Construction Manual

Note: Information considered reliable at time of printing. Please visit www.diamondsnapform.com for latest information. June 2011
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General Recommendations

Diamond Snap-Form ICF Sizes

Diamond Snap-Form® ICF system consists of Foam-Control® EPS planks and Diamond Snap-Tie® connectors. The Diamond Snap Form® ICF planks are 1’ x 8’ and are factory cut to accept the Diamond Snap-Tie®. Diamond Snap-Tie® connectors are available to create a 6”, 8”, or 10” thick concrete wall. Consult DSF for further information.

Environmentally Safe

The Foam-Control® EPS for the Diamond Snap-Form® ICF system contains no CFCs, HCFCs, HFCs or formaldehyde and is recyclable. Foam-Control® EPS is inert, non-nutritive and highly stable. DSF encourages you to support recycling and energy conservation.

Warranty

Contact DSF for details regarding its R-value warranty.

Handling - Storage - Protection

DSF ICFs should be stored in a fully supported manner and protected from weather. Cover stored DSF ICFs with tarps or similar protective wraps.

EPS contains a flame retardant additive. However, the EPS should be considered combustible and used with code approved thermal barriers and should not be stored near any open flame or source of ignition. Do not install or use EPS with coal-tar pitch or highly solvent extended mastics, adhesives or sealants. Consult DSF for suggested adhesives, sealants, and assembly specifications not otherwise detailed in this manual.

DSF ICF walls must be covered with code approved weatherproof cladding systems (underlayment plus siding) when immediately practical. If wall cladding application is delayed (more than three weeks or if repeated exposure to precipitation is expected) apply temporary, breathable, weather-barrier underlayment to the exterior wall.

Thermal Barriers

All interior surfaces of the Diamond Snap-Form® ICF must be finished with a minimum 15-minute thermal barrier, such as 1/2” gypsum board. Consult your local code for exceptions and special uses. Apply code approved thermal barriers according to the manufacturer’s application specification.
Vapor Retarders

Vapor retarders and/or vapor barriers and their potential use in insulated concrete wall construction must be determined by consulting a Building Science Professional for your specific project location, site conditions, climate, construction methods, materials and the completed building assembly.

Disclaimer

Details, illustrations, pictures and guidelines provided herein give basic information and illustrate examples of DSF ICF System installation. The basic information provided herein is not intended to cover every potential use and application of the DSF ICF System. It is the responsibility of the installer to become familiar with the job site specific application and determine if the DSF ICF System is suitable. By commencing work, the installer accepts full responsibility for the proper and safe installation of the DSF ICF System at their job site. Furthermore, it is the sole responsibility of the installer to meet all federal and local regulatory requirements for job site safety for themselves, their workers and any others on the job site while in the execution of all phases of the DSF ICF System installation. Construction must be done in compliance with local building codes.
Diamond Snap Form® ICF
Installation Instructions

1.) Study all details thoroughly prior to starting Diamond Snap Form® installation.
2.) Footings shall be level, square, and of sufficient width to support the Diamond Snap Form® ICF System.
3.) Layout concrete wall dimensions on footings with chalk lines.
4.) Install outside toe plate (see DSF−001 for no toe plate installation method), vertical outside corner, T−intersection and opening braces. Plumb and secure all bracing. (DSF−002, DSF−004, DSF−005) The contractor is responsible for providing adequate bracing of the Diamond Snap Form® ICF system.
5.) Install first course of ICF. Level as required. (DSF−001, DSF−002, DSF−009)
6.) Install inside toe plate (DSF−002 or for no toe plate installation method see DSF−001).
7.) Install all courses of Diamond Snap Form® ICF wall starting from corners. Cut planks to fit wall.
8.) Place rebar vertically and horizontally as required. Use Diamond Snap Tie® rebar cradles for positioning of the horizontal reinforcing. Do not drag rebar over ties.
9.) Maximum unsupported distance horizontally or vertically is 7”.
10.) For openings (i.e., windows, doors, etc.) and wall terminations, consult Diamond Snap Form® details.
11.) Install walkway and vertical braces (DSF−002, DSF−002a) or other approved methods to support workers. This walkway may be used to plumb the wall.
12.) Concrete should be 5” slump, 3,000−4,000 psi strength, and maximum ¾” aggregate size.
13.) Plywood and bracing materials should be available at the job site for remediation of unforeseen circumstances that may occur during the concrete pouring operations.
14.) Service temperature of Diamond Snap Tie® is 20°F (−7°C) or warmer.

Updated 05−31−11

Diamond Snap Form® ICF
TITLE:
Installation Recommendations
Notes:
1.) Perform Guard- EPS insulated concrete form.
2.) Diamond Snap Ties. @ 12” o.c., each direction.
3.) Use Diamond Snap Half Ties at top and bottom of wall.
4.) Concrete wall thickness varies with Diamond Snap Tie size.
5.) Pour concrete in max. 4’ vertical lifts for walls up to 8” thick and max. 2’ vertical lifts for walls thicker than 8”.
6.) Perform Guard- EPS boards are typically 12” x 96” (nominal).
7.) Field modifications to forms may be made provided the maximum unsupported EPS distance horizontally or vertically is 7”.
8.) If field cutting EPS boards, install a Diamond Snap Tie @ all slot locations & joints, even if spaced closer than 12”.
9.) Joints in EPS planks do not need to be staggered.
10.) Do not use cracked or damaged EPS planks or Diamond Snap Ties.
11.) Set factory cut corner pieces first. Build from corners to middle of wall, using field cut pieces as needed to complete wall.
Diamond Snap Half Ties @ 12" o.c.

Perform Guard EPS footings

Fasten Diamond Snap Half Tie through tabs into footing
Bracing: Site-built wood system

Handrail 2x attached to vertical 2x.

2–2x ledgers for attaching planks.

Kicker to brace and plumb wall @ 6’–0” o.c. max.

2x brace for stabilizing legs.

Screw vertical 2x to half tie and first full tie. Use coarse threaded drywall screws, 2 each tie. Plumb ICF System before fastening vertical 2x to ties.

24” min suggested

Perform Guard: EPS

Plank for walking.

Diamond Snap Ties: @ 12” o.c. each way

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

2X4 toe plate, nail to footing, each side. See detail DSF–001 for no toe plate installation.

Vertical 2x’s laid flat to Diamond Snap Form® ICF. Space @ 6’0” o.c. max.

Footing

Section

Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Typical Wall Section

NO. DSF–002
Bracing: Metal Panel Jack™ System.

Perform Guard. EPS

Diamond Snap Ties. @ 12” o.c. each way

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

2X4 toe plate, nail to footing, each side. See detail DSF–001 for no toe plate installation.

Footing

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Typical Wall Section | NO. DSF–002a
Diamond Snap Half Ties.

Perform Guard. EPS

2x4 vert.

Diamond Snap Ties © 12” o.c. each way

Kicker as req’d.

7” max.

3/4” plywood.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Section
Scale: NTS

Diamond Snap Form © ICF

TITLE:
Wall Closure

NO.
DSF-003

Updated 05–31–11
Metal strapping @ 12” o.c. vertically, fastened to Diamond Snap Ties.

Diamond Snap Half Tie.

Perform Guard EPS

Diamond Snap Ties @ 12” o.c. each way

7” max.

3/4” plywood.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.
#8x3–1/2" coarse thread screws @ 6" o.c. vertically.

Treated blocking as req’d.

Perform Guard® EPS

Diamond Snap Ties® @ 12" o.c. each way

Corrosion resistant screws @ 12" o.c. if treated blocking is permanent.

Minimum 7/16" OSB, plywood, or 1X’s fastened to 2 columns of ties (24" min.), both sides.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Kicker as req’d.

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF
TITLE: Wall End Closure
NO. DSF–003b
2x4 vertical brace fasten to bottom toe plates.

Perform Guard. EPS

Diamond Snap Ties. @ 12" o.c. each way

7" max.

3/4" plywood.

Diamond Snap Half Ties. @ 12" o.c.

Wall cavity for concrete. Reinforce as req'd with rebar horizontally and vertically.

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form. ICF

TITLE: Wall Closure
NO. DSF-003c
Plan

Kickers @ 4'-0" o.c. vertically to plumb and brace the corner.

Min. 2x10 corner braces full height of wall. Attach with min. #8 screws @ 6" o.c. vertically.

Perform Guard® EPS
7" max.

Diamond Snap Ties®
@ 12" o.c. each way

See detail DSF–014, DSF–015

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Factory cut Perform Guard® EPS 90° corners. See mfr. for corner sizes corresponding to various concrete wall thicknesses.
Note: See DSF–004, for corner bracing requirements.

Perform Guard. EPS

See DSF–014a, DSF–015a.

8"  12"

6" Diamond Snap Half Ties  @ 12" vertically

Fasten corner with #6 coarse thread screws at each tie location.

Diamond Snap Tie slots @ 12" o.c. each way
Perform Guard. EPS

See DSF-014a, DSF-015a.

10"  12"

8" Diamond Snap Half Ties @ 12" vertically

Fasten corner with #6 coarse thread screws at each tie location.

Diamond Snap Tie slots @ 12" o.c. each way

Note: See DSF-004, for corner bracing requirements.
Note: See DSF-004, for corner bracing requirements.

Perform Guard EPS

See DSF-014a, DSF-015a.

12"  12"

10" Diamond Snap Half Ties @ 12" vertically

Fasten corner with #6 coarse thread screws at each tie location.

Diamond Snap Tie slots @ 12" o.c. each way

Plan
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE:
10" Fly By Corner Detail

NO.
DSF-004c
Kickers @ 48" o.c. max. vertically to plumb & brace 'L' support.

Perform Guard. EPS

Perform Guard. EPS cut to fit between Diamond Snap Ties. See Note 1 below.

7" max.

Diamond Snap Ties @ 12" o.c. each way

2-2x8 verticales to support EPS.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Factoy cut Perform Guard. EPS 90° inside corners. See mfr. for corner sizes corresponding to various concrete wall thicknesses.

Note 1:
6” System = 18” piece
8” System = 20” piece
10” System = 22” piece

Plan
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

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Perform Guard. EPS to plumb and brace L support.

Fasten corner with #6 coarse thread screws at each tie location.

Diamond Snap Ties @ 12" o.c. each way

Diamond Snap Half Ties @ 12" o.c. vertically

Wall cavity for concrete. Reinforce as req'd with rebar horizontally and vertically.

Note 1:
6" System = 30" piece
8" System = 32" piece
10" System = 34" piece
Field cut slots for Half Ties.

Plan
Scale: NTS

Updated 05–31–11
Kickers @ 4’-0” o.c. vertically to plumb and brace the corner.

See details DSF-014, DSF-015 (similar)

2x8 corner braces. Provide full height of wall.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Factory cut Perform Guard® EPS custom angled corners. See mfr. for corner sizes corresponding to various concrete wall thicknesses.
Temporary blocking. To be removed after concrete cures.

NOTE: When header depth exceeds 3’ see DSF–007e for bracing.

Window opening.

24” max.

16” o.c. max.

9–1/2” max.

DSF 007a

DSF 007b

notch for half tie @ corners to be field cut typ.

Notes:
1.) See details DSF–007a & DSF–007b for closure detail around the opening.
2.) Provide horizontal & vertical bracing to support blocking at the top & sides of the opening as required by opening size & forces developed from the concrete pressure & weight.
3.) Where wood blocking is to remain in place around the opening, use treated lumber.
4.) Once concrete is up to the level of the sill, screed off.
5.) Vinyl bucks may require different bracing. Follow vinyl buck manufacturer’s installation recommendations.

Elevation
Scale: NTS

Diamond Snap Form © ICF

| TITLE: Window Blockout | NO. DSF–007 |
Perform Guard EPS

1-1/2” min.

3’0” max.

Temporary blocking. To be removed after concrete has cured.

Vertical treated wood blocking beyond

Foam Control wood screws or non-corrosive equal @ 12” o.c. max. Install prior to concrete pour.

Diamond Snap Form Half Ties

Concrete

NOTE: When header depth exceeds 3’ see DSF-007e for bracing.

Fasten treated lumber to Diamond Snap Form Half Ties w/ non-corrosive screws.

Treated lumber typ.

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE: Wall Section at Window Opening NO. DSF-007a
Horizontal treated wood blocking beyond

Foam Control wood screws or non-corrosive equal @ 12" o.c. max. Install prior to concrete pour.

1-1/2” min. Diamond Snap Form Half Ties

Concrete

Perform Guard EPS

Fasten treated lumber to Diamond Snap Form Half Ties w/ non-corrosive screws.

Treated lumber typ.

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE: Wall Section at Window/Door Opening
NO. DSF-007b
NOTE: When header depth exceeds 3’ see DSF–007e for bracing.

Door opening.

24” max.

16” o.c. max.

DSF 007b

Temporary blocking.
To be removed after concrete cures.

DSF 007d

\[\text{\textbullet} \text{ notch for half tie @ corners to be field cut}\]

Notes:
1.) See details DSF–007b & DSF–007d for closure detail around the opening.
2.) Provide horizontal & vertical bracing to support blocking at the top & sides of the opening as required by opening size & forces developed from the concrete pressure & weight.
3.) Where wood blocking is to remain in place around the opening, use treated lumber.
4.) Vinyl bucks may require different bracing. Follow vinyl buck manufacturer’s installation recommendations.

Elevation
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

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Concrete

Perform Guard® EPS

Fasten treated lumber to Diamond Snap Form
Half Ties w/ non-corrosive screws.

1–1/2” min.

Temporary blocking to be removed after concrete has cured.

Foam Control® wood screws or non-corrosive equal @
12” o.c. max. Install prior to concrete pour.

Vertical treated wood blocking beyond

NOTE: When header depth exceeds 3’ see
DSF–007e for bracing.

3’0” max.

Diamond Snap Form Half Ties®

Concrete screws per engineer’s recommendations.

Treated lumber typ.

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Wall Section at Door Opening
NO. DSF–007d
Perform Guard. EPS

Diamond Snap Form Half Ties

Vertical blocking continuous to footing

Concrete

When header depth exceeds 3'0" add full height vertical bracing.

Fasten treated lumber to Diamond Snap Form Half Ties w/ non-corrosive screws.

Foam Control: wood screws or non-corrosive equal @ 12" o.c. max. Install prior to concrete pour.

Temporary blocking to be removed after concrete has cured.

Vertical treated wood blocking beyond

1-1/2" min.

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Header Section at Window/Door Opening

NO.
DSF–007e
Diamond Snap Half Ties @ 12" o.c. each way.

Shim in between ties and secure with wire.

2-#6 or #8 coarse threaded drywall screws.

Perform Guard: EPS factory cut ledger piece.

Diamond Snap Ties @ 12" o.c. each way.

Perform Guard: EPS

Wall cavity for concrete. Reinforce as req'd with rebar horizontally and vertically.

Section

Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE: Brick Ledge

NO. DSF-008
Perform Guard. EPS Diamond Snap Half Ties @ 12” o.c. horizontally.

Coarse thread screws used to hold blockout EPS in place.

EPS used for brick ledge blockout. Remove after concrete has set.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Diamond Snap Ties @ 12” o.c. each way.

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

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Perform Guard EPS

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Diamond Snap Half Ties @ 12” o.c. horizontally.

EPS or pressure treated ply shims as req’d to level first course of ICF system.

2x4 toe plate, nail to footing each side.

Note: This is an option to level the ICF System if the footing is not quite level.

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form ICF

TITLE: Leveling of 1st Course
NO. DSF–009
2X10 corner braces.

7" max.

Diamond Snap Ties @ 12" o.c. each way

Add blocking if additional horizontal resistance to concrete pressure is req'd.

Diagonal kickers @ 4'-0" o.c. to plumb and brace corner.

Note: See DSF-004 for information not covered in this detail.

Elevation

Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE: Corner Bracing

NO. DSF-011
Diagonal kickers @ 4’-0” o.c. vertically to plumb and brace L support.

Add blocking if additional horizontal resistance to concrete pressure is req’d.

2x8 angle brace to support EPS.

Diamond Snap Ties @ 12” o.c. each way 2x4 toe plate, nail to footing. See detail DSF-001 for no toe plate installation. Footing. Perform Guard. EPS

Elevation
Scale: NTS

Note: See DSF-005 for information not covered in this detail.

Updated 05-31-11
Note: Maximum unsupported EPS distance horizontally or vertically is 7”.

Note: Maximum EPS notch to notch distance horizontally is 12”

Factory cut notch (not used)

12” max.

Perform Guard. EPS field notched to accept Diamond Snap Tie.
Note: Max. 6” between field notches

Factory cut notches

EPS plank field cut to length

Perform Guard. EPS

Diamond Snap Ties @ 12” o.c. each way
2x4 toe plate, nail to footing. See detail DSF-001 for no toe plate installation.

Elevation
Scale: NTS

Updated 05–31–11
Perform Guard® EPS

Diamond Snap Half Ties®
@ 12” o.c. horizontally.

Secure anchor bolt with wire to DSF ties above and below.

Anchor bolt set @ proper location for brick angle. See detail DSF–105.

Note: after concrete sets, cut Perform Guard EPS to allow for placement of steel brick ledge. See DSF–105, DSF–105a.

Diamond Snap Ties®
@ 12” o.c. each way

Wall cavity for concrete.
Reinforce as req’d with rebar horizontally and vertically.

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Brick Ledge Angle Anchorage
NO. DSF–013
**Isometric—Outside**

Scale: NTS

Use Diamond Snap Half Ties or full Ties (with web cut down to 2\" max). Use 1 on each layer on alternate sides, for leveling planks in below grade exterior applications.

Note:
Place tie on bottom edge next to footing, all other layers place ties on top edge only.

**Isometric—Inside**

Scale: NTS

Diamond Snap Half Ties \( @ \) 12\" o.c. horizontally.

Note:
Field notch corner pieces as req’d to accept tie.
Diamond Snap Half Ties. @ 12” o.c. vertically.

Diamond Snap Ties. @ 12” o.c. each way

**Isometric—Outside**

Scale: NTS

Use Diamond Snap Half Ties or full Ties (with web cut down to 2” max). Use 1 on each layer on alternate sides, for leveling planks in below grade exterior applications.

Note: Place tie on bottom edge next to footing, all other layers place ties on top edge only.

**Isometric—Inside**

Scale: NTS

Diamond Snap Half Ties. @ 12” o.c. horizontally.

Note: Field notch corner pieces as req’d to accept tie.

Updated 05-31-11
Isometric—Outside
Scale: NTS

Use Diamond Snap Half Ties or full Ties (with web cut down to 2” max). Use 2 on each layer at each corner for leveling planks in above grade exterior applications.

Isometric—Inside
Scale: NTS

Factory cut Perform Guard EPS corners.

Note:
Place tie on bottom edge next to footing, all other layers place ties on top edge only.

Note:
Field notch corner pieces as req’d to accept tie.
Isometric—Outside
Scale: NTS
Use Diamond Snap Half Ties or full Ties (with web cut down to 2" max). Use 2 on each layer at each corner for leveling planks in above grade exterior applications.

Note: Place tie on bottom edge next to footing, all other layers place ties on top edge only.

Isometric—Inside
Scale: NTS

Diamond Snap Half Ties @ 12" o.c. horizontally.

Note: Field notch corner pieces as req’d to accept tie.

Diamond Snap Form ICF
TITLE: Above Grade Fly By Corner Application  NO. DSF-015a
Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Perform Guard- EPS

Diamond Snap Ties @ 12” o.c. horizontally.

Diamond Snap Half Ties @ 12” o.c. horizontally.

Treated 2x8 with 2-#6 drywall screws @ 12” o.c.

#6 drywall screw each side.

2x4 toe plate, nail to footing each side.

See detail DSF–114 for interior finishing suggestion.

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Baseboard Attachment

NO. DSF–017
Perform Guard, EPS

Diamond Snap Ties @ 12” o.c. horizontally

Diamond Half Snap Ties @ 12” o.c. horizontally

3/4”x4” OSB Strip continuous fastened w/ EPS foam compatible adhesive.

2x4 toe plate, nail to footing each side. See detail DSF-001 for no toe plate installation.

See details DSF-115, DSF-116 for interior finishing suggestion.

Wall cavity for concrete. Reinforce as req’d with rebar horizontally and vertically.

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

<table>
<thead>
<tr>
<th>TITLE:</th>
<th>NO.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baseboard Attachment</td>
<td>DSF-018</td>
</tr>
</tbody>
</table>
Perform Guard® EPS

Gypsum wallboard

Diamond Snap Ties® @ 12” o.c. each way

Concrete slab.

Sand layer.

Footing

Synthetic stucco finish system above grade. See mfrs. recommendation.

Diamond Snap Half Ties® @ 12” o.c. horizontally.

Polyethylene as protection over EPS compatible damp proofing or water proofing.

Gravel backfill.

Drain tile.

Soil.

Note: Damp proofing, water proofing and drainage as req’d. Do not use highly solvent extended coatings & mastics or coal tar pitch products on the Perform Guard® EPS.

SECTION
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE:
Typical Section – Finishes

NO.
DSF–100
Gypsum wallboard

Subfloor.

Floor joist.

Blocking.

Treated sill plate.

Sill sealer.

Diamond Snap Ties, @ 12” o.c. each way

Gypsum wallboard

Perform Guard, EPS

Exterior finish and underlayment as req’d by code.

R-Control SIP

Diamond Snap Half Ties, @ 12” o.c. horizontally.

Insect clip or flashing.

Caulk.

Anchor bolt as req’d by code.

Synthetic stucco finish system above grade. See mfrs. recommendation.
SECTION
Scale: NTS

Exterior finish and underlayment as req’d by code.

R-Control SIP

Diamond Snap Half-Ties @ 12” o.c. horizontally.

Insect clip or flashing.

Caulk.

Anchor bolt as req’d by code, or design for specific conditions.

Synthetic stucco finish system above grade. See mfrs. recommendation.

Gypsum wallboard

Subfloor.

Floor joist.

Blocking.

LSL sill plate, designed for wall load specific to project.

3/8” treated plywood. Diamond Snap Ties @ 12” o.c. each way

Perform Guard EPS

Diamond Snap Form® ICF

TITLE: Concrete Wall / Sill Plate

NO. DSF-102

Updated 05–31–11
LSL sill plate, designed for wall load specific to project.
Insect clip or flashing.
Caulk
Anchor bolt as req’d by code.
Synthetic stucco finish system above grade. See mfrs. recommendation.
Diamond Snap Ties @ 12” o.c. horizontally.
3/8” Treated plywood.
Diamond Snap Half Ties @ 12” o.c. horizontally.
Crawl Space
Horizontal H.D. Perform Guard. EPS
Soil
Perform Guard. EPS
Rebar in footing as req’d.

SECTION
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF
TITLE:
Shallow Footing using DSF
NO.
DSF–103
LSL sill plate, designed for wall load specific to project.

Insect clip or flashing.

Caulk

Anchor bolt as req'd by code.

Synthetic stucco finish system above grade. See mftrs. recommendation.

Diamond Snap Half Ties @ 12" o.c. horizontally.

R-Control SIP

Exterior finish and underlayment as req'd by code.

Gypsum wallboard

3/8" Treated plywood.

Diamond Snap Half Ties @ 12" o.c. horizontally.

Concrete slab, design by others.

Sand layer.

Soil

Perform Guard EPS

Rebar in footing as req'd.
Building paper (i.e. 15" asphalt felt.) or code accepted equivalent.

Gypsum wallboard

R-Control SIP

Brick ties as req’d.

Exterior face brick (design by others)

Diamond Snap Half Ties @ 12" o.c. horizontally.

Anchor bolt as req’d by code.

Flashing.

Weepholes.

Soil.

Polyethylene as protection over EPS compatible damp proofing or water proofing.

Diamond Snap Ties @ 12" o.c. each way

Gypsum wallboard

Perform Guard EPS

Galvanized steel angle & anchor bolt as req’d. Strip EPS and ties as req’d to place brick.

SECTION
Scale: NTS

Updated 05-31-11

Diamond Snap Form ICF

TITLEx:
Brick Angle Anchorage
NO.
DSF-105
Building paper (i.e. 15” asphalt felt.) or code accepted equivalent.

R-Control® SIP

Brick ties as req’d.

Exterior face brick (design by others)

Diamond Snap Half Ties @ 12” o.c. horizontally.

Anchor bolt as req’d by code.

Flashing.

Weepholes.

Soil.

Galvanized steel angle & anchor bolt as req’d.

Strip EPS and ties as req’d to place brick.

Polyethylene as protection over EPS compatible damp proofing or water proofing.

SECTION
Scale: NTS

Diamond Snap Form® ICF

Updated 05–31–11

TITLE:
Brick Angle Anchorage

NO.
DSF–105a
Lath or furring strips spaced as req’d. Fasten to concrete with concrete fasteners.

Gypsum wallboard

Diamond Snap Ties® @ 12” o.c. each way

Dry wall screws as req’d into the face of ties.

Perform Guard® EPS

Finish cladding and underlayment as req’d by code, furring strips as req’d and installed per cladding manufacturer’s recommendations.

SECTION
Scale: NTS

Diamond Snap Form® ICF

Updated 05–31–11

TITLE:
Gypsum & Siding Finishes

NO.
DSF–106
Gypsum wallboard

Diamond Snap Ties @ 12” o.c. each way

Dry wall screws as req’d into the face of ties.

Perform Guard EPS

EIFS adhesive

Note: Install all finish components according to exterior finish system manufacturers’ recommendations.

SECTION
Scale: NTS

Updated 05-31-11
Reinforcement screwed to ties as req’d.

Gypsum wallboard

Diamond Snap Ties
@ 12” o.c. each way

Dry wall screws as req’d into the face of ties.

Perform Guard® EPS

Exterior finish system.

Note: Install all exterior finish components according to exterior finish system manufacturers’ recommendations.

SECTION
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE:
Exterior Finish System

NO.
DSF–107a
3" Perform Guard. EPS with hidden tie horizontal cut.

Gypsum wallboard

Diamond Snap Ties® @ 12" o.c. each way

Dry wall screws as req’d into the face of ties.

Perform Guard® EPS

Exterior Insulation Finish System.

Note: Install all finish components according to exterior finish system manufacturers’ recommendations.

SECTION
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Hidden Tie Exterior Finish System
NO. DSF–107b
Beveled 2x blocking, toe nail with 16d nails @ 12” o.c. top and bottom.

EPS wedge infill piece.

Treated sill plate.

Sill sealer.

Diamond Snap Ties. @ 12” o.c. each way

Gypsum wallboard

Perform Guard. EPS

R-Control. SIP

R-Control. screw fastener as req’d.

Do–All–Ply™

Diamond Snap Half Ties. @ 12” o.c. horizontally.

Anchor bolt as req’d by code.

**SECTION**

Scale: NTS

Note: Install all exterior finish components according to exterior finish system manufacturers’ recommendations.

**Diamond Snap Form. ICF**

**TITLE:**
ICF Wall/ SIP Roof

**NO.:**
DSF–108

**Updated 05–31–11**
Provide truss anchorages as req'd for each specific design. Truss anchors not shown in detail.

Plated wood truss.

Diamond Snap Ties @ 12" o.c. horizontally.

Treated sill plate.

Soffit vent as req'd.

Sill sealer.

Anchor bolt as req'd by code.

Diamond Snap Ties @ 12" o.c. each way

Gypsum wallboard

Perform Guard, EPS

Note: Design member sizes and connections as req'd for each condition and/or project.

SECTION
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE: ICF Wall / Truss Roof

NO. DSF-109
SECTIONS

R-Control, SIP

Overlap waterproofing membrane a min. of 2” on the horizontal concrete surface.

Cladding system above grade. See mfr. recommendations.

Gypsum wallboard

Diamond Snap Ties @ 12” o.c. each way

ICF compatible waterproofing membrane and protection layer per mfr. recommendations.

Concrete slab.

Sand layer.

Soil.

Gravel backfill.

5” min.

Footing

Fillet.

Drain tile.

SECTION

Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE:
ICF Sheet Waterproofing

NO.
DSF–110
ICF compatible waterproofing membrane. Prestrip 6” of corner prior to application of membrane.

Diamond Snap Ties - © 12” o.c. each way

Perform Guard. EPS

ICF compatible waterproofing membrane.

Isometric – Outside
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

<table>
<thead>
<tr>
<th>TITLE: ICF Sheet</th>
<th>NO. DSF-111</th>
</tr>
</thead>
<tbody>
<tr>
<td>Waterproofing at Corner</td>
<td></td>
</tr>
</tbody>
</table>
SECTION
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: ICF Sheet
Waterproofing at Brick Angle

NO. DSF–112
Diamond Snap Ties® @ 12” o.c. each way

Subfloor & finished floor.

Expansion bolt as req’d by specific design.

Treated ledger beam as req’d by specific design.

Floor joist.

Joist hanger nail as req’d.

Dry wall screws as req’d into the face of ties.

Gypsum wallboard

Perform Guard® EPS
Treated sill plate

Diamond Snap Half Ties @ 12” o.c. horizontally.

Ledger board

Anchor bolt as req’d. by code.

Sill Sealer

Subfloor

Floor joist

Joist hanger

Simpson ICFVL-C (or ICFVL-CW) or equivalent w/ 8 Simpson ICF-D3.62 screws or equivalent as req’d.

Simpson ICFVL connector plate or equivalent pressed into face of EPS. Secure to nearest Diamond Snap ties with wire.

Diamond Snap Ties @ 12” o.c. each way

Perform Guard, EPS

Note 1: Design member sizes & connections as req’d for each condition and/or project.

Note 2: At ledger joint locations provide 1 ICFVL connector & 1 ICFVL-C (or ICFVL-CW) or equivalent each side of the joint within 12” of the joint.
Baseboard nailed to treated 2x8 as req'd.

Perform Guard. EPS

Diamond Snap
Half Ties, @ 12" o.c. horizontally

Treated 2x8.

Interior concrete slab.

Footing

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF
TITLE:
Baseboard Attachment
NO.
DSF-114
Perform Guard. EPS (finish not shown)

Diamond Snap Half Ties. @ 12” o.c. horizontally

Diamond Snap Ties. @ 12” o.c. horizontally.

3/4”x4” OSB strip continuous with EPS foam compatible adhesive.

Baseboard nailed to OSB strip.

Interior concrete slab.

Footing

Section
Scale: NTS
Updated 05-31-11

Diamond Snap Form® ICF
TITLE: Baseboard Attachment
NO. DSF-115
Perform Guard. EPS (finish not shown)

Diamond Snap Ties @ 12" o.c. horizontally.

Gypsum wallboard

Baseboard nailed to treated plywood strip.

Interior concrete slab.

Treated plywood glued to EPS with EPS foam compatible adhesive.

Section
Scale: NTS

Updated 05-31-11

Diamond Snap Form® ICF

TITLE: Baseboard Attachment
NO. DSF-116
Perform Guard. EPS (finish not shown)

Diamond Snap Ties @ 12" o.c. horizontally

Gypsum wallboard

Baseboard nailed to treated plywood strip.

Interior concrete slab.

Treated plywood screwed to Half Tie before pouring concrete slab.

Footing

Section
Scale: NTS

Updated 05–31–11

Diamond Snap Form® ICF

TITLE: Baseboard Attachment
NO. DSF-117
DSF No. 7001

Subject: Diamond Snap-Form ICF Code Considerations

Date: February 2011

With the multitude of lightweight concrete forming systems in the construction market, building officials are raising questions about code compliance and/or code evaluation reports for these systems. The two basic types of lightweight concrete forming systems are foam blocks and the plank and tie systems. Block-type systems reduce the area of concrete in the wall and may be required to have evaluation reports to address their design. The plank and tie forms, generally, do not reduce the volume of concrete in the wall; therefore, separate evaluation reports for the capacity of the finished concrete wall are not required for plank and tie systems.

The Diamond Snap-Form (DSF) ICF System is a plank and tie system which does not change the physical properties or the configuration of the concrete wall. It functions identically to a plywood or metal form system. That is to say, the form holds the wet concrete in place until the concrete has sufficient strength to support itself. The design requirements for the concrete formed with the DSF ICF System are the same as with any other concrete wall. Rebar is still required in the horizontal and vertical directions as designed by the structural engineer or stipulated by code minimums.

Various sections of the codes that deal with concrete formwork state that the design of the formwork shall include consideration of rate and method of placing concrete and construction loading. Pursuant to these codes, building officials have requested to see structural information on the validity of the DSF ICF System.

Calculations for the spacing of the Diamond Snap-Ties and the capacity of the EPS are included with this technical bulletin. DSF has conducted field and laboratory testing which determined tension values for the Diamond Snap-Ties (6”, 8”, and 10”) at 450 - 650 pounds.

Based on this data, DSF recommends that a pour rate of three to four feet per hour is appropriate. This, as well as the minimum bracing needed to assure plumb and true walls, is shown in our technical data.

The Foam-Control EPS with Perform Guard used in the DSF ICF System is produced under a third party quality control program and is UL listed with flame spread and smoke development ratings that meet major model building codes.
DSF No. 7002

Subject: Diamond Snap-Form ICF Screw Withdrawal Capacities

Date: February 2011

The DSF ICF System is used in applications where finish materials such as drywall and sheet sidings are desired. The attachment of these types of finishes is accomplished by installing screws through the finishing material and into the tie face of the Diamond Snap®-Tie (reference the DSF ICF Construction Manual). As support for these types of applications, DSF conducted numerous screw withdrawal tests. In these tests, screws of various sizes and thread design were evaluated for resistance to withdrawal when pulled out of the face of Diamond Snap-Ties. Tests showed only slight variation in the force required to remove a variety of screw fastener types from the tie, irrespective of screw diameter, thread design, or penetration depth.

**DSF recommendation for the ultimate withdrawal value of #6 through #14 screw fasteners placed in Diamond Snap-Ties is 210 pounds per fastener.**

In all cases: the screw fastener must penetrate the full thickness of the Diamond Snap-Tie face. The finishing materials manufacturers’ recommendations for fastener frequency should be followed. Applications exposed to weather conditions should utilize corrosion resistant fasteners.

The data in this bulletin is an average ultimate withdrawal value. No factor of safety has been applied. An appropriate factor of safety must be used in design calculations.
Diamond Snap-Form has prepared a guide for strength comparison of concrete construction versus wood construction. Specific conditions for comparison of each wall type are presented in this bulletin. The variables are spelled out for each material and the results follow.

The wall comparisons are based on bending strengths only. The deflection limitations of the various materials are not considered. In designing a specific project, the serviceability of the wall (i.e., the deflection requirements) must also be considered.

**NOTE:** Comparisons given here are not to be used for any project designs. They are strictly for information only. DSF recommends that the applicable code requirements and the services of a registered professional structural engineer be used for the design of specific projects.

Situation: Exterior wall, 10’ tall, wind loading only (i.e. no gravity load).

### Wall Type - Stud Wall:

<table>
<thead>
<tr>
<th>2 x 4 Stud Wall</th>
<th>2 x 6 Stud Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPF #2 &amp; better;</td>
<td>SPF #2 &amp; better;</td>
</tr>
<tr>
<td>2 x 4 @ 16” o.c.;</td>
<td>2 x 6 @ 16” o.c.;</td>
</tr>
<tr>
<td>$F_b = 850$ psi;</td>
<td>$F_b = 850$ psi;</td>
</tr>
<tr>
<td>Capacity = 13 psf</td>
<td>Capacity = 32 psf</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>2 x 8 Stud Wall</th>
</tr>
</thead>
<tbody>
<tr>
<td>SPF #2 &amp; better;</td>
</tr>
<tr>
<td>2 x 8 @ 16” o.c.;</td>
</tr>
<tr>
<td>$F_b = 850$ psi;</td>
</tr>
<tr>
<td>Capacity = 56 psf</td>
</tr>
</tbody>
</table>

### Wall Type - Reinforced Concrete:

**4” Concrete Wall**
- $f'_c = 3000$ psi;
- $A_s = #4’s @ 24” o.c.;$
- $F_y = 60$ ksi;
- Reinforcing centered in 4” wall.
- Capacity = 59 psf

**8” Concrete Wall**
- $f'_c = 1350$ psi;
- $A_s = #4’s @ 24” o.c.;$
- $F_y = 60$ ksi;
- Reinforcing centered in 8” wall.
- Capacity = 120 psf

**6” Concrete Wall**
- $f'_c = 3000$ psi;
- $A_s = #4’s @ 24” o.c.;$
- $F_y = 60$ ksi;
- Reinforcing centered in 6” wall.
- Capacity = 89 psf

**10” Concrete Wall**
- $f'_c = 1350$ psi;
- $A_s = #4’s @ 24” o.c.;$
- $F_y = 60$ ksi;
- Reinforcing centered in 10” wall.
- Capacity = 150 psf

### Wall Type - unreinforced Concrete:

**4” Concrete Wall**
- $f'_c = 3000$ psi;
- $A_s = None;$
- Capacity = 29 psf

**8” Concrete Wall**
- $f'_c = 1350$ psi;
- $A_s = None;$
- Capacity = 117 psf

**6” Concrete Wall**
- $f'_c = 3000$ psi;
- $A_s = None;$
- Capacity = 66 psf

**10” Concrete Wall**
- $f'_c = 1350$ psi;
- $A_s = None;$
- Capacity = 183 psf

**Key:**
- $F_b$ - bending strength level of the wood (SPF #2 usually rates 850 psi)
- Capacity refers to the wind load wall strength in pounds per square foot (psf)
- $f'_c$ - compressive strength of the concrete used (usually at 28 days cure time)
- $A_s$ - size of rebar in the wall (#4 = 1/2 inch diameter) and the spacing (24 inch O/C)
- $F_y$ - yield strength of the steel rebar - in this case 60,000 pounds per square inch

www.diamondsnapform.com
DSF No. 7004

Subject: Diamond Snap-Form ICF Corner Room Test Results

Date: February 2011

The International Building Code (IBC) has specific requirements when it comes to the application of foam plastics.

The codes require the use of a thermal barrier covering the foam plastic, when the foam plastic is placed toward the interior of habitable space.

This code requirement does not include attics with limited access, crawl spaces, or mechanical rooms, all of which have alternate provisions within the codes.

A recognized building product used to meet these thermal barrier code requirements is 1/2" gypsum board (other materials may qualify under the code). In applications where the DSF ICF System is utilized to create a full basement or the main structure above grade, it is required that the Diamond Snap-Form ICF interior be covered with a thermal barrier.

DSF ICF was subjected to a “Corner Room Burn” (UL 1715, UBC 26-3) test at a third party laboratory to demonstrate that the application of gypsum over the DSF ICF System meets code requirements for a thermal barrier. This test showed that the code-required thermal barrier remained in place through the fire test.
DSF No. 7005

Subject: Real Time Aging of Diamond Snap-Form Ties

Date: February 2011

Construction projects may take weeks or even months to complete. During this time, the components used in the construction are exposed to the elements. To demonstrate that the DSF ICF System is not negatively affected by long term exterior exposure, DSF conducted field exposure tests on Diamond Snap-Ties.

Diamond Snap-Form subjected DSF Ties to the elements for an extended period of time - five months. During this time, the ties were mounted in both horizontal and vertical positions facing due south. At the conclusion of the exposure, the DSF Ties were tested for color retention, screw holding power, and tensile strength.

After five months of exposure to ambient outdoor conditions, the weathered DSF Ties showed:

• No color change
• Maintained their excellent screw holding capabilities (see ICF Tech. Bulletin #7002)
• Retained their complete tensile strength

In addition to the controlled experiment described, DSF also tested DSF Ties on a 1-1/2 year old concrete filled field exposed test wall. DSF monitored the appearance and tested the screw holding capacity of the exposed ties. The field exposed wall was located in Denver, Colorado. It was subjected to the harsh ultraviolet light exposure and temperature fluctuations that Denver is known to experience.

After this severe 1-1/2 year exposure to the elements, the weathered DSF Ties showed:

• Excellent color retention.
• Screw holding capacities in excess of recommended values (see ICF Tech Bulletin #7002).
• Retained their complete tensile strength

DSF testing demonstrates that projects utilizing the DSF ICF System will maintain the necessary attachment strength characteristics under general construction time exposure.
Concrete form applications that use rigid wood, steel or hard board require that concrete placed within the form be consolidated by vibration. The vibration requirement for these type of form materials is necessary to ensure that no voids or pockets are created in the concrete. Voids can be caused by the lack of flow around obstacles such as ties, rebar and blockouts within these rigid form types. Air also may be trapped during the pour.

DSF ICF does not require vibration when you follow DSF recommended application procedures. The Diamond Snap-Tie is designed to allow 4” - 6” slump concrete, with 3/4” or smaller aggregate to readily flow around and through the tie. The Diamond Snap-Tie design, along with the natural vibration that takes place in the form system during the concrete placement, eliminates the need for additional vibration. The natural vibration caused by the concrete placement eliminates voids and honey-combing in the DSF ICF System wall.

Diamond Snap-Form has evaluated in-place DSF ICF walls to prove that consolidation does occur. Block-outs have been removed and the Foam-Control EPS with Perform Guard® stripped from the projects. Each of these applications showed excellent consolidation of the concrete.

To further demonstrate that complete consolidation occurs around the Diamond Snap-Ties, a concrete saw was used to cut through a typical 8” DSF wall. The cut was made directly in line with a row of Snap-Ties. It was found that concrete had flowed through and completely around the Diamond Snap-Ties. Consolidation was so complete that the printing found on the web of the tie was embossed into the concrete and legible.
Any time products are used in conjunction with concrete, the product is subjected to an alkaline environment. This alkaline environment has a tendency to slowly deteriorate many materials over time. Diamond Snap-Ties are encased in concrete, and these ties must continue to withstand potential alkaline exposure.

DSF ICF polymer is resistant to many chemicals, including alkalies. The Diamond Snap-Tie is manufactured from polypropylene homopolymer and produced under a strict quality control program. Through utilization of this high quality, alkaline resistant polymer, DSF knows that its Diamond Snap-Ties will perform unaffected in concrete.
DSF No. 7008

Subject: Rebar Requirements and Diamond Snap-Form ICF System

Date: February 2011

Concrete walls can be classified as either plain concrete or reinforced concrete. The American Concrete Institute (ACI) defines plain concrete as concrete that is either unreinforced or contains less reinforcement that the minimum amount specified in the code for reinforced concrete. Reinforced concrete is defined as concrete reinforced with no less than the minimum amount required by the code, and designed on the same assumption that the two materials act together in resisting force. ACI also states that reinforcement shall be accurately placed, adequately supported and be secured against displacement at the time of the concrete pour, within tolerances of the code.

In typical reinforced concrete walls, the horizontal and vertical rebar is secured against displacement by wire tying the rebar and by the use of spacers. When building with the DSF ICF System these methods of securing the rebar are not necessary. The Diamond Snap-Tie has a rebar cradle into which the horizontal reinforcement is placed. This secures the rebar in place. The positioning of the rebar cradle also ensures that the concrete cover is a minimum of 1 1/2 inches. Vertical rebar is captured between the webs of several Diamond Snap-Ties. The friction developed from placement of the vertical rebar keeps it in place when the concrete is poured.

When designing reinforcement for the DSF ICF System, it is most efficient to keep the spacing of the horizontal and vertical reinforcing to multiples of 12 inches, since the Diamond Snap-Ties are spaced at 12 inches on center in each direction. This spacing of reinforcing will allow the Diamond Snap-Ties to secure the rebar against any displacement and not require any time consuming wire tying of the rebar.
DSF No. 7009

Subject: Sound Transmission of Concrete Walls

Date: February 2011

The Diamond Snap-Form ICF System is often used in above grade applications. Many of these applications, including exterior and partition walls of commercial structures, require that specific sound transmission standards be met. These requirements are usually called out for in a specification as a STC value. STC (sound transmission class) is determined by testing full scale wall assemblies for the amount of sound which transmits through the assembly at various frequencies.

The following are STC Values for concrete wall assemblies which consist of plain concrete (no insulation attached):

<table>
<thead>
<tr>
<th>Concrete wall thickness</th>
<th>STC*</th>
</tr>
</thead>
<tbody>
<tr>
<td>6”</td>
<td>57</td>
</tr>
<tr>
<td>8”</td>
<td>58</td>
</tr>
</tbody>
</table>

* STC values extracted from Portland Cement Association paper, “Sound Loss Through Concrete and Masonry Walls”, by Albert Litvin and Harold Belliston.

These STC values typically will meet or exceed specific sound transmission requirements found in most structures. STC values will also be enhanced when additional finishes, such as drywall and/or cementitious coatings, are added to the final wall assembly. Please consult with the Portland Cement Association, as well as other appropriate resources, regarding concrete design.

DSF ICF wall applications provide excellent sound resistance and will meet most specifications found in commercial and common wall structures. Design of final application to meet STC requirements is the responsibility of the building designer.
DSF No. 7010

Subject: 12” & Greater Diamond Snap-Form ICF Applications

Date: February 2011

The DSF ICF System is available with ties that create 6”, 8” and 10” concrete wall assemblies. In a small percentage of applications a greater thickness of concrete may be desired. Diamond Snap-Form has developed a cost effective means for creating a form system that will allow for walls of 16” and greater.

The following chart shows tie combinations and the resulting concrete thickness of the wall.

<table>
<thead>
<tr>
<th>Tie combination</th>
<th>Wall Thickness</th>
</tr>
</thead>
<tbody>
<tr>
<td>6”+ 6”</td>
<td>16”</td>
</tr>
<tr>
<td>6”+ 8”</td>
<td>18”</td>
</tr>
<tr>
<td>6”+ 10”</td>
<td>20”</td>
</tr>
<tr>
<td>8”+ 8”</td>
<td>20”</td>
</tr>
<tr>
<td>8”+ 10”</td>
<td>22”</td>
</tr>
<tr>
<td>10”+ 10”</td>
<td>24”</td>
</tr>
</tbody>
</table>

When ties are combined to fabricate ties for these larger wall sections, it is necessary to attach the ties to each other with four # 6 course threaded drywall screws. Care must be taken not to over torque the screws. Thick wall sections, such as those listed above, are not to be poured in lifts greater than two feet per pass.
The following recommendations are intended to help you successfully pour your DSF ICF wall.

- First and foremost, schedule the concrete to arrive only after your DSF ICF system is completely in place and you have time to double check your details.
- Be sure to plan ahead when ordering pump trucks and concrete. Allow time for the equipment and concrete suppliers to schedule your delivery.
- Concrete trucks hold at most 10 cubic yards of concrete and most suppliers allow 5 to 7 minutes per yard of concrete to unload.
- Ask the ready mix supplier to space the concrete trucks out appropriately for your project.
- Normal concrete mix for a DSF ICF wall is 5” slump with maximum 3/4” cut aggregate. However, design and/or code requirements could possibly dictate a different concrete mix.
- When ordering concrete explain to the ready mix supplier and pump truck contractor that you are pouring an ICF system.
- Tell the pump truck supplier that you want two 90 degree elbows or an “S” attachment for the end of the pump hose. Elbows and “S” attachments help control the discharge of the concrete from the delivery hose.
- If you can get a pump truck that is a newer model with an accumulator on it, request this from the pump truck supplier.
- A pump truck will retain about 1 cubic yard of concrete in its hopper and line. If you cannot hand haul this to the ICF wall, it will be dumped in cleanup. To be sure you have an adequate quantity of concrete ordered, it is best to give your ready mix company your wall dimensions, and let them tell you how much concrete you should order. In this way, any wastage factor becomes their responsibility and should be taken into account by them.
- When you are pouring concrete into the DSF ICF system, direct the concrete stream between the Diamond Snap-Ties as you move down the wall. Always pour concrete at a controlled rate.
- Pouring should be done in 4 foot maximum lifts in a continuous pour around the DSF ICF wall.
The DSF ICF System consists of a uniquely designed plastic tension tie and high density Foam-Control EPS with Perform Guard® insulation. These components are used to create a lightweight rigid form, into which concrete is poured, resulting in a high strength insulated concrete wall system.

The DSF ICF System has been used widely in building foundations, above grade walls, retaining walls and other similar structures. DSF feels that EIFS products are an exceptional finish for the DSF ICF System. We have developed details which show the application of EIFS systems. We are providing these to users of the DSF ICF System, so that they have a basic understanding of the methods for applying EIFS Systems and One Coat Stucco products.

Complete installation guidelines for EIFS Systems should be obtained from the EIFS company. The recommended guidelines, as warranted by the EIFS manufacturer, are recognized as the primary source of installation information for the EIFS System. Our recommendations are general and show the two basic approaches for the application of EIFS and One Coat Stucco Systems over the DSF ICF System:

- **Polymer Based Systems** - DSF suggests that a minimum layer of 3/4” EPS be applied over the ICF System. Attachment can be made by EPS foam to EPS foam adhesive bonding methods that are recommended by the EIFS manufacturer. Attachment can also be made by screw fasteners into the Diamond Snap-Tie face, as recommended by the EIFS manufacturer. The finish system can then be applied per the EIFS manufacturer’s guidelines. Expansion joints should be installed where substrate changes occur, or at a frequency recommended by the Polymer Based EIFS manufacturer.

- **Polymer Modified Systems** - DSF suggests that these systems can be applied directly to the ICF System, provided that the DSF ICF substrate has been rasped to a level plane, and that a reinforcing mesh recommended by the EIFS manufacturer is used. The reinforcing mesh should be screw applied to the face of the Diamond Snap-Tie, with the polymer modified reinforced coating then applied at a level fully embedding the mesh and covering the face of the Diamond Snap-Tie plate at a minimum thickness recommended by the Polymer Modified EIFS manufacturer. Finish coloring, when required, should be applied per the EIFS manufacturer’s guidelines. Expansion joints should be installed where substrate changes occur or at a frequency recommended by the Polymer Modified EIFS manufacturer.

- **One Coat Stucco Systems** - DSF suggests that these systems can be directly applied to the DSF System provided that the DSF substrate has been rasped to a level plane, and that a reinforcing wire recommended by the one coat stucco manufacturer is used. The reinforcing wire should be screw applied to the face of the Diamond Snap-Tie with the one coat stucco then applied at a level fully embedding the wire reinforcement and covering the face of the Diamond Snap-Tie plate at a minimum thickness recommended by the one coat stucco manufacturer. Finish coloring, when required, should be applied per the one coat stucco manufacturer’s guidelines. Expansion joints should be installed at a frequency recommended by the one coat stucco manufacturer.
DSF No. 7013

Subject: Windspeed versus Pressure - Diamond Snap-Form ICF

Date: February 2011

Diamond Snap-Form (DSF) ICF recommends the following formula be used in order to calculate the approximate load that will be imposed on a DSF formed concrete wall for a specific windspeed:

The following formula and graph are based upon atmospheric pressure of 14.7, a temperature of 60°F and a velocity pressure based on air which is 0.0764 lbs/ft². Actual values will vary with elevation, atmospheric conditions and geographic location. The formula for approximating velocity pressure is \( p = 0.00256w^2 \) or the constant of 0.00256 \( \times \) the windspeed squared. A qualified engineer should be consulted to ensure adequate design of the concrete wall.
For further information about Diamond Snap-Form ICFs
call: 800-766-3626 or 406-388-4146
Email: answers@diamondsnapform.com
visit: www.diamondsnapform.com