1. PRODUCT NAME

Total Direct ICF
Direct Applied Exterior Finish System (DEFS) on Insulated Concrete Form

2. MANUFACTURER

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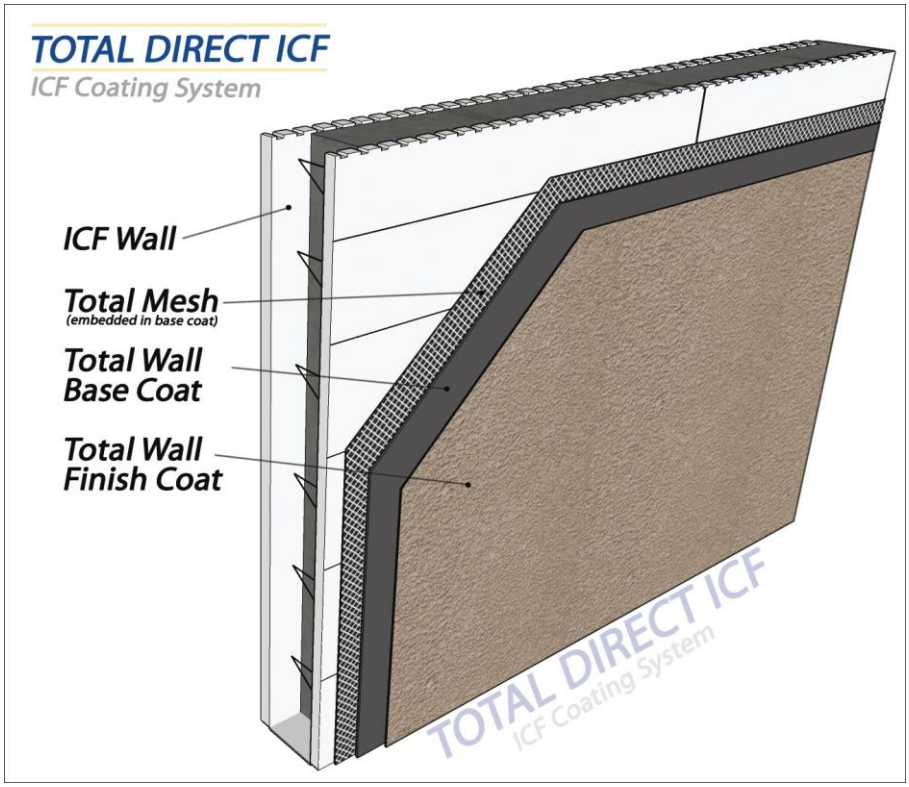
3. DESCRIPTION

Total Direct ICF is a non-bearing exterior cladding for commercial and residential structures constructed of polystyrene insulated concrete forms. This system used to weatherproof, protect and beautify any ICF structure. The advantages of this exterior cladding system are:

- It is light weight and will not stress the design structure.
- It is a relatively low cost yet highly durable cladding.
- The cladding will provide impact resistance, ultraviolet protection and weather protection to the polystyrene ICF surface.
- Practically any combination of color or texture is achieved.
- The structure is easily accessorized with architectural enhancements made of the same materials as the wall system (arches, quoins, etc.).

Limitations:
Total Wall, Inc. products must be applied in temperatures of 40° F or higher. The freshly applied products must be protected from precipitation and the temperature must be maintained at 40° F or greater for 24 hours. Stored products must be covered, and protected from sun and freezing conditions.
Total Wall, Inc. products must be installed by certified Total Wall registered applicators. Only registered applicator installations are eligible for a System Warranty.
Total Wall, Inc. reserves the right to use certified inspectors on any phase of installation.



Materials:
Total Direct ICF Systems consist of 3 layers of constituents:

1. ICF Substrate
2. Base coat / Reinforcing mesh
3. Finish coat

Layer 1 - ICF Substrate

Approved ICF materials as manufactured by:

- Reward Wall
- Arxx
- Polysteel
- Dow Chemical
- Keeva
- Owens Corning
- BuildBlock
- Amvic
- EcoBlock
- Or others, as approved, in writing, by Total Wall, Inc.

Layer 2 - Base Coat and Reinforcing Mesh

The entire surface of the foam block is covered with reinforcing mesh embedded with a special base coat material. A Total Wall synthetic finish coating is required for optimum results in appearance and performance.

Base Coat:

1. Total Wall T-2000 Base Coat
This product is a dry powder that contains Portland cement, polymer, specialty aggregates and curing agents. It is available in 50 lb. bags in white or grey.

The product is mixed with water at the job site using a jiffy mixer blade and drill (or a mortar mixer) until a mortar-like consistency is achieved (about 5 quarts of water per 50 lb. bag).
The mix is allowed to stand for five minutes and is then remixed. More water may be added if necessary, to adjust final consistency.
If the mix is too wet, dry product may be mixed in to decrease slump. Typical pot-life will be from 30 to 45 minutes. If the mix stiffens during use, it may be re-tempered by adding a few ounces of water and remixing.

2. EZ Base NCB (Non-Cement Base)
This product is a ready to use, fully synthetic base coat. Mix before use. Product may be thinned by adding 4 - 6 ounces of water per 5-gallon pail of Total Wall EZ Base NCB while mixing. Mix with a low speed jiffy mixer blade on a drill.

3. Total Wall Foam N' Base Coat ES
This product contains a liquid acrylic polymer plus specialty aggregates and modifiers. Mix in a 1:1 ratio by weight with Type I, II or I-II Portland cement at the job site. Add 16 - 24 ounces of water to a 5-gallon pail of mix to adjust to a mortar-like consistency. Wait 5 minutes and remix. Pot life will be from 30 to 45 minutes. If the mix stiffens during use, add a few ounces of water and remix.

Reinforcing Mesh:

1. Standard Mesh
A polymer coated woven fiberglass mesh with a weight of ~ 4 ounces per yard and a relative impact resistance of 25-35 in/lbs. Runs of standard reinforcing mesh are lapped 2.5".
2. Enhanced Mesh
A polymer coated woven fiberglass mesh with a weight of ~ 6 ounces per yard and a relative impact resistance of 35-45 in/lbs. Runs of enhanced reinforcing mesh are lapped 2.5".
3. Intermediate Mesh
A polymer coated woven fiberglass mesh with a weight of ~ 11 ounces per yard and a relative impact resistance of 75-95 in/lbs. Runs of intermediate reinforcing mesh are lapped 2.5".
4. High Impact Mesh
A polymer coated woven fiberglass mesh with a weight of ~ 15 ounces per yard and a relative impact resistance of 180-220 in/ lbs. Runs of High Impact Mesh are butted and covered with a layer of Standard Mesh.
5. Ultra-High Impact Mesh
A polymer coated woven fiberglass mesh with a weight of ~ 20 ounces per yard and a relative impact resistance of 230-240 in/lbs. Runs of Ultra-High Impact Mesh are butted and covered with a layer of Standard Mesh.

Layer 3 - Finish Coat

The Finish Coat is the outer coating that gives color and texture to the system. The Finish coat also provides protection against weather, mildew, and pollution. All Total Wall Finishes are 100% acrylic based, giving them superior durability, and are available in two grades:

1. Premier Grade
Premier grade is rich with an internally plasticized acrylic polymer, which provides for exceptional movement.
2. Journeyman Grade
Journeyman grade is designed for superior workability and performance.

Total Wall Finishes are available in the following textures and may be trowel applied or spray applied:

1. Swirl Coarse - generates a traditional wormhole appearance at ~ 0.078".
2. Ultra Coarse - generates a very coarse wormhole appearance at 0.098".
3. Swirl Fine - generates a traditional wormhole appearance at ~ 0.065".
4. Shot Blast Coarse - generates a coarse limestone appearance at ~0.059".
5. Shot Blast Medium - generates a coarse limestone appearance at ~ 0.078".
6. Shot Blast Fine - generates a very fine limestone appearance at ~ 0.044".
7. Freestyle - generates a variety of hand-applied textures at varying thicknesses.
8. Gemstone - generates a variety of marble grain looks using colored aggregates in a clear acrylic base at ~ 0.046".

Applicable Standards:
Total Wall, Inc. has had extensive testing performed on each individual system component and on the assembled system by certified and code approved independent testing laboratories:

- International Code Council (ICC)
- International Building Code (IBC)
- National Evaluation Services (NES)
- Uniform Building Code
- National Building Code
- Standard Building Code
- International Residential Code

Professional Affiliations:
Total Wall, Inc. maintains memberships and involvement with these organizations:

- Exterior Design Institute (EDI)
- American Society for Testing and Materials (ASTM)
- Federation of Societies for Coatings and Technology (FSCT)
- Association of the Wall and Ceiling Industries (AWCI)
- Northwest Walls and Ceilings Bureau (NWCB)

4. TECHNICAL DATA

Chemistry Polymer modified Portland cement with microfibers or Fully Synthetic 100% acrylic with patented dirt resistance and mildew resistance
Flame Spread < 5 ASTM E84
Weight* ~ 1.0 - 1.3 lb.
*lamina only per ft²

5. INSTALLATION

A. Substrate Preparation and Inspection

✓ The ICF surface must be clean and in sound condition. Any deteriorated, damaged or pocked areas must be repaired before proceeding.

✓ The wall must be uniform. Planar irregularities greater than 1/4“ in 10’ must be addressed prior to installation.

✓ Areas below grade that require waterproofing treatment as outlined in job documents must be treated first with an approved membrane sealer.

✓ Window corners, door corners and other natural stress points must be inspected for splits in the foam. Any splits or breaks must be repaired with low expanding approved foam such as EnerFoam, or equivalent. These areas will receive a 9”x 12” butterfly of detail mesh embedded in Base Coat and placed at a 45° angle to the corner.

✓ Expansion joints must be placed at all through wall joints and at intersections with dissimilar substrate materials.

✓ If desired, Direct Applied System coating may be terminated with any of the following accessories: PVC stops or trims, galvanized steel or solid zinc.

✓ Any accessories may be attached with either grip-rite plastic nails or galvanized nails.

B. Minimum Tools and Equipment

✓ Drill mixer 1/2” and jiffy mix-blade

✓ Drill and appropriate bits and tips

✓ Razor knife

✓ Tape measure

✓ Level

✓ Hammer

✓ Bucket brush

✓ Chalk-line

✓ Caulk gun

✓ Finishing tool

✓ Stainless steel trowel

✓ Margin trowel

✓ Appropriate floats

✓ Fine-toothed saw for cutting accessories

C. Applying Base Coat and Mesh

a) Using a steel trowel, apply the base coat mix to the entire surface of the ICF in a 1/8” skim coat. Dab all fastener heads with base coat and allow to dry thoroughly before applying base coat to the remainder of the surface area.

b) Immediately embed the reinforcing mesh into the freshly applied base coat. Using a trowel, press the mesh into the base coat by starting at the center and working toward the edges. Press out the air voids and wrinkles to produce a smooth base coat. Overlap mesh layers and edges by a minimum of 2.5”. Overlay a 9” by12” section of detail mesh placed at a 45° angle at each window corner and door corner to reinforce these natural stress points. Apply additional base coat as necessary to completely cover the mesh so that the fabric pattern is no longer visible.

c) Allow base coat to cure for a minimum of 18 hours while protecting from freezing and precipitation.

d) Remove any trowel marks by rubbing a pumice stone over the surface.

e) An optional layer of Total Wall primer may be applied to the base coat to assure finish coat color consistency. It is highly recommended to apply a primer before applying any vibrant finish color.

D. Applying the Finish

a) Apply the Total Wall Finish of choice directly out of the bucket onto the cured base coat using a stainless steel trowel. The thickness of the finish is gauged by the largest aggregate in the texture selected.

b) Immediately texture or float the finish with the proper floating tool and motion to achieve the desired result.

c) Allow the finish to cure by protecting from freezing and precipitation for 24 hours.

E. Installing Sealant

Except for aesthetic joints, all isolation joints must be a minimum width of 1/2” and all expansion joints must be a minimum of 3/4” or 4 times the expected movement, whichever is greater.

A non-absorbing backer rod and approved sealant is required. Optionally, isolation joints or terminations may be sealed with fillet beads of approved sealant.

Joint depth minimums are established by the sealant manufacturer and can be obtained from their literature or by calling Total Wall Technical Services.

All ICF terminations, such as windows and doors penetrations, ground terminations and expansion joints, may be made with PVC or zinc accessories.

Apply a primer when recommended by the sealant manufacturer.

Insert a proper diameter backer rod to allow for its compression into the joint at a uniform depth. The depth is to allow for the desired thickness caulk bead.

The backer rod must be a closed cell polyethylene material or an extruded polyolefin with a non-absorbing skin. Prepare the sealant according to the manufacturer’s instructions. Apply the sealant with a pressure gun and properly sized nozzle.

Fill the surface of the prepared joint with a smooth, solid, even bead of sealant. The bead must be free of sags, voids and wrinkles. Tool the joint to eliminate air pockets and force contact with the joint surfaces.

F. Architectural Enhancements

Architectural shapes such as quoins, corners, arches, and cornices can be added after the base coat has cured. Foam shapes can be mounted using Total Wall Blue Mastic Adhesive or EnerFoam and temporary or permanent mechanical attachment as applicable. These shapes are then base coated and finished to match the flat wall application described above. Alternatively, finished shapes which match or accent the flat wall system can be mounted to the base coated or finished system. The quoins may be made at the job site, or ordered along with any architectural enhancement, from Total Wall, Inc. Architectural enhancements are prefabricated and ready to mount to the wall.

G. Precautions
All details must be properly constructed. These details include: all caulking details, kick outs, flashings, terminations, and utility penetrations.

6. AVAILABILITY

Total Wall, Inc. materials are manufactured in Wisconsin and are purchased by Registered Applicators through Total Wall Distributors. Contact your local distributor for a list of Registered Applicators or call Total Wall, Inc. (888-702-9915) customer service for assistance.

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7. WARRANTY

Total Wal, Inc. l warrants its system against delamination or material defects when properly installed by a Registered Total Wall Applicator according to current Total Wall, Inc. and job specifications in force at the time of installation.

No warranty stated herein must be effective until the goods and labor subject to said warranty have been paid for in full. Total Wall, Inc. makes no other express warranty or warranty of merchantability. Further, Total Wall, Inc. makes no warranty that the products of its manufacture are fit for any particular purpose.

Defects caused by misuse, improper storage, mishandling or improper application must not be warranted. Total Wall,Inc. is not responsible for damage or injury for materials not manufactured by Total Wall Inc., acts of God, structural movement, or defective materials or their application on the warranted structure.