perimeter of openings divided by 16. Round up and add 1 piece per 10 openings.

Window openings x 8 and door openings x 4 to determine number of corner connectors.