

LiteForm[®] ICF

LiteForm ICF Specifications

Product Specifications

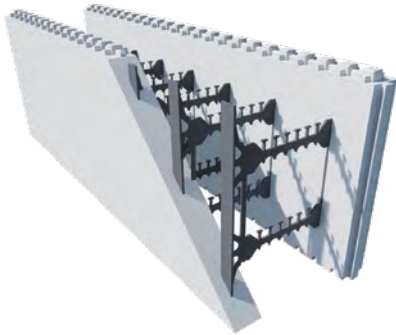
Physical Properties of EPS (Expanded Polystyrene)

CSI Specification : LiteForm Insulated Concrete Forms

Material Safety Data Sheet on EPS (Expandable Polystyrene)

LiteForm® ICF

PRODUCT SPECIFICATIONS



This document is intended for general information purposes only regarding specifications for LiteForm ICF® Insulated Concrete Forms by LiteForm® Technologies.

Visit liteform.com for more information.

PRODUCT DESCRIPTION

LiteForm ICF is an insulating concrete forming system, which consists of two flame-resistant expanded polystyrene (EPS) foam boards separated by polypropylene webs.

The EPS boards are 63.5mm (2.5") thick, which gives a total total thickness of 127mm (5") of EPS.

The webs separate the EPS boards to form 102mm (4"), 152mm (6"), 203mm (8"), 254mm (10"), and 305mm (12") cavities, which creates the concrete wall thicknesses.

The webs are spaced every 152mm (6") on center horizontally and 406mm (16") on center vertically, and contain a 32mm (1.25") wide furring strip that extends within 6mm (.25") to the top and bottom of each block. The furring strips facilitate fasteners for attachment of both exterior and interior finishes.

DESIGN PERFORMANCE

| TEST DESCRIPTION | RESULT | PASS/FAIL | REFERENCED STANDARD |
|--|------------|---------------|---------------------|
| R-Value (Thermal Resistance) per inch (per 25.4mm) | R 4.13 | Min. R 4.00 | ASTM C518 |
| Water Absorption | 0.21% | Max. 3.0% | ASTM D2842 |
| Water Vapor Permeance | 1.64 perm. | Max 3.5 perm | ASTM E96 |
| Compressive Strength | 25 psi | Min. 15 psi | ASTM D1621 & C165 |
| Flexural Strength | 51psi | Min. 35 psi | ASTM C203 |
| Dimensional Stability | 0.60% | Max. 2.0% | ASTM D2126 |
| Density | 1.65pcf | Min. 1.35 pcf | ASTM C1622, C303 |
| Limiting Oxygen Index | 31.00% | Min. 24.0% | ASTM D2863 |
| Formaldehyde Emission | NONE | N/A | AATTC-112 |
| Fungi Resistance | NONE | N/A | ASTM G21 |
| Flame Spread Rating | <25 | N/A | ASTM E84 |
| Smoke Developed Rating | <450 | N/A | ASTM E84 |
| Sound Transmission | STC53 | N/A | ASTM E90 |

Physical Properties of EPS

| Specification Reference (ASTM-C578-95) | | | | Type I (1#) | Type VIII (1 1/4#) | Type II (1 1/2#) | Type IX (2#) |
|--|-----------------------|---------------|---------|----------------|-----------------------|---------------------|-----------------|
| Property: | Units | ASTM Test | | | | | |
| Density, Min. | (pcf) | C303 or D1622 | | 0.90 | 1.15 | 1.35 | 1.80 |
| Thermal Conductivity "K Factor" | BTU/(hr)(sqft)(°F/in) | C177 or C518 | @ 25 °F | 0.238 | 0.227 | 0.217 | 0.208 |
| | | | @ 40 °F | 0.250 | 0.238 | 0.227 | 0.217 |
| | | | @ 75 °F | 0.277 | 0.263 | 0.250 | 0.238 |
| Thermal Resistance "R Value" | One inch thickness | C177 or C518 | @ 25 °F | 4.20 | 4.40 | 4.60 | 4.80 |
| | | | @ 40 °F | 4.00 | 4.20 | 4.40 | 4.60 |
| | | | @ 75 °F | 3.60 | 3.80 | 4.00 | 4.20 |

| Strength Properties | | | | Type I (1#) | Type VIII (1 1/4#) | Type II (1 1/2#) | Type IX (2#) |
|------------------------------------|---------|-----------|-----------------|----------------|-----------------------|---------------------|-----------------|
| Property: | Units | ASTM Test | | | | | |
| Compressive @ xx% deflection | psi | D1621 | @ 1/2% | 3.5 | 4.3 | 6.0 | 8.0 |
| | | | @ 1% | 7.0 | 8.5 | 12.0 | 16.0 |
| | | | @ 5% | 8.0 | 11.0 | 12.0 | 20.0 |
| | | | @ 10% | 10.0 | 13.0 | 15.0 | 25.0 |
| Flexural | psi | C203 | | 25 | 32 | 40 | 55 |
| Tensile | psi | D1623 | | 16 | 17 | 18 | 23 |
| Shear | psi | D732 | | 18 | 23 | 26 | 33 |
| Shear Modulus | psi | --- | | 280 | 370 | 460 | 600 |
| Modulus of Elasticity | psi | --- | | 180 | 250 | 320 | 460 |
| Allowable Compressive Stress | psi | . | Long-Term Load | 2.1 | 3.3 | 4.5 | 7.0 |
| | | | Short-Term Load | 4.0 | 5.0 | 5.9 | 9.1 |
| | | | Rolling Loads | 8.0 | 10.0 | 11.8 | 18.2 |
| Young's modulus | psi | . | . | 573 | 739 | 1000 | 1449 |
| Modulus of Subgrade Reaction | [k],pci | . | . | 200 | 240 | 280 | 460 |
| Poisson's Ratio | [v] | . | . | .086 | .103 | .126 | .165 |
| Coefficient of Friction | . | . | . | 0.5-0.7 | 0.5-0.7 | 0.5-0.7 | 0.5-0.7 |



| Moisture Resistance | | | Type I (1#) | Type VIII (1 1/4#) | Type II (1 1/2#) | Type IX (2#) |
|-----------------------------------|------------------------------------|-----------|----------------|-----------------------|---------------------|-----------------|
| Property: | Units | ASTM Test | | | | |
| Water Vapor Permeance, max. perm. | Perms (ng/Pa•s•m ²) | E 96 | 5.0 (287) | 3.5 (201) | 3.5 (201) | 2.0 (115) |
| Absorption by Volume, max. | % | C272 | < 4.0 | < 3.0 | < 3.0 | < 2.0 |
| Capillarity | --- | --- | None | None | None | None |
| Buoyancy | lbs/ft ³ | . | 60 | 60 | 60 | 60 |

| Other Properties | | | Type I (1#) | Type VIII (1 1/4#) | Type II (1 1/2#) | Type IX (2#) | |
|------------------------------------|---------------|------------|----------------|-----------------------|---------------------|-----------------|-----|
| Property: | Units | ASTM Test | | | | | |
| Coeff. of Thermal Expansion | in./(in) (°F) | D696 | 0.000035 | 0.000035 | 0.000035 | 0.000035 | |
| Max. Service Temperature | °F | --- | Long-Term | 167 | 167 | 167 | 167 |
| | | | Intermittent | 180 | 180 | 180 | 180 |
| Flame Spread max. 6" | | UL® (BRYX) | 20 | 20 | 20 | 20 | |
| Smoke Development | | UL® (BRYX) | 300 | 300 | 300 | 300 | |

All values based on data from Huntsman Chemical Corporation, Styrochem International, NOVA Chemical Corporation and BASF Corporation.

Federal Trade Commission Ruling: Use the 75 F R-Value when calculating R-Values for residential construction.

Design Considerations:

- **DO NOT COMPARE** polyisocyanurate conditioned R-Values by RIC-TIMA and PIMA to EPS R-Values by ASTM C-578.
- **ASK for a 20 year 100% R-Value Warranty.**
- **Flammability:** Like many construction materials, EPS is combustible. It should not be exposed to flame or other ignition sources. Current model building code requirements should be met for adequate protection or separation from occupied areas.
- **Water Absorption Properties:** EPS water absorption is low. Moisture takes the path of least resistance and travels around individual beads rather than through them; the non-interconnecting cell structure prevents capillary absorption.
- **Water Vapor Transmission:** EPS has low permeability but is not considered a vapor barrier.

LiteForm® ICF

LITEFORM TECHNOLOGIES | SECTION 03 11 19 LiteForm ICF - INSULATED CONCRETE FORM

PART 1 GENERAL

1.01 SUMMARY

- Comply with the requirements for Division 1.
- Supply & installation of insulated concrete forms, installation of reinforcing steel and placement of concrete within formwork.
- Adequate bracing and falsework shall be provided by the Installing Contractor to comply with all applicable Codes.

1.02 SCOPE OF WORK

- Furnish all labor, materials, tools and equipment to perform the installation of LiteForm Insulated Concrete Form Wall System as manufactured by LiteForm Technologies, 1950 West 29th Street, South Sioux City, NE. 68776. (800) 551-3313.
- Furnish all labor to include placement of reinforcing steel within forms, placement of concrete into forms, and final cleanup.

1.03 PRODUCTS SUPPLIED BUT NOT SPECIFIED OR INSTALLED UNDER THIS SECTION

- EPS compatible modified bituminous sheet waterproofing membrane.
- EPS compatible parge coat.

1.04 PRODUCTS INSTALLED BUT NOT SPECIFIED OR SUPPLIED UNDER THIS SECTION

- Sleeves
- Inserts
- Anchors
- Bolts
- Reinforcing Steel
- Window & Door Opening Bucks
- Concrete

1.05 RELATED SECTIONS

- Section 03 20 00 - Concrete Reinforcing
- Section 03 30 00 - Cast-In-Place Concrete
- Section 03 40 00 - Precast Concrete
- Division 04 00 00 - Masonry
- Division 05 00 00 - Metals
- Division 06 00 00 - Wood, Plastics and Composites
- Section 07 13 00 - Sheet Waterproofing
- Section 07 24 00 - Exterior Insulation and Finishing Systems
- Section 07 46 00 - Siding
- Division 08 00 00 - Openings
- Section 09 20 00 - Plaster & Gypsum Board

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1.06 ALTERNATES

- Materials shall be only as specified in Paragraphs 1.02 & 2.02 as per Manufacturer specified in Paragraph 2.01. No alternate materials shall be accepted for this Section.

1.07 REFERENCES

- ACI 318 Building Code Requirements for Reinforced Concrete
- ACI 332 Guide to Residential Cast-in-Place Concrete Construction
- ASTM C236 Steady State Thermal Performance of Building Assemblies
- ASTM C473 Physical Testing of Gypsum Board Products & Gypsum Lath
- ASTM D1761 Mechanical Fasteners in Wood
- ASTM E84 Surface Burning Characteristics of Building Materials
- UBC 26-3 Uniform Building Code Standard Room Fire Test

1.08 DEFINITIONS

- Wall Alignment System - a form alignment & scaffold system designed for use with ICF wall systems.
- Contractor Installer- An installation contractor, who has received instructional training in the installation of LiteForm wall systems.
- Technical Advisor- A technical representative, usually an employee of LiteForm or a LiteForm Distributor, who has received instructional training in the installation of LiteForm Wall Systems and is in the capacity of supervising an installation crew on site.
- EPS- Acronym for "Expandable Polystyrene" when referencing the insulating foam component of the LiteForm ICF Wall System.
- ICF- Acronym for "Insulated Concrete Form".
- Window or Door Opening Buck- a pre-manufactured or site constructed frame assembly consisting of wood or plastic material used to frame a rough opening within the forming system that will retain concrete around the opening. The frame can also provide for subsequent anchorage of doors and windows within the wall assembly.

1.09 SYSTEM DESCRIPTION / PERFORMANCE REQUIREMENTS

- Insulated concrete wall form system shall consist of 2 flame resistant panels of Expandable Polystyrene (EPS) connected by high-density polypropylene ties.
- Wall system to provide min. 4", 6", 8", 10", or 12" wall section (as required) at all locations throughout wall area.
- Wall system ties to provide min. 1" (25mm) wide fastening strips @6" (200mm) o/c recessed approximately 1/2" beneath the surface and clearly marked to facilitate finish fastening both interior and exterior.
- Wall system to provide accurate positioning of steel within form cavity to conform to reinforcing requirements of ACI 318.
- EPS foam panels with concrete to provide min. insulation levels as noted:
- 4" (100 mm) Cavity Form Unit: R 21 (RSI 3.01)
- 6" (160 mm) Cavity Form Unit: R 24 (RSI 3.89)
- 8" (200 mm) Cavity Form Unit: R 24 (RSI 3.82)
- 10" (200 mm) Cavity Form Unit: R 24 (RSI 3.82)
- 12" (300 mm) Cavity Form Unit: R 24 (RSI 3.83)
- EPS foam to provide maximum vapor permeation of 3.5 Perm-in. (200 ng/Pa.s.m2)
- Finished wall assembly to provide min. rating of STC 53 sound attenuation performance.

1.10 SUBMITTALS

- Submit relevant laboratory tests or data that validate product compliance with performance criteria specified prior to commencement of work under this Section.
- Submit copy of Manufacturer's Product Manual

1.11 QUALITY ASSURANCE

- Contractor shall engage a LiteForm trained Contractor Installer or Technical Advisor for the duration of the work under this Section.
- Site Mock-up: If required, construct sample wall mock-up panel to include full wall system and details, located where directed by consultant. Panel may form part of finished work if approved by Consultant.
- Contractor Installer/Technical Advisor to meet with Contractor prior to material delivery on site to co-ordinate provision of access, storage area, and protection of LiteForm ICF product and spatial requirements for form alignment placement steel storage & forming.

1.12 DELIVERY STORAGE & HANDLING

- Deliver products in original factory packaging, bearing identification of product, manufacturer and batch/lot number.
- Handle and store products in location to prevent damaging and soiling.
- Ensure that UV protection is provided for material, should on-site storage extend beyond 30 days.

1.13 PROJECT CONDITIONS

- Use appropriate measures for protection and supplementary heating when required to ensure proper curing conditions in accordance with manufacturer's recommendations if installation is carried out during periods of weather where temperatures are below minimum specified by governing building code for concrete and masonry.

1.14 COORDINATION

- Ensure those materials listed under Sub-Section 1.03 & 1.04 are provided to Contractor Installer prior to commencement of work under this Section.

1.15 WARRANTY

- Contact Manufacturer for supply of written copy of specific warranties of the product

PART 2 PRODUCTS

2.01 MANUFACTURER

Lite-Form Technologies
1950 West 29th Street
South Sioux City, NE. 68776
Phone: (800) 551-3313 | Fax: (402) 241-4435
E-Mail: general@liteform.com | Web Page: www.liteform.com

2.02 MATERIALS

- Insulated Concrete Forms shall be LiteForm forms as manufactured by LiteForm Technologies South Sioux City, NE. 68776.
- Insulated Concrete Forms to be supplied through LiteForm or an authorized LiteForm Distributor.
- Substitutes and alternates will not be accepted. (See Section 1.06).

2.03 COMPONENTS

Provide LiteForm ICF Wall System Forms as listed below as may be required for proper execution of the work:

- 4", 6", 8", 10" & 12" Standard Form Unit
- 4" Core - 48"L x 8" W x 16"H
- 6" Core - 48"L x 10" W x 16"H
- 8" Core - 48"L x 12" W x 16"H
- 10" Core - 48"L x 14"W x 16"H
- 12" Core - 48"L x 16"W x 16"H
- 4", 6", 8", 10" & 12" 90 Degree Corners
- 6" & 8" Extended Brick Ledge

2.04 CONCRETE

- Concrete supplied under Section 03 30 00 shall be of strength as specified by the design engineer (measured at 28 days).
- Recommended aggregate size to be 3/4" (19mm).
- Recommended concrete slump is 4" to 6" +/- 1" (100 to 150mm +/- 25mm) (subject to design revision to suit application).

2.05 REINFORCING STEEL

- Reinforcing steel shall be as specified in Section 03 20 00 and shall be supplied under that Section for placement by the LiteForm Contractor Installer.

2.06 WALL ALIGNMENT SYSTEM

- To aid in the construction of the wall system, and to provide an adjustable device for ensuring plumbness of the wall during construction, where appropriate, an approved alignment system (provided as an installation component of the LiteForm ICF System) shall be used.

2.07 WATERPROOFING

- Where called for on drawings, Waterproofing shall be Peel & Stick Modified Bituminous Sheet Waterproofing Membrane. Material to be supplied under this Section & installed as specified under Section 07 13 00 (Sheet Waterproofing).
- Waterproofing material shall be EPS foam compatible.

2.08 PARGING

- Where called for on drawings, parging (stucco type) shall be an approved Acrylic Product. supplied under this section and installed as specified under Section 09 20 00 (Plaster & Gypsum Board)
- Alternate EIFS supplied and installed under Section 07 24 00 (Exterior Finishing Systems).

PART 3 EXECUTION

3.01 EXAMINATION

- Inspect all areas included in Scope of Work to establish extent of work and verify site access conditions.

3.02 SITE VERIFICATION OF CONDITIONS

- Verify that site conditions are as set out in Part 1- General Conditions.
- Examine footings installed under Section 03 30 00 are within +/-1/4" (6mm) of level and that steps in footings are 16" (425 mm) in height.
- If specified, ensure reinforcing steel dowels are in place at specified centers along footing lengths

3.03 PREPARATION

- Clean all debris from top of footings prior to commencing work.

3.04 INSTALLATION

- Installation of forms to be in strict accordance with Manufacturer's Product Manual as supplied in evidence to contractor under Sub Section 1.10 of this Section.
- The Installation Contractor shall ensure Manufacturer's procedures for the following work are employed on site (As outlined in the Manu-

facturer's Installation Manual):

- First Course Placement
- Horizontal Reinforcement Placement
- Successive Course Placement
- Door & Window Opening Construction
- Form Alignment & Scaffolding Installation
- Vertical Reinforcement Placement
- Pre-Concrete Placement Inspection
- Concrete Placement
- Alignment Assembly Removal

3.05 SERVICE PENETRATIONS

- Service penetrations (e.g.- electrical service conduits, water service pipes, air supply and exhaust ducts etc.) shall be installed at the required locations as indicated by the appropriate trade.
- Service penetrations exceeding 16" x 16" (400mm x 400mm) in area shall be reinforced.
- Prior to concrete placement, install service penetration sleeves (supplied by others) at designated locations to create voids where services can be passed through at later date.

3.06 CLEANUP

- Clean up and properly dispose of all debris remaining on job site related to the installation of the insulated concrete forms.

3.07 PROTECTION

- Provide temporary coverage of installation to reduce exposure to Ultra Violet light should final finish application be delayed longer than 60 days.

END OF SECTION

LiteForm[®] ICF

LiteForm ICF Detail Drawings

LF04 - 4" Straight Block

LF04RC - 4" Right Corner

LF04LC - 4" Left Corner Blocks

LF06 - 6" Straight Block

LF06RC - 6" Right Corner

LF06LC - 6" Left Corner

LF08 - 8" Straight Block

LF08RC - 8" Right Corner

LF08LC - 8" Left Corner

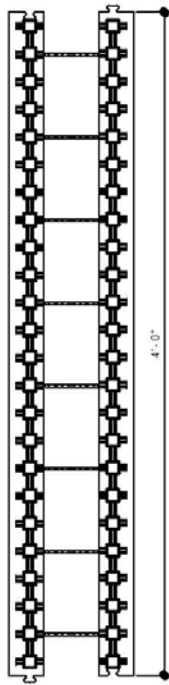
BL - Brickledge

8" to 6" - 8" to 6" Foundation Detail with Standard Floor

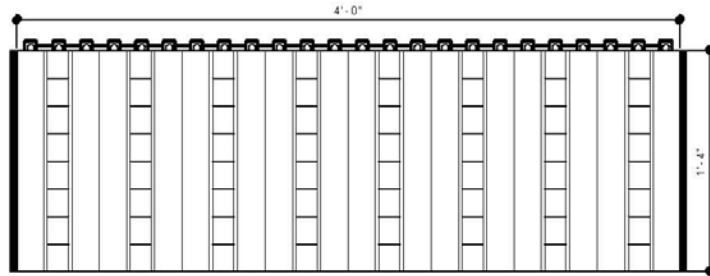
8" to 6" - 8" to 6" Foundation Detail with LiteDeck Floor

8" to 4" - 8" to 4" Foundation Detail with Standard Floor

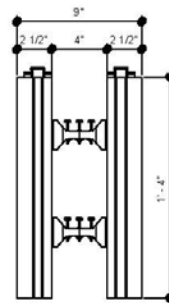
8" to 4" - 8" to 4" Foundation Detail with LiteDeck Floor



Top View



Side View



Front View

LiteForm ICF®

LiteForm Technologies
1950 West 29th Street
South Sioux City, NE. 68776
Tel: 800-551-3313
Fax: 402-241-4435
www.liteform.com

4" LITEFORM ICF - STRAIGHT BLOCK

DRAWN BY: AB

REVISION DATE:

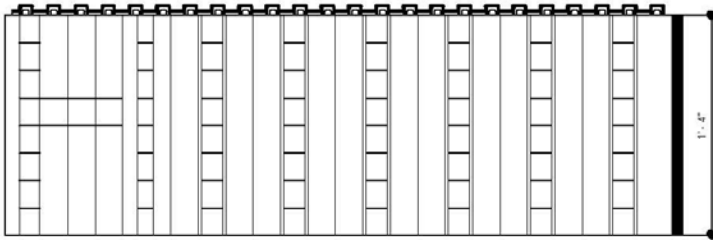
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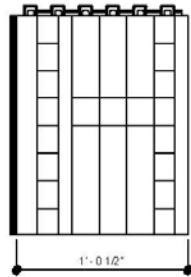
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LF04

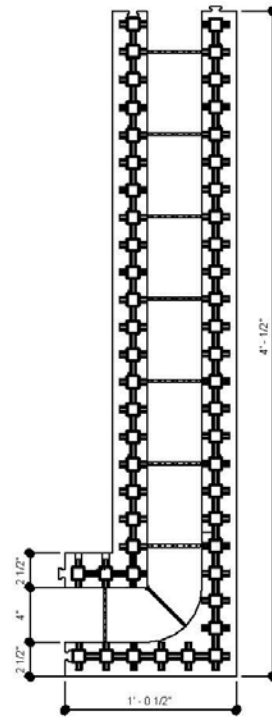
DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITE-FORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.



Side View



Front View



Top View

LiteForm ICF®

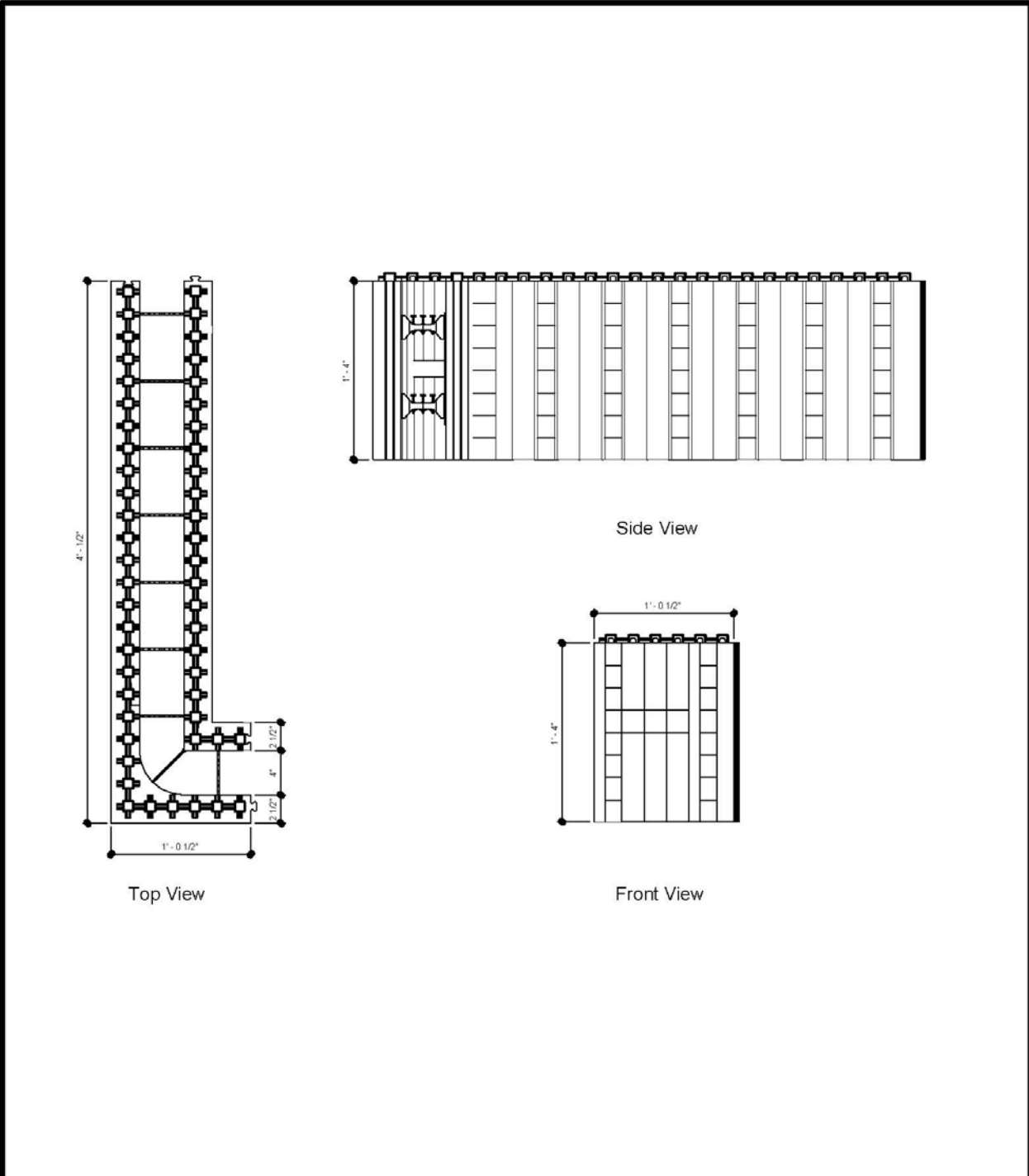
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4" LITEFORM ICF - RIGHT CORNER

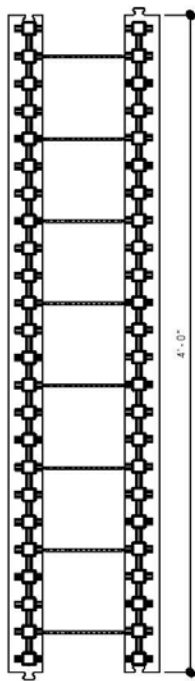
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DETAIL NO: LF04RC

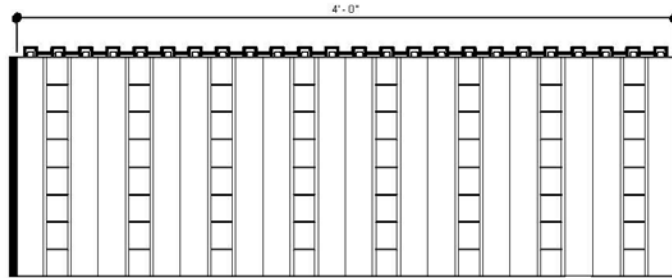
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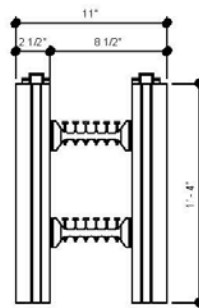
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|--|--|----------------|--------------------------------------|---------------------|
| <h1 style="margin: 0;">LiteForm ICF®</h1> | LiteForm Technologies 1950 West 29th Street South Sioux City, NE. 68776 Tel: 800-551-3313 Fax: 402-241-4435 www.liteform.com | | 4" LITEFORM ICF - LEFT CORNER | |
| | DRAWN BY: AB | REVISION DATE: | DATE: 03/26/20 | SCALE: Not to Scale |
| DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITE-FORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE. | | | DETAIL NO.: | LF04LC |



Top View



Side View



Front View

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6" LITEFORM ICF - STRAIGHT BLOCK

DRAWN BY: AB

REVISION DATE:

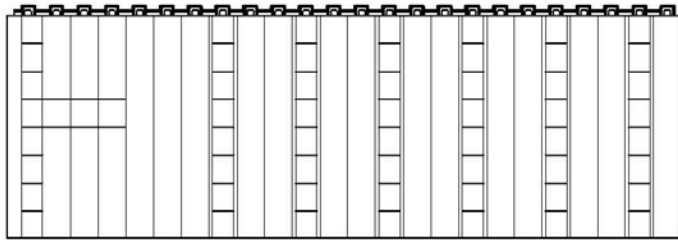
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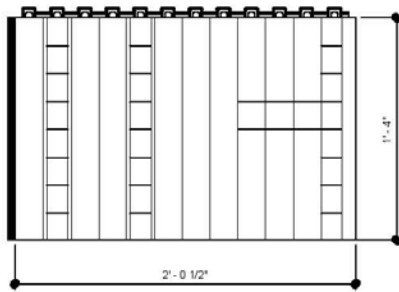
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LF06

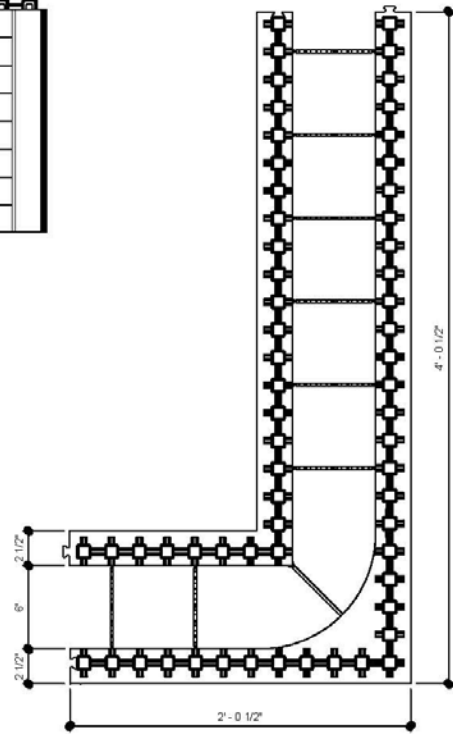
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Top View

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6" LITEFORM ICF - RIGHT CORNER

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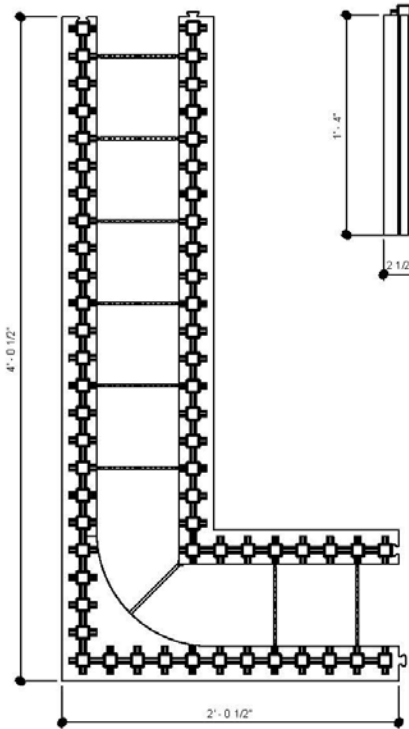
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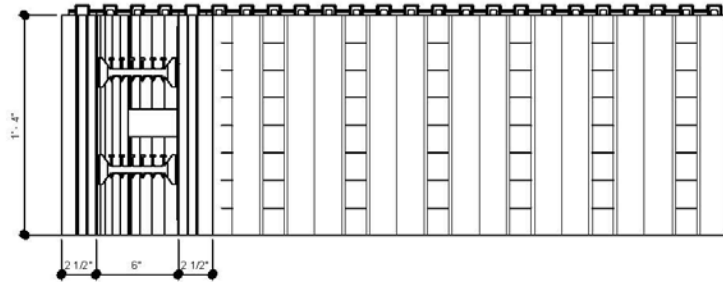
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LF06RC

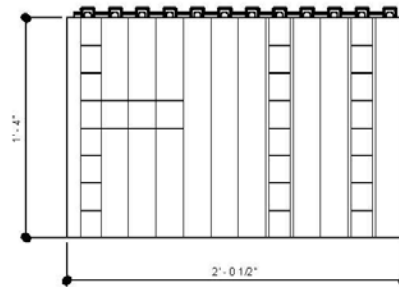
DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITE-FORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.



Top View



Side View



Front View

LiteForm ICF®

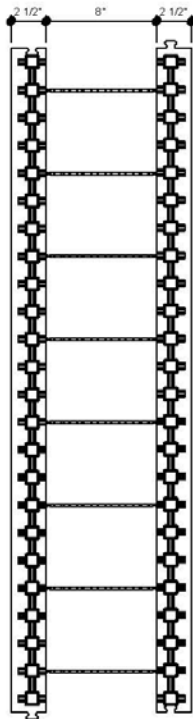
LiteForm Technologies
 1950 West 29th Street
 South Sioux City, NE. 68776
 Tel: 800-551-3313
 Fax: 402-241-4435
 www.liteform.com

6" LITEFORM ICF - LEFT CORNER

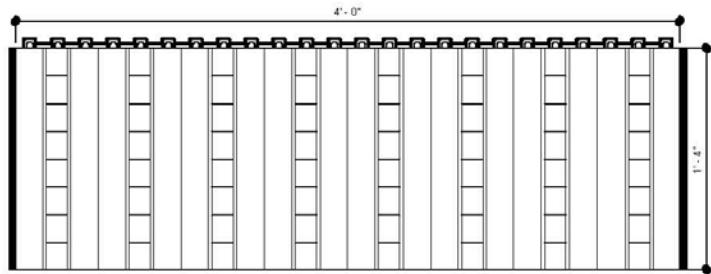
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| DRAWN BY: AB | REVISION DATE: |
| DATE: 03/26/20 | SCALE: Not to Scale |

DETAIL NO: LF06LC

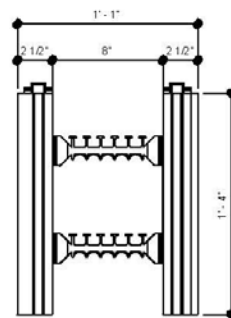
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Top View



Side View



Front View

LiteForm ICF®

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8" LITEFORM ICF - STRAIGHT BLOCK

DRAWN BY: AB

REVISION DATE:

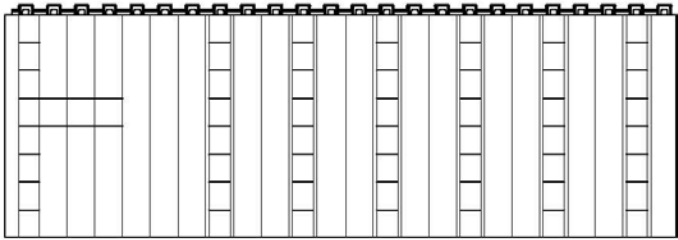
DATE: 03/26/20

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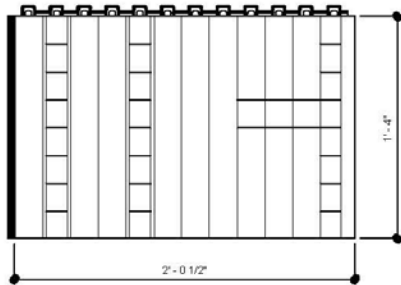
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LF08

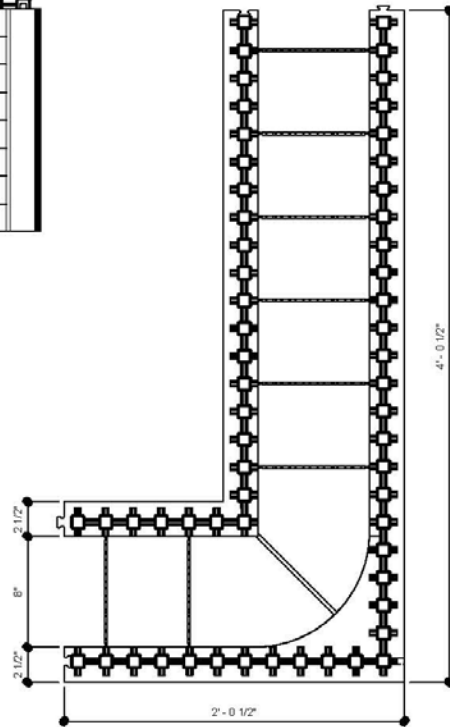
DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITE-FORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.



Side View



Front View



Top View

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8" LITEFORM ICF - RIGHT CORNER

DRAWN BY: AB

REVISION DATE:

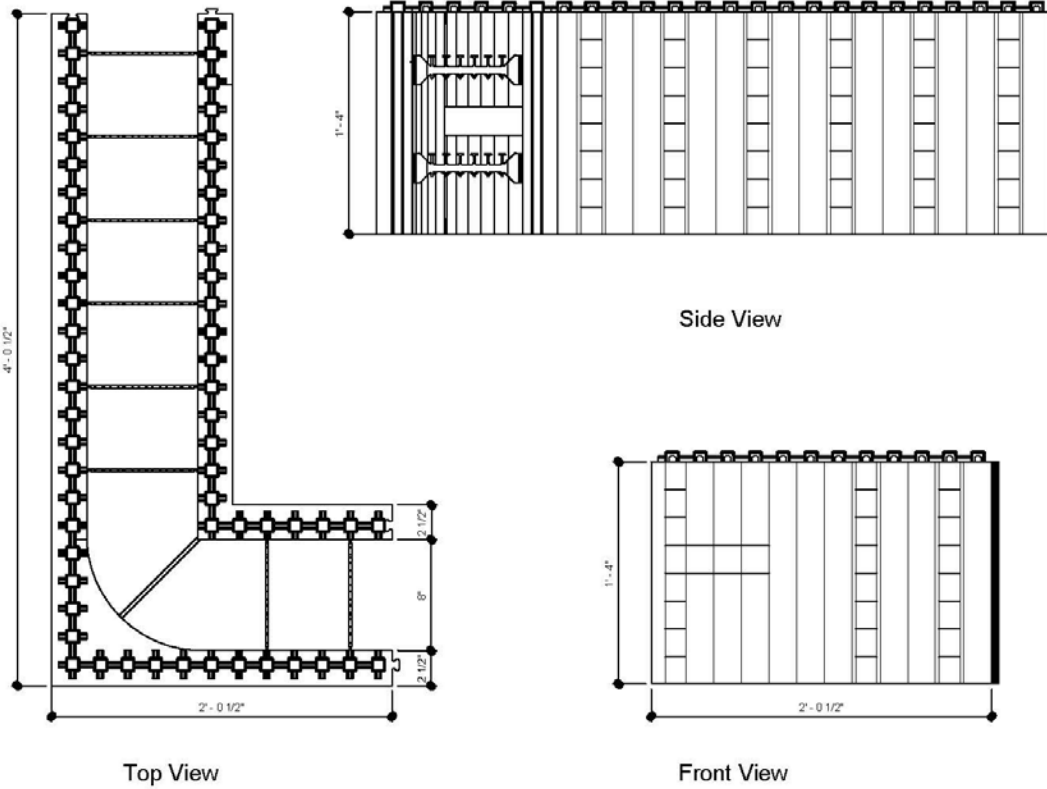
DATE: 03/26/20

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8" LITEFORM ICF - LEFT CORNER

DRAWN BY: AB

REVISION DATE:

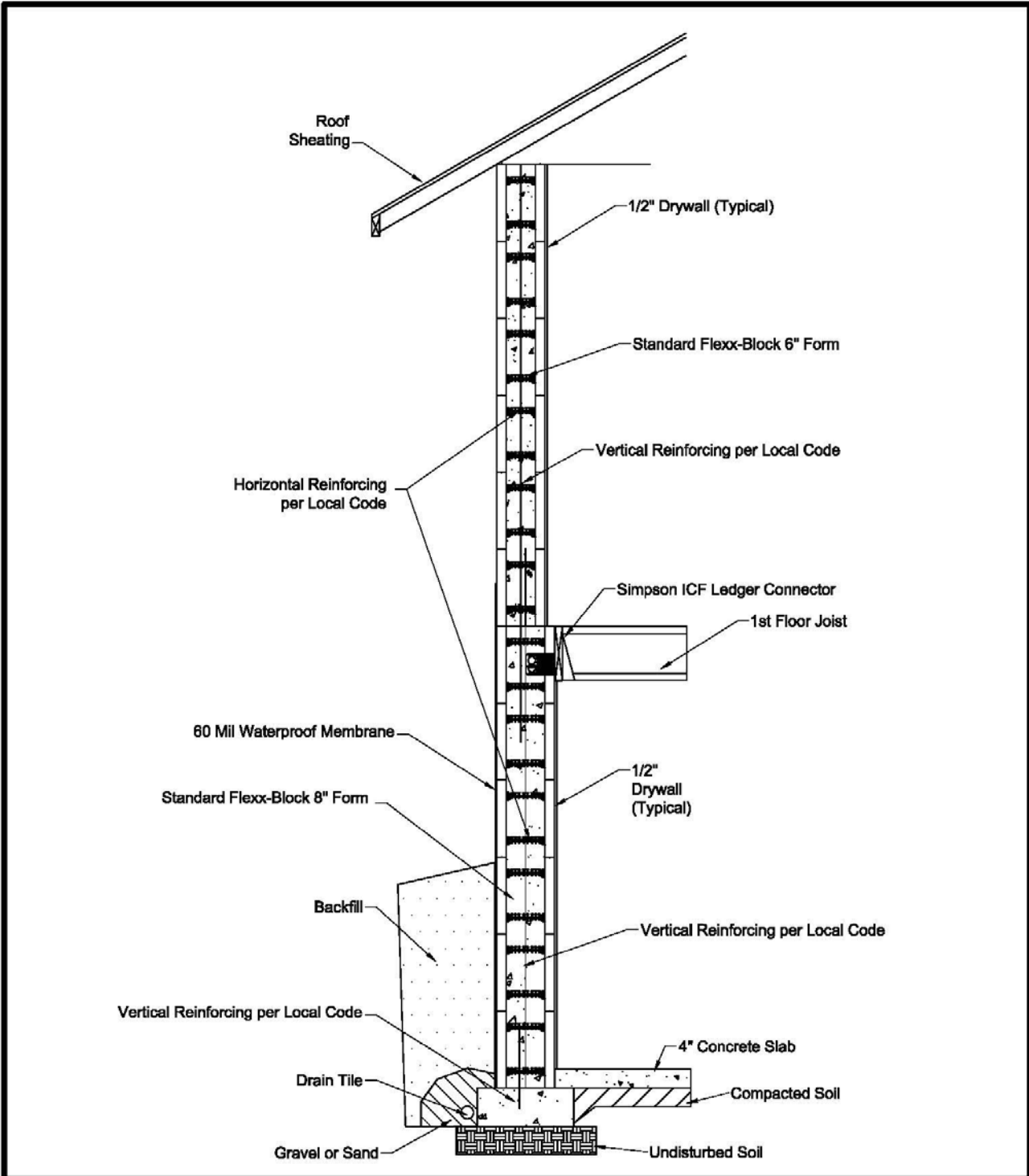
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DETAIL NO:

LF08LC

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITE-FORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.



LiteForm ICF®

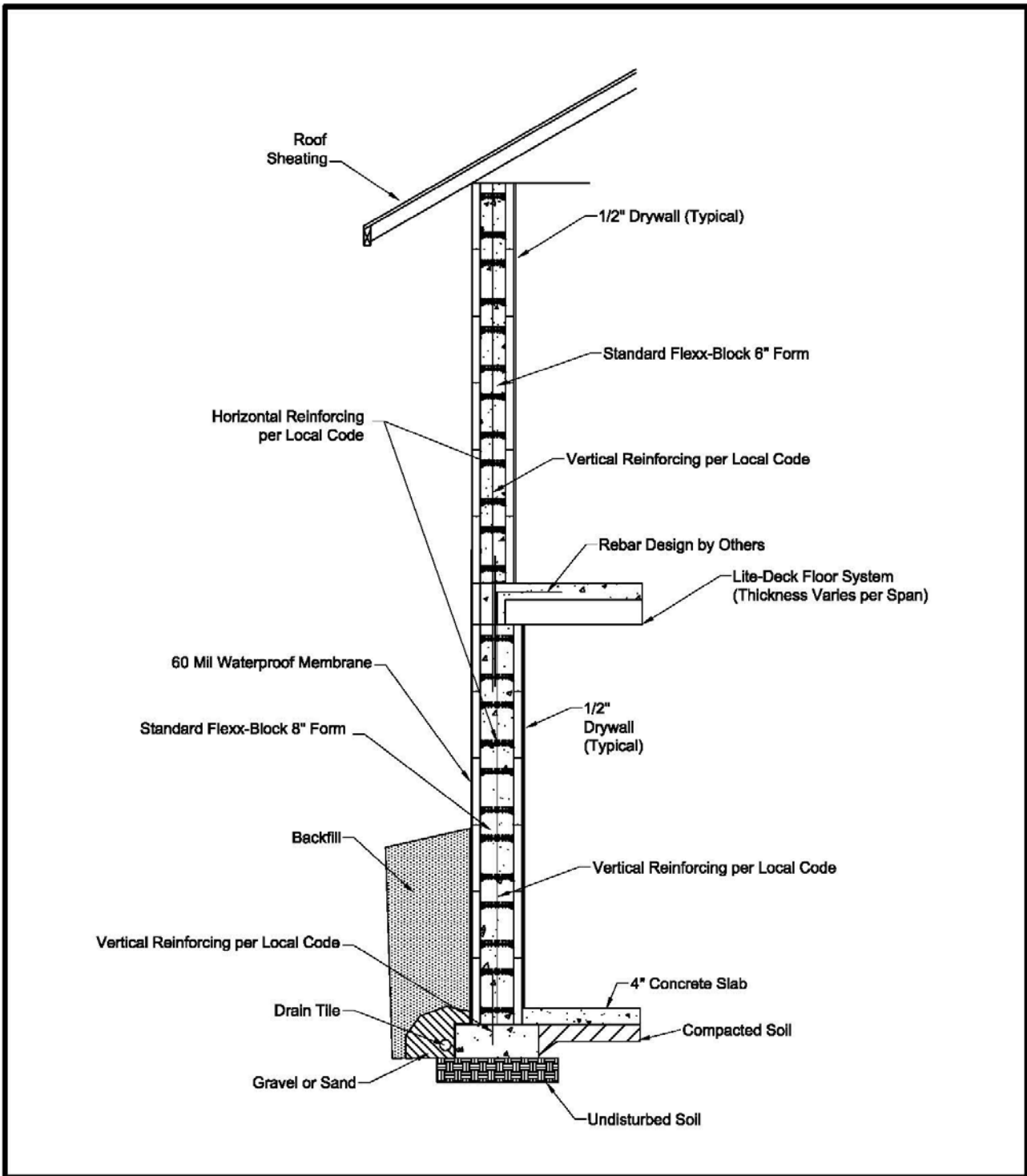
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**8" to 6" Foundation Detail
 with Standard Floor**

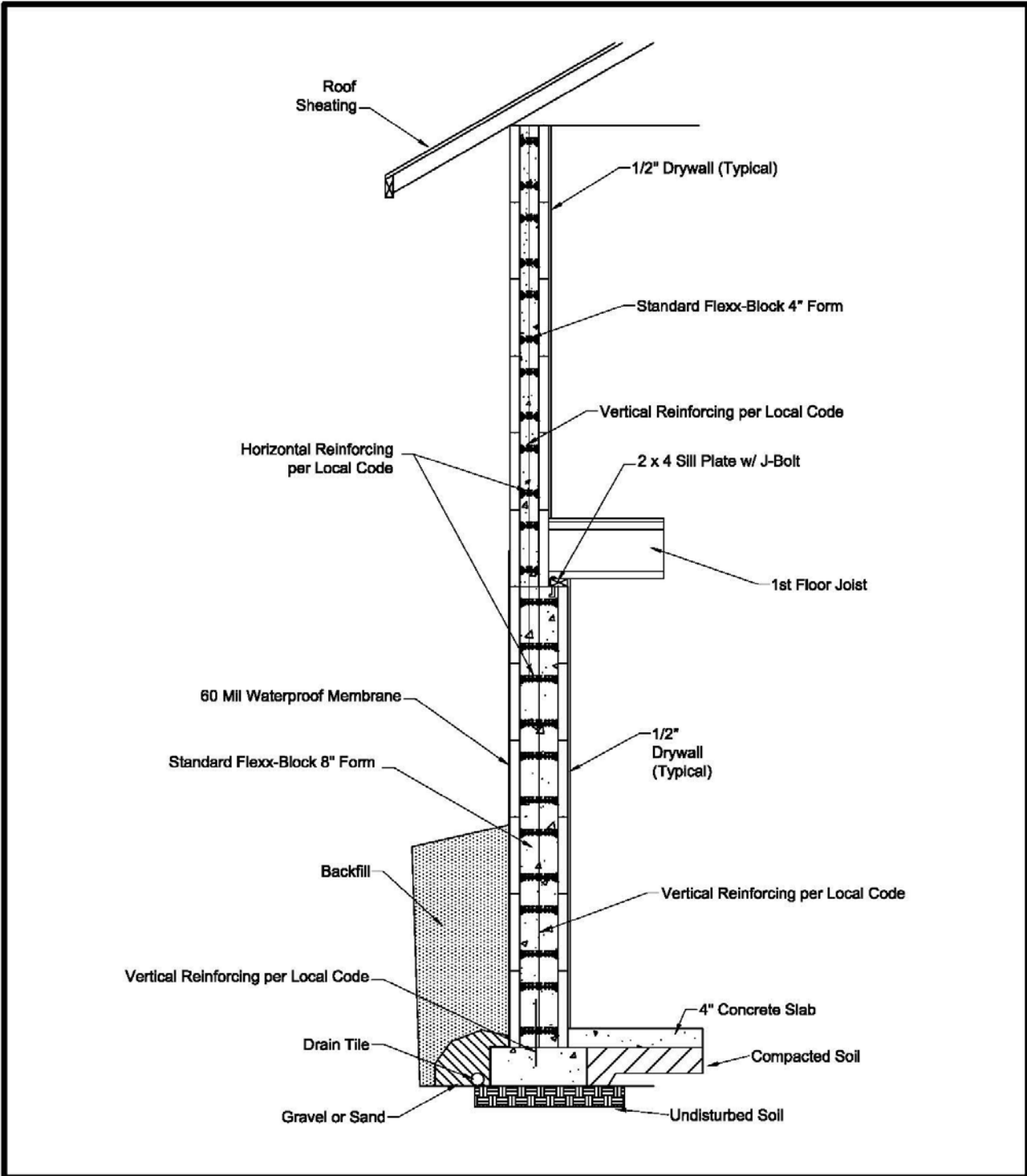
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| DRAWN BY: RKH | REVISION DATE: |
| DATE: 05/07/10 | SCALE: Not to Scale |

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

DETAIL NO: 8" to 6"
 REV. August, 2010



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|---|---|----------------|---|--------------------------------------|
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| | DRAWN BY: RKH | REVISION DATE: | | |
| DATE: 05/07/10 | SCALE: Not to Scale | | | |
| <small>DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITE-FORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.</small> | | | DETAIL NO: | 8" to 6" REV. August, 2010 |



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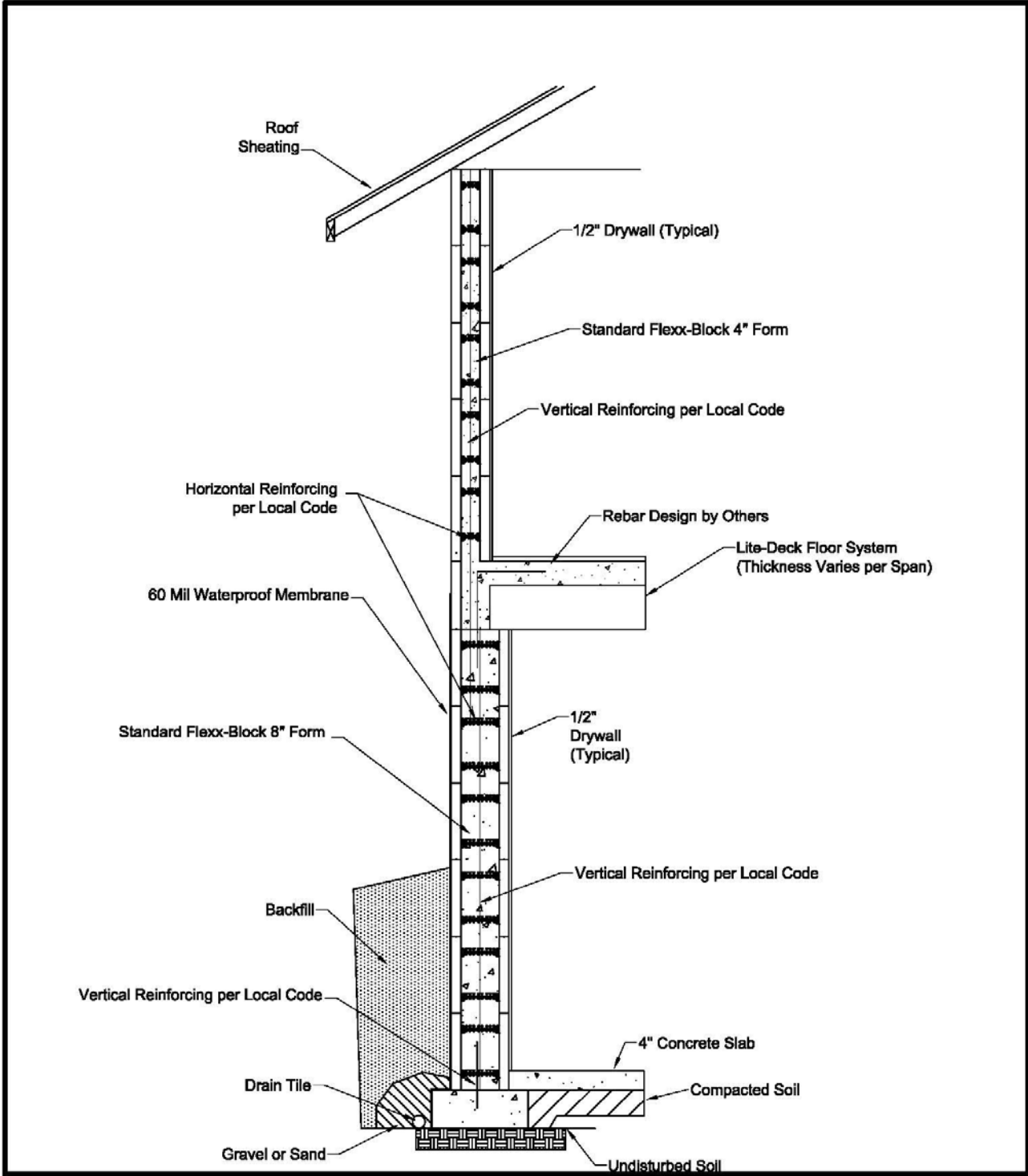
LiteForm Technologies
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**8" to 4" Foundation Detail
 with Standard Floor**

| | |
|----------------|---------------------|
| DRAWN BY: RKH | REVISION DATE: |
| DATE: 05/07/10 | SCALE: Not to Scale |

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

DETAIL NO: 8" to 4"
 REV. August, 2010



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| | DRAWN BY: RKH | REVISION DATE: | | |
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LiteForm® ICF

LiteForm ICF forming components should only be assembled by workers who have been properly trained. It is the installer's responsibility to make sure that training is done before construction begins. Serious injury or death may result from safety hazards caused by improper assembly and installation of forming components! Before beginning check local engineering and building codes on cast-in-place concrete construction. This guide covers typical building situations and is not meant to replace specific codes for engineering or safety.

Tools and Materials Needed

Basic Carpentry Hand Tools

- Tape Measure
- Hammer
- Pliers
- 4' Level
- Course Tooth Hand Saw
- Utility Knife
- Chalk Line

Building Materials

- 2"x4" Lumber for Braces
- 2" Lumber for Doors and Windows
- 1"x4" Wooden Grade Stakes
- 3" Course Thread Screws
- Plastic Insulation Washers
- 24" Zip Ties or Roll of 18 gauge Wire
- High Quality Low Expanding Foam Adhesive

Inventory May Include



LiteForm ICF Blocks
16" x 48" blocks with continuous furring ties every 6". Available in 4", 6", 8", 10" and 12" concrete thickness.



Additional Forms and Ties
LiteForm provides a variety of different forms and ties to construct virtually any wall shape.

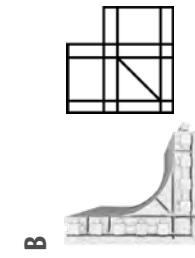


In-Wall Bracing (optional)

Steel In-Wall bracing is used to help keep your assembled wall straight from corner to corner.



90° Corner Options
90° Corner Block
Left and Right 90° corner blocks are alternated between courses.



90° Compact Corner
Compact corners and corner ties are a space saving option to form 90° corners.



SCAN ME

Questions?



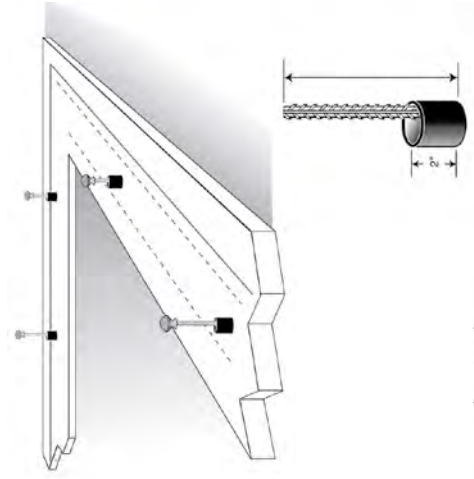
1-800-551-3313



Assembly videos of this and other advanced techniques may be seen at www.youtube.com/liteform

1 Footing or Pad Preparation

Footing or pad must be level, uniform and wide enough for the form to rest on. Footing must also be proper width and thickness for soil conditions. Check with local code officials for guidelines and specifications. First course (row) of forms will be glued to the footing/pad, along the chalk line.



2 Start at a Corner

Note : LiteForm ICF has 2 types of corner designs. Instructions for both designs are as follows:

- LiteForm ICF Corner Block
- LiteForm ICF Compact Corner

A. LiteForm ICF Corner Block



90° Corner Block
Left and Right 90° corner blocks are alternated between courses to create staggered seams.



Using low expansion foam adhesive, run a bead of glue along the bottom side of the corner form. Set the Corner in place on the footing following the chalk line. Glue will normally set within 20 minutes.

B. LiteForm ICF Compact Corner



COMPACT CORNER VIDEO
Take a Picture with Your Phone to View Assembly Instructions



WATCH NOW

90° Compact Corner
Compact corners and corner ties are a space saving option to form 90° corners.

B. LiteForm ICF Compact Corner Continued



Start with 2 full blocks. Cut one of the full blocks in half (2 - 24" Sections).



Drill or punch a hole on the opposite side of the 1st plastic tie on **both** sides of the 48" adjoining block.



Slide both the full and half blocks onto the compact corner.



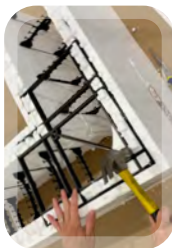
Using the provided zip ties, run ties through the pre-drilled holes in the corner and into to the hole you made in the adjoining block. Pull the zip tie tight against the ties.



Drill or punch a hole on the opposite side of the 1st plastic tie on both sides of the 24" cut block.



Add the 3rd zip tie to the inside of the corner and pull it tight. **IMPORTANT - Remove zip ties after concrete is set.**



Place a corner tie onto the pre-molded slots. You may need to clean the slots with a drywall saw. Tap the corner with a hammer so it is flush to the top of the form.



3 Glue First Course of Forms

Once the first course of forms are set, place foam glue every 18-24 inches so that it expands enough to protrude from both sides of the form. Glue both sides of the form wall.



4 Center of Wall : Common Seam

Reinforce the common seam at the center of each wall using the same **foam adhesive**. For common seams that are within 36" from the corner, use additional materials to reinforce the common seam. Tie spacing over 6" must be supported externally on both sides of the wall.



LiteForm Block Locks

Optional Reinforcing Methods



1x4 Wood Cleats



1/2" Plywood

5 2nd Course

A. LiteForm ICF Corner Block - Using the alternating corner block (Left or Right), place the corner onto the first course. The alternating left and right corners produce alternating seams through the wall assembly.

B. LiteForm ICF Compact Corner



Repeat the same steps from the 1st course using the other 1/2 block on the alternate side of the compact corner. This will create an alternating seam for your wall.



Place a corner tie into the pre-molded slots the same as you did for the first course.



Set your corner assembly onto the first course corner.

BLOCK LOCK VIDEO



Take a Picture with Your Phone to View Assembly Instructions



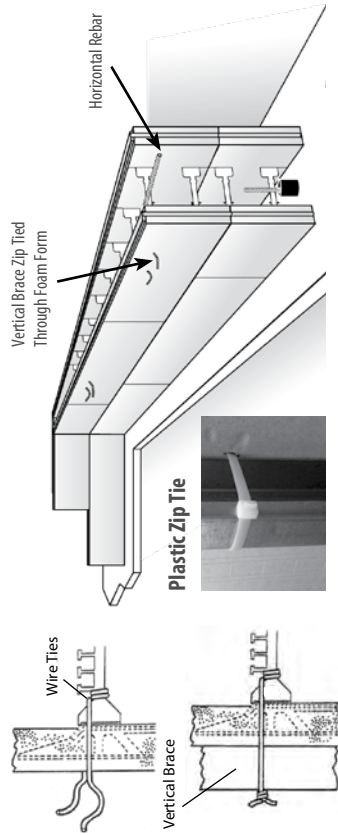
To hold the custom cut blocks together, place the provided LiteForm Block Locks into the pre-molded slots. As an alternative, use good quality foam adhesive.



Trim the tongue off of the next full block and slide it against the cut block.

6 Vertical Bracing

Begin installing wire ties with the second course of forms. A 24-inch zip-tie or 16 gauge wire is pressed through the form wall and wrapped around a spacer tie, leaving the ends extending out. As assembly continues, wire ties should be placed approximately every 32 inches up the wall, with rows placed approximately 6-feet apart along the entire wall. If a brace is also being used to support a work platform, braces should be placed in the corners. Always follow OSHA guidelines when constructing and working from platforms.



Wire Ties



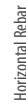
Vertical Brace



Plastic Zip Tie



Vertical Brace Zip Tied Through Foam Form



Horizontal Rebar

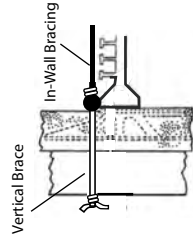
7 In-Wall Bracing (Optional)

Horizontal In-Wall bracing sections should be installed horizontally approximately every 32 - 48 inches around the entire wall and at the top of the wall. Wire-tie or zip-tie the In-Wall to a spacer tie and vertical stud approximately every 32 inches.



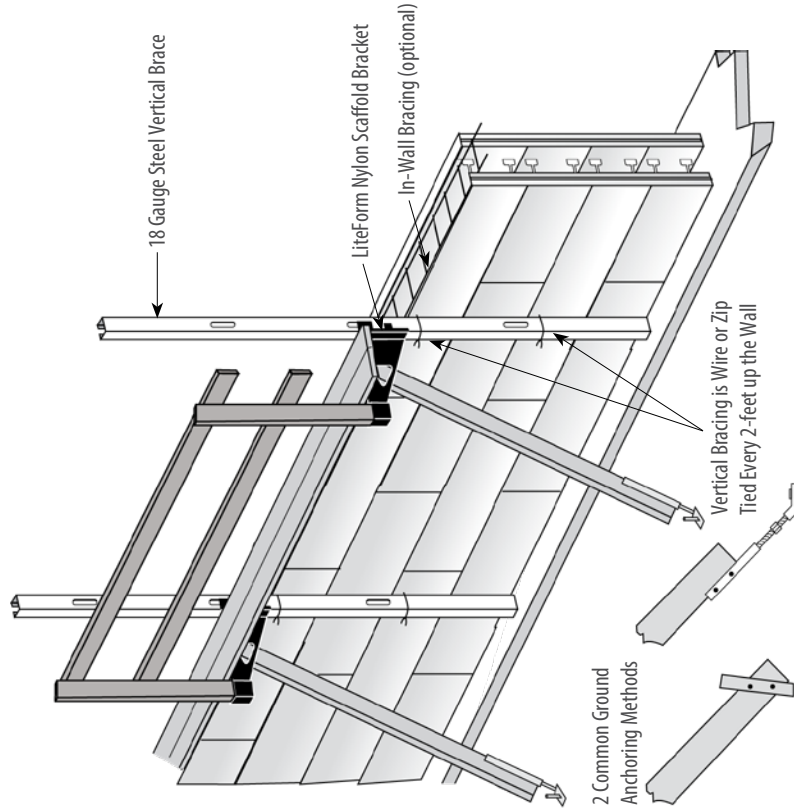
IMPORTANT!

Whenever a vertical brace will be located, make sure to use a wire or zip-tie wrapped around the In-Wall bracing. This will ensure a straight wall from corner to corner.



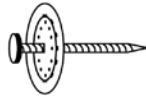
8 Vertical Bracing Support

When assembled wall reaches 4-courses high, exterior vertical braces must be attached along one side of the form. They are placed approximately *6-feet apart and are anchored to the form with the wire ties which were installed earlier. Braces can be good-quality dimensional lumber (2X4) or 18-gauge steel. Additional braces should be used next to window or door jambs. A diagonal "kicker" brace is anchored to each vertical brace. If optional steel In-Wall Bracing is not used, vertical braces should be placed approximately every 4-feet apart, to ensure proper alignment. *Maximum spacing of 6 feet is allowed by OSHA guidelines, if brace is also being used to support a work platform.

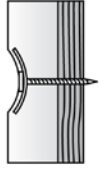


9 Window & Door Casing and Bracing

Openings can be built during form wall assembly or they can be cut in with a hand saw, after the form is assembled.

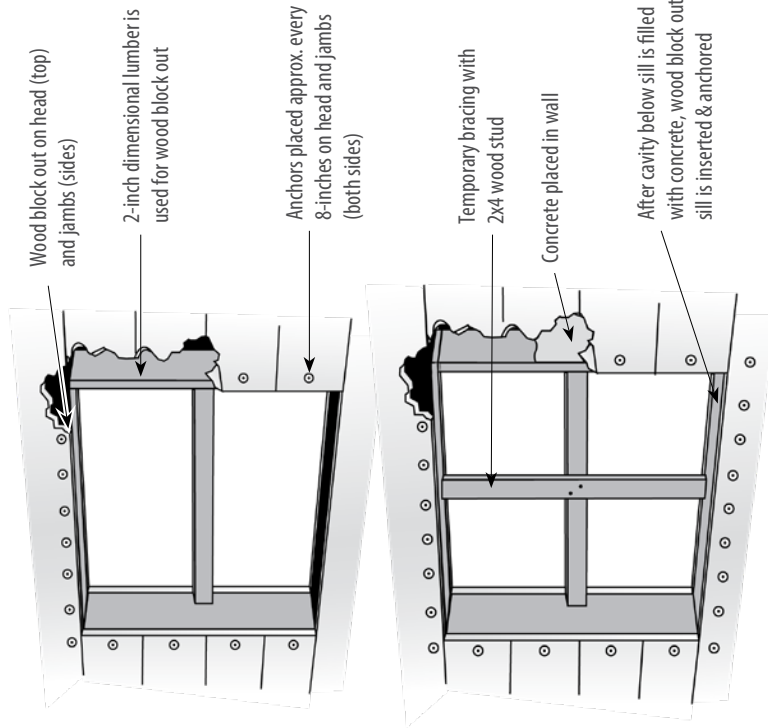


3-inch Drywall Screw with Plastic Reinforcing Washer



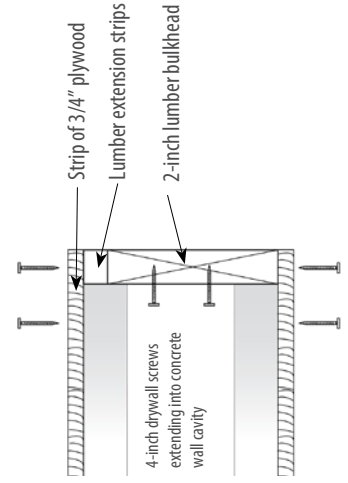
Seat Screw so that Washer is Countersunk into Insulation

Prior to placement of concrete, wood block outs are securely anchored at head and jambs. A temporary 2x4 wood brace is added to openings over 2-feet tall. Wood sill block out is not placed at this time to allow for visual inspection of proper concrete placement under sill.



Alternate Technique for Window and Door Casing

The 2-inch dimensional lumber (for block outs) can be installed flush with trimmed edges of insulation. The 2-inch lumber is anchored in place with strips of 3/4-inch plywood or 1x4 lumber anchored to bulkhead and plastic spacer ties with drywall screws. Strips of 2-inch lumber are used to extend the width of block out lumber (concrete wall width + 5-inches)

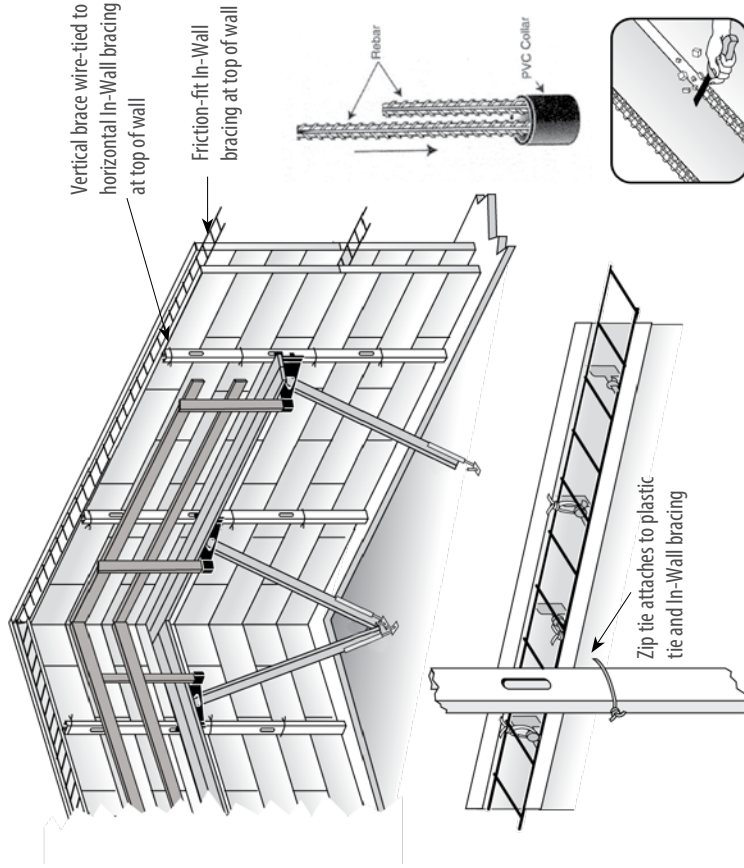


Top Assembly of Form Wall

When assembled wall reaches full height, vertical rebar is lowered in-between the foam planks and inserted into the PVC collar up against the other rebar protruding from footing or pad.

Steel In-Wall bracing is 'friction fit' around the entire wall. The vertical 2x4 braces are anchored to the form with lengths of wire through the form wall and around the steel In-Wall Bracing.

If a wood frame structure will be constructed above the concrete wall, castellations should be removed with a sharp blade or saw, to ensure a smooth fit.



Final Check List of Your Project

- Are corners plumb from top to bottom?
- Are vertical braces wire tied every 2-feet?
- Diagonal braces adjusted and anchored?
- Is top In-Wall bracing installed and wire-tied?
- Has final alignment been checked?
- Is someone assigned to check for blow-outs?
- Is all rebar installed?
- Does each vertical brace have a diagonal brace?
- Are window and door bulkheads reinforced?
- Have utility holes been cut and blocked?
- Is a blow-out repair kit handy?
- Is scaffold planking safely anchored?

Calculate Concrete

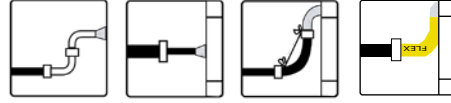
Length in Feet x Height in Feet x Thickness in Inches x .0031 = Cubic Yards of Concrete - Minus window and door openings.

Concrete Specifications

1/2 to 3/4 inch smooth aggregate
2,500 to 4,000 psi mix
4 to 6 inch slump

Placing the Concrete with a Concrete Pump

Concrete is often placed in the insulating form walls with a concrete pump. To minimize the risk of form failure, the discharge pressure from the pump hose should be reduced by using one of the techniques detailed below. Most pump operators are familiar with these techniques and can provide the necessary accessory if they are notified, in advance.



90-Degree Elbows - A 90° elbow accessory is attached to the pump's delivery hose to reduce discharge volume and pressure.

Hose Reducer - A 3-inch reducer is attached to the pump's delivery hose. The 3-inch discharge hose reduces the concrete's discharge pressure.

Hose Harness - A hose harness can be fitted with a rope or strap to bend it so that concrete is not discharged straight down into the form. The hose is diverted and allows the concrete to fall naturally.

Flexible Hose - A 4-inch or 5-inch flexible discharge hose can be used to mitigate waste and control the flow of concrete.

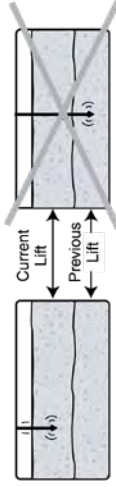
Place Concrete in Lifts

Place concrete in lifts not to exceed a height of 4-feet, with no more than 8-feet of concrete placed vertically in one hour. This rate must be followed, regardless of how concrete is placed into the form. Placing concrete in lifts over 4-feet per lift can cause immediate form failure (blow-outs).



Vibrating Walls

Only experienced operators should be allowed to use an electric vibrator with a 3/4 - 1 inch head to consolidate concrete.



Winter Projects

If a winter project is delayed for several days, assembled forms should be covered to protect the accumulation of ice or snow at the bottom of the form. If this debris is not removed, they will cause voids in the wall when the concrete is placed.



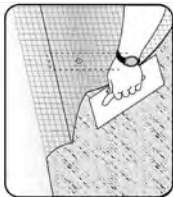
Damproofing

Select only latex or low-solvent liquid damproofing which is approved for application directly onto the polystyrene insulation. Apply a liberal coating directly onto the form, sealing the seams in the form wall.



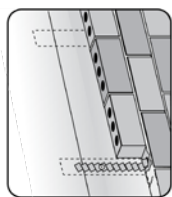
Waterproofing

Self-adhesive membranes (minimum 60 mil thickness) or approved liquid waterproofing materials can be applied directly to the form walls. Follow manufacturer's recommendations for application directly onto rigid polystyrene insulation.



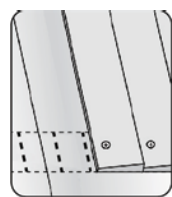
Stucco, EIFS, Synthetic Masonry

Insulation surface must first be roughened by sanding or scratching. For products having a base coat and mesh, the mesh is anchored directly to the concealed tie pads. Follow manufacturer's instructions for proper placement, temperature control, etc. Form walls which have been exposed to the environment for more than 90 days will normally have a light coat of fine "powder" which must be thoroughly brushed off before applying finish.



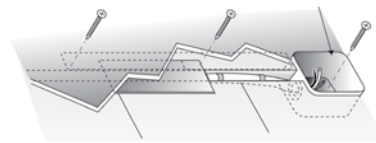
Brick

With a concrete brick ledge, brick veneer (fascia) can be added directly to the form walls. Brick anchors may be attached to the concealed plastic tie pads or may be inserted throughout the form walls, into the form cavity, prior to placement of concrete. Follow local building codes or accepted practices for the placement of brick anchors.



Drywall or Siding

Gypsum board (drywall) is attached directly to the form walls. This is done by anchoring the drywall to the form's concealed continuous vertical furring strips with a drywall screw. The furring strips are the tab-ends of Spacer Ties and are located every 6-inches on both sides of the forms.

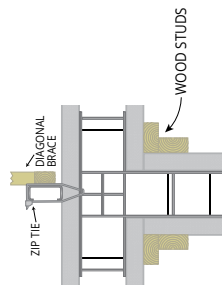


Electrical and Plumbing Lines

Follow local codes for the types of electrical and plumbing components which are acceptable for project. Electrical and plumb lines are concealed in the insulation by cutting or carving a pathway approximately 1-1/2" to 2-1/2" inches deep with a saw, router or hot knife. For junctions or switch boxes, insulation is completely removed and items are anchored directly into the concrete. Electric lines can be protected by running the inside approved metal or plastic conduit. Damage to lines can also be avoided by covering the pathway with a 16 gauge metal strip, approximately 2-inches wide, anchored to the concealed tie pads with a drywall screw. Electric lines can be held to the back of the pathway by using approved electrical anchors or expandable insulation placed approximately 2-feet apart.

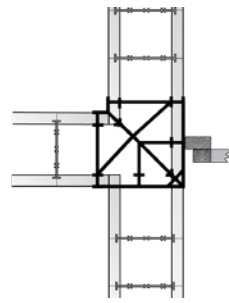
Advanced Forming Techniques

T-Intersections



4", 6" and 8" Concrete Wall

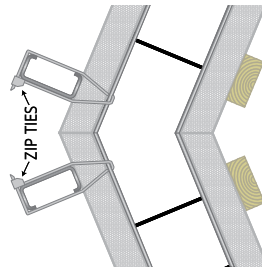
Form a t-intersection using 2 full blocks. Cut form to the inside dimension and remove ties. Use the friction fit In-Wall support at every course. Tie the vertical brace to the In-Wall support wherever your other horizontal In-Wall is placed. Support the inside of the t-intersection with vertical studs fastened to a plastic tie. Support the back of the t-intersection with a vertical and diagonal brace.



10" and 12" Concrete Wall

Exposed 90-degree Corner Ties are used in intersections for walls which are over 8-inches thick. The blocks are cut and positioned as usual. The T shape is assembled by alternating the position of the 90-degree Corner Tie as the wall is assembled. Additional bracing is also required. For T-Intersection in concrete walls which are over 12-inches thick, 12-inch Exposed 90-degree Corner Ties are cut apart and re-wired at the new width using 18 gauge wire.

45 Degree Corners



4", 6" and 8" Concrete Wall

Miter cut 22.5" from two blocks to form a 45° corner. Remove any cut ties. Insert the 45° In-Wall support. This should sit on top of the ties and be friction fit. Brace the back of the 45° wall on both sides with a steel stud or wood studs and diagonal brace. Once the vertical and diagonal bracing is secured and wire tied to the top of the wall, use foam adhesive all the way up the seam. Place 2 - 2x4 studs on each side of the 45° and screw fasten to a plastic tie.

Fiber Tape Option

Fiber tape can be used as additional support for 45° corners.



Brickledge Assembly



8" Concrete Wall

The Brickledge block can be paired with LiteForm ICF wall forms. Structural engineering is needed to determine the rebar requirements to support the weight of the brick veneer.



Many installers will place In-Wall bracing at the course of brickledge blocks. This will help in keeping wall alignment and enforcing the brickledge.



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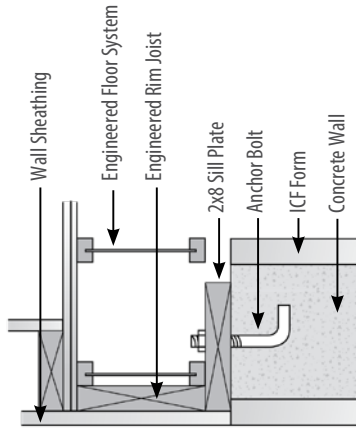
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US Patent Numbers 4765109, 4916879, 4889310, 5209039, 3617100, 4866891, 4885888, 4706429, 4730422, 5497592, Canadian Patent Number 1314727, Patents Pending.

For more advanced forming techniques visit - youtube.com/liteform

Top Plate

Detail as drawn is a general guide only and does not replace manufacturer's guidelines for application of their products or the prevailing construction codes for a particular region or project design.





Forward and Introduction

Description of LiteDeck System

- 1.1 Materials
- 1.2 Floor/Roof Formwork Installation
- 1.3 Structural Engineering
- 1.4 Span Tables
- 1.5 Reinforcing Concrete
- 1.6 Concrete Placement
- 1.7 Temporary Shoring
- 1.8 Concentrated Loads
- 1.9 Maximum Ceiling Load / Steel Stud Load Capacity
- 1.10 Fire Resistance
- 1.11 Fire Performance Test w/ Drywall
- 1.12 Fire Performance Test w/o Drywall
- 1.13 Sound Transmission Class
- 1.14 R-Value
- 1.15 Impact Isolation Class
- 1.16 Patents
- 1.17 Imprints

FORWARD and INTRODUCTION

The Technical Evaluation data contained herein is provided for general information only. It is not to be construed as engineering advice on a particular project and does not replace the engineering judgment, interpretation or conclusions of the Engineer Of Record on a particular project.

Tests and Reports

The tests provided herein were conducted by independent firms and facilities and are warranted to have been done in full compliance with the codes referenced for each test. Further related statements have been secured from information published by the firms, organizations or associations which are referenced herein.

Local Building Codes

The Lite-Deck concrete forming system is sold throughout several building code jurisdictions. Construction codes may be subject to various interpretations and periodic changes. Lite-Form Technologies does not warrant that the information contained herein complies with any specific local code or building regulation. The engineer, designer or installer must insure that all applications of Lite-Deck forms are in compliance with the appropriate local codes and regulations in the jurisdiction and for which the specific applications are being used.

Errors and/or Omissions

The information contained herein could include technical or typographical errors, omissions or other inaccuracies. Lite-Form Technologies reserves the right to make changes, corrections and/or improvements without notice. Lite-Form Technologies assumes no liability for the accuracy or completeness of the information contained herein. Further, Lite-Form Technologies, its' representatives or distributors disclaim any and all liability for damages incurred directly or indirectly as a result of such errors, omissions or inaccuracies.

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Patent Number 6272749 and 6817150B1. Other Patents applied for or Pending.

Description of the Lite-Deck System

Lite-Deck Floor/Roof System – Stay-in-Place EPS formwork for Concrete Construction

General: The Lite-Deck System consists of interlocking rigid polystyrene foam plastic panels with inserted steel stiffeners, and is a permanent formwork for reinforced concrete joists and slab. The system is an ICF (Insulated Concrete Form) panel for floors and roofs to be used in residential and commercial applications.

1.1 Materials:

Base Sections: This profile consists of a wire-cut expanded polystyrene (EPS) foam-plastic panel with provision for load-bearing, concrete structural joists. The sides of the panels have an interlocking configuration. Cut-outs for the metal C-channel stiffeners are made on the bottom face of the base sections. The stiffener cut-outs are spaced 12 inches on center. The panels can be either 24 inches or 48 inches wide by lengths as needed.

See Detail Drawings in Section 3

The foam billets used to fabricate the base sections are molded from modified, expandable polystyrene beads that comply with Type 8 EPS classification in accordance with the latest ASTM C578 requirements. The foam plastic has a nominal density of 1.25 lbs. pcf and has a maximum flame-spread rating of 25 and maximum smoke-density rating of 450 when tested in accordance with ASTM E84 in a thickness of 4 inches.

Top Hats: This EPS profile is molded with 100% recycled EPS. During installation, it is attached to the top of the base sections in order to increase the depth of the load-bearing concrete joist. The top hats come in thicknesses of 2, 4 and 6-inches by 4 foot lengths. The foam plastic has a nominal density of 1.25 lbs. pcf. EPS has a maximum flame-spread rating of 25 and a maximum smoke-density rating of 450 when tested in accordance with ASTM E84 in a thickness of 4 inches. See Detail Drawings Section 3; LD 2.3

Steel C-channel: The channels are formed from 18 gauge (0.0516") Type G90, galvanized steel in compliance with ASTM A653, Chemically Treated, Dry or lightly oiled. The nominal dimensions of the channels are 1 1/2" flange by 3 1/2" web with 3/8" thick return lip. The channels are inserted into the channel cutouts on the bottom face of the base sections. To maintain the base sections in place, 3 inch self-tapping screws with plastic insulation washers are fastened through the top face of the base section and into the stiffener.

See Lite-Deck Detail Drawing Section 3; LD 2.1

1.2 Floor/Roof Formwork Installation

Base Sections are installed over temporary shoring. Top hats are then installed on top of base sections as required by code or design. Reinforcing steel is then installed in the joist and in the top slab. Concrete is then placed on the Lite-Deck formwork. Once the concrete reaches the required strength, the temporary shoring is removed from under the Lite-Deck form. See Installation Manual in Section 4; Marketing Materials

1.3 Structural Engineering

Structural engineering for all projects using Lite-Deck formwork shall have the concrete joist engineered for the clear span and loads to be placed on the completed concrete joist. The design shall be in compliance with applicable building code. If the building code does not address concrete joists, the latest edition of (American Concrete Institute) ACI 318 shall be used to design the joist. Any variance from applicable building code or ACI code must be certified in advance by a Structural Engineer who is licensed for the jobsite location and specifications.

See Section 3; Detail Drawings

1.4 Span Tables (Autocad and PDF Files of these drawings are located on liteform.com)

Lite-Deck span tables should not be used without first securing competent advice with respect to its suitability for any given application. The use of the information disclosed in this diagram is subject to approval by the local building code authority. Although the information in this document is believed to be accurate, Lite-Form Technologies, nor any of their employees or representatives makes any warranty, guarantee or representation, expressed for the direct or indirect damages arising from such use.

1.5 Reinforcing of Concrete

Placement and specifications of all reinforcing steel shall be designed in compliance with the latest editions of ACI 318 and CRSI (Concrete Reinforcing Steel Institute) standards. Any variance from ACI or CRSI standards must be certified in advance by a Structural Engineer who is licensed for the jobsite location and specifications.

1.6 Concrete Placement

Placement of concrete shall be in compliance with latest edition of ACI-614 Code (Handling) and ACI-301 and 306 Codes for cold and hot weather concrete placement. Any variance from ACI standards must be certified in advance by a Structural Engineer who is licensed for the jobsite location and specifications.

1.7 Temporary Shoring (Full test available upon request)

All Lite-Deck formwork shoring shall be designed in compliance with the latest edition of ACI347R "Guide to Formwork for Concrete" (design chapter) using Load Table 1 as minimum requirements. Loads in Table 1 have a 2 to 1 safety factor included. Distance between support beams under Lite-Deck steel stiffener shall be determined by capacity of vertical shores and spacing between vertical shores. The maximum spacing between vertical shores shall be based on ASTM E72-05 Transverse Load Test, submitted as part of this Technical Evaluation.

See Transverse Load Test: RADCO Test Report No. RAD-3860

1.8 Concentrated Loads (Full test available upon request)

Maximum loads applied by foot traffic (from construction crews) to the Lite-Deck formwork shall be based on ASTM E661-03 Concentrated load Test, submitted as part of this Technical Evaluation. As required by ASTM standard, concentrated loads were placed on the "most vulnerable" portion of the Lite-Deck form. See Concentrated Load Test - RADCO Test Report No. RAD-3861

1.9 Maximum Ceiling Load / Steel Stud Load Capacity.

The maximum ceiling load attached to steel C-channels inserted into the base sections shall be based on Steel Channel Withdrawal Test, submitted as part of this Technical Evaluation. See Ceiling Load Test (Channel Withdrawal) - RADCO Test Report No. RAD-3862

1.10 Fire Resistance Rating (Full test available upon request)

Lite-Deck formwork has a 1.5 hour fire resistance rating based on the test results which were made in compliance with ASTM E 119-00.

See Fire Resistance Rating Test (ASTM E 119-00) SwRI – Test Project No. 01.11579.01.001

1.11 Fire Performance Evaluation with Drywall

(Complete Test Results are available on the attached Lite-Deck CD)

Foam plastic insulation used in the Lite-Deck formwork system has an average thickness which is in excess of 4 inches. Foam plastic insulation covered with 1/2 inch drywall is in compliance with UBC Standard 26-3, based on Fire Performance Test, submitted as part of this Technical Evaluation.

See Fire Performance Test (UBC 26-3) - SwRI – Test Project No. 01.10934.01.418a

1.12 Fire Performance Evaluation without Drywall

(Complete Test Results are available on the attached Lite-Deck CD)

Foam Plastic insulation used in the Lite-Deck formwork system has an average thickness which is in excess of 4 inches. Foam plastic insulation without 1/2 inch drywall covering is in compliance with UBC Standard 26-3, based on Fire Performance Test, submitted as part of this Technical Evaluation.

See Fire Performance Test (UBC 26-3)

SwRI – Test Project No. 01.10934.01.418b

1.13 STC -Sound Transmission Class (Full test available upon request)

A concrete floor's ability to reduce the transmission of outside, ambient sound is rated by a Sound Transmission Class number. The higher the number, the better the barrier to ambient sound pollution.

Lite-Deck Floor with 3-inch Concrete Cover and 14-inch Load-Bearing Concrete Joist

STC by Test – 57

STC by Calculation – 54 – With 1/2" Drywall attached direct to Lite-Deck stiffeners

STC by Calculation – 67 – With 1/2" Drywall attached with Resilient Clips

Lite-Deck Floor with 3-inch Concrete Cover, 14-inch Load-Bearing Concrete Joist, 1/2 " Carpet w/Pad

STC by Test – 48

STC by Calculation – 52 – With 1/2" Drywall attached direct to Lite-Deck stiffeners

STC by Calculation – 56 – With 1/2" Drywall attached with Resilient Clips

1.14 IIC – R-Value (Full Test located on enclosed CD)

The insulating value of Lite-Deck forms is achieved by its' use of EPS (Expanded Polystyrene) Insulation.

By test (C177 or C518), the insulating value of the EPS used in Lite-Deck Base Sections is R-4.40 (@ 25-degrees f) per inch of thickness*.

Based on the above-referenced tests, the calculated, nominal insulating value of Lite-Deck Base Sections is R-26.4.

1.15 IIC – Impact Insulation Class (Full test available upon request)

A concrete floor's ability to reduce the transmission of sound is rated by an Impact Insulation Class number. This rating quantifies the transmission of "impact sounds" such as foot traffic. The higher the number, the better the barrier to impact sounds.

Lite-Deck Floor with 3-inch Concrete Cover and 14-inch load-bearing Concrete Joist

IIC by Test – 44

IIC by Calculation – 48 – With 1/2" Drywall attached direct to Lite-Deck stiffeners

IIC by Calculation – 61 – With 1/2" Drywall attached with Resilient Clips

Lite-Deck Floor with 3-inch Concrete Cover, 14-inch load-bearing Concrete Joist, 1/2 " Carpet w/Pad

IIC by Test – 82

IIC by Calculation – 86 – With 1/2" Drywall attached direct to Lite-Deck stiffeners

IIC by Calculation – 90 – With 1/2" Drywall attached with Resilient Clips

1.16 Patents

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1.17 Lite-Deck Imprints

This sticker label is present on all LiteDeck products that leave the South Sioux City, NE. manufacturing facility.

CUSTOM MANUFACTURED TO LITEDECK SPECIFICATIONS

LiteDeck®

Insulated Concrete Floors, Decks, Roofs and Walls.

Minimum Steel C Channel Specs:
18 gauge - 50ksi
3 5/8" x 1 5/8"

CAUTION! USE IN ACCORDANCE WITH:
ACI 347R, 318, 301, 306 and CRSI Standards

Maximum Shoring Spacing per Concrete Cover:
Up to 3" Cover: 5' (60")
Over 3" to 6" Cover: 4' (48")

Manufactured under license by,
LiteForm® Technologies
South Sioux City, NE
Phone: 800-551-3313
www.litedeck.com

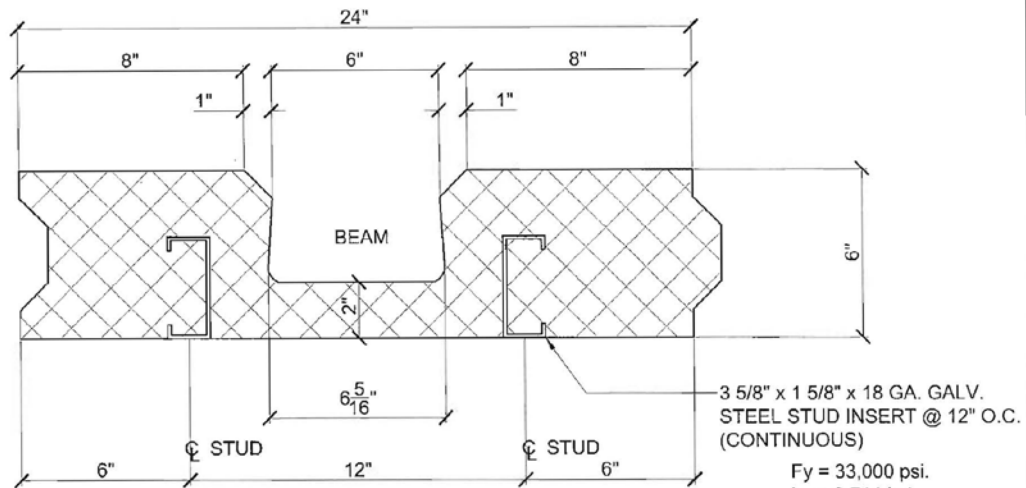
**For Technical Questions about:
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or REINFORCING
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Patent Nos. 8272749, 8817150 B1 • Other Patents Applied for or Pending

MADE IN THE USA

Detail Drawings

- LD-2.1 - 24" Wide Base Section Dimension
- LD-2.2 - 48" Wide Base Section Dimension
- LD-2.3 - 18" Wide Top Hat Section Dimension
- LD-2.3.1 - 26" Wide Top Hat Section Dimension
- LD-2.4 - Typical Combination of Base Section and Top Hats
- LD-2.5 - Trans. Section @ LiteDeck
- LD-2.6 - Trans. Section @ LiteDeck Floor to ICF Wall
- LD-2.7 - Long. Section @ LiteDeck Floor to ICF Wall (Resting)
- LD-2.8 - Long. Section @ LiteDeck Floor to ICF Wall (Abutment)
- LD-2.9 - Trans. Section @ Interior ICF Wall
- LD-2.10 - Longitudinal Section @ Interior ICF Wall
- LD-2.11 - Trans Section @ LiteDeck Floor to CMU Wall (Abutment)
- LD-2.12 - Long. Section @ LiteDeck Floor to CMU Wall (Resting)
- LD-2.13 - Trans. Section @ Interior CMU to LiteDeck Floor
- LD-2.14 - Long. Section @ Interior CMU Wall to LiteDeck Floor
- LD-2.15 - One Sided Trans. Sect. @ Flush Concrete Beam
- LD-2.16 - Longitudinal Section @ Flush Concrete Beam
- LD-2.17 - Transverse Section @ Dropped Concrete Beam
- LD-2.18 - Long. Section @ Flush Concrete Beam
- LD-2.19 - Trans. Section @ Porch Perimeter Beam



24" WIDE BASE SECTION

EPS Foam Density = 1.25 pcf

Weight = 4.10 pounds per lineal foot or 2.05 psf

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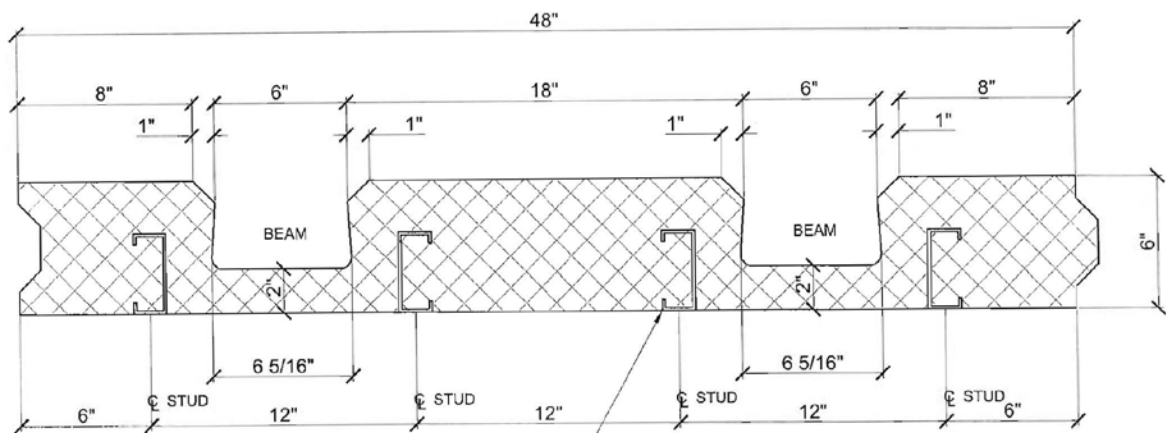
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Fax: 402-241-4435
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24" WIDE BASE SECTION DIMENSIONS

| | |
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| DATE: 09/23/08 | SCALE: Not to Scale |

DETAIL NO: **LD-2.1**

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3 5/8" x 1 5/8" x 18 GA. GALV. STEEL STUD INSERT
@ 12" O.C. (CONTINUOUS)

Fy = 33,000 psi.
Ix = 0.711 in⁴
Sx = 0.392 in³
A = 0.340 in²
Mx = 8505 in-lb. or
Mx = 708 ft-lb.

48" WIDE BASE SECTION

EPS Foam Density = 1.25 pcf

Weight = 8.25 pounds per lineal foot or 2.06 psf

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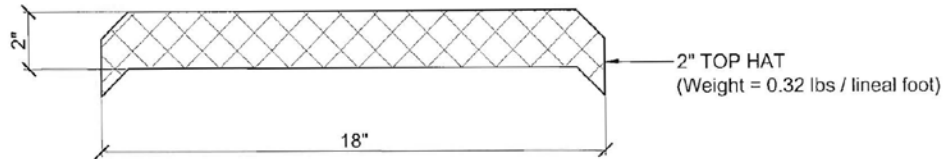
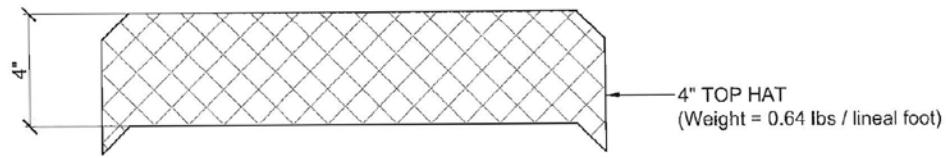
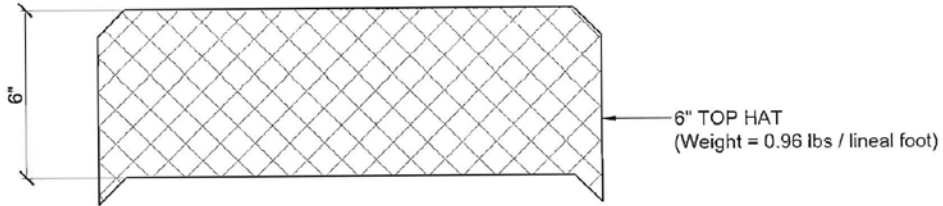
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18" WIDE TOP HAT SECTIONS

EPS Foam Density = 0.75 pcf

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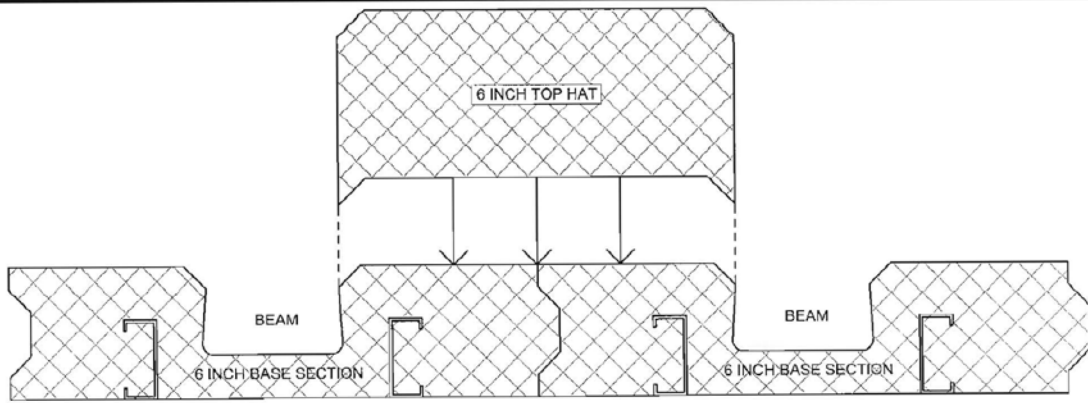
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18" WIDE TOP HAT SECTION DIMENSIONS

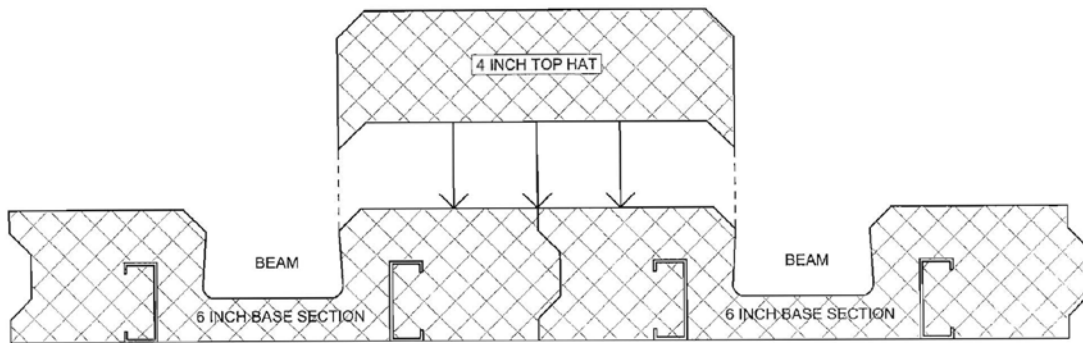
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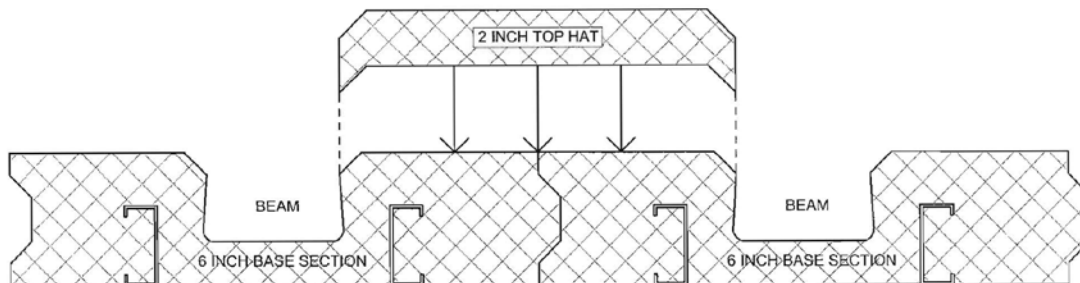
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12 INCH LITE-DECK FORM



10 INCH LITE-DECK FORM



8 INCH LITE-DECK FORM

TYPICAL COMBINATIONS
BASE SECTION WITH TOP HATS

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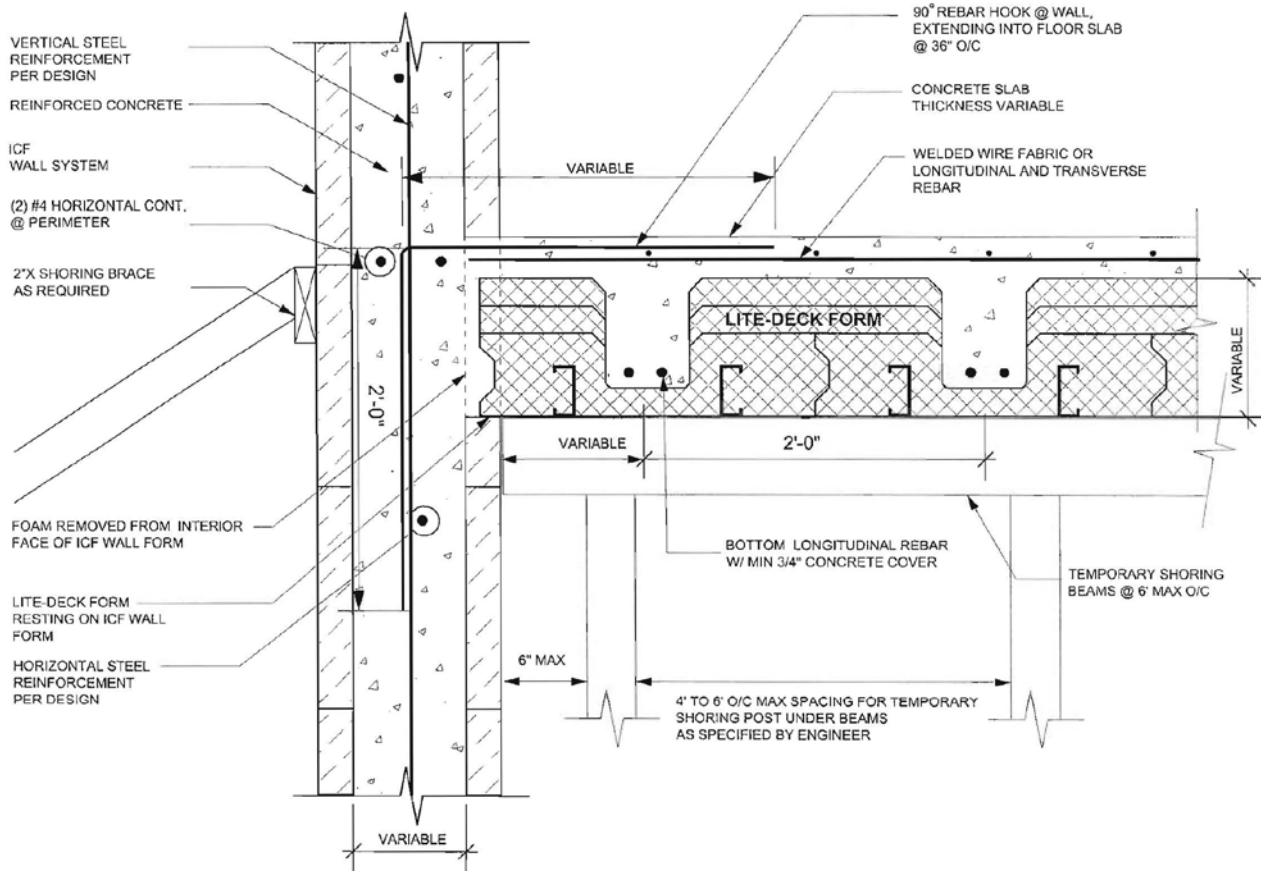
TYPICAL COMBINATIONS
BASE SECTION WITH TOP HATS

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TRANSVERSE SECTION @ LITE-DECK FLOOR TO ICF WALL



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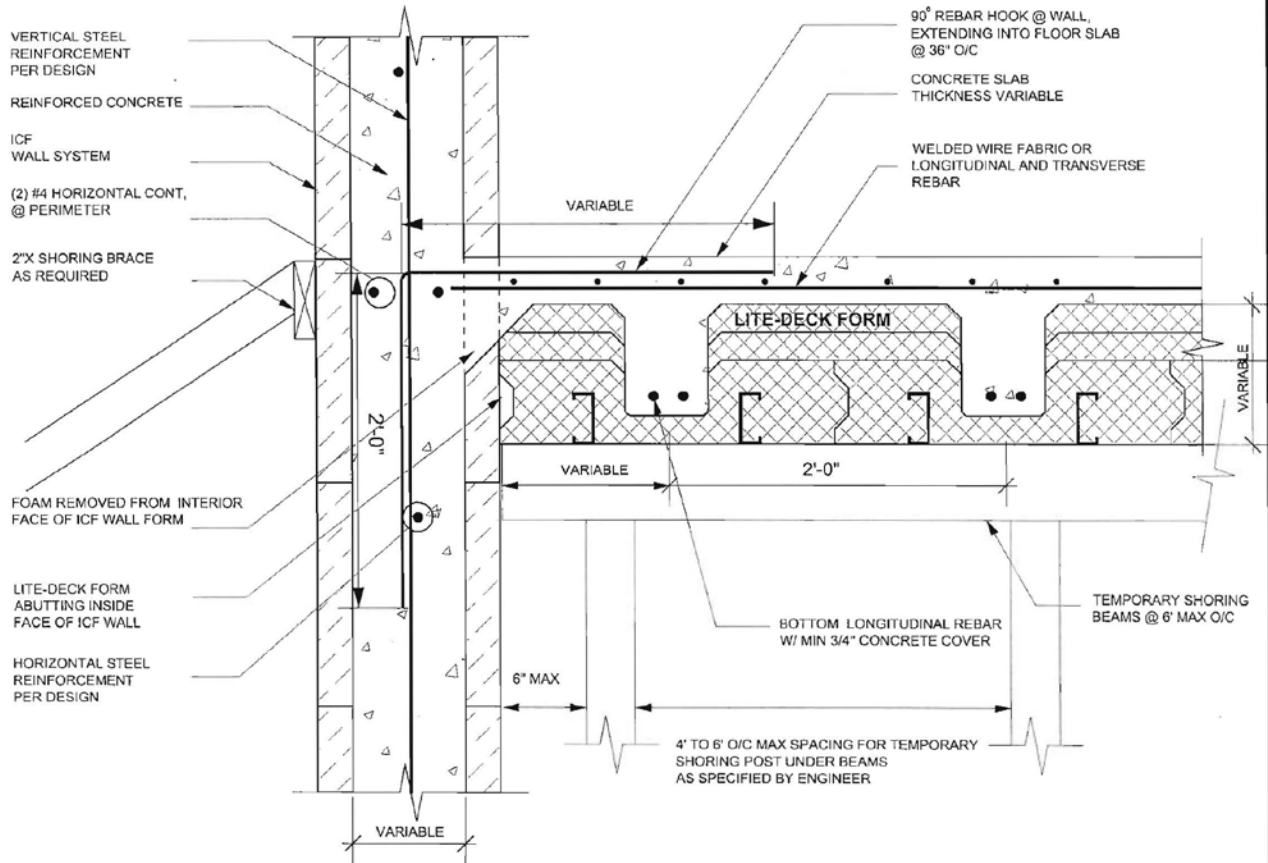
TRANS. SECTION @ LITE-DECK

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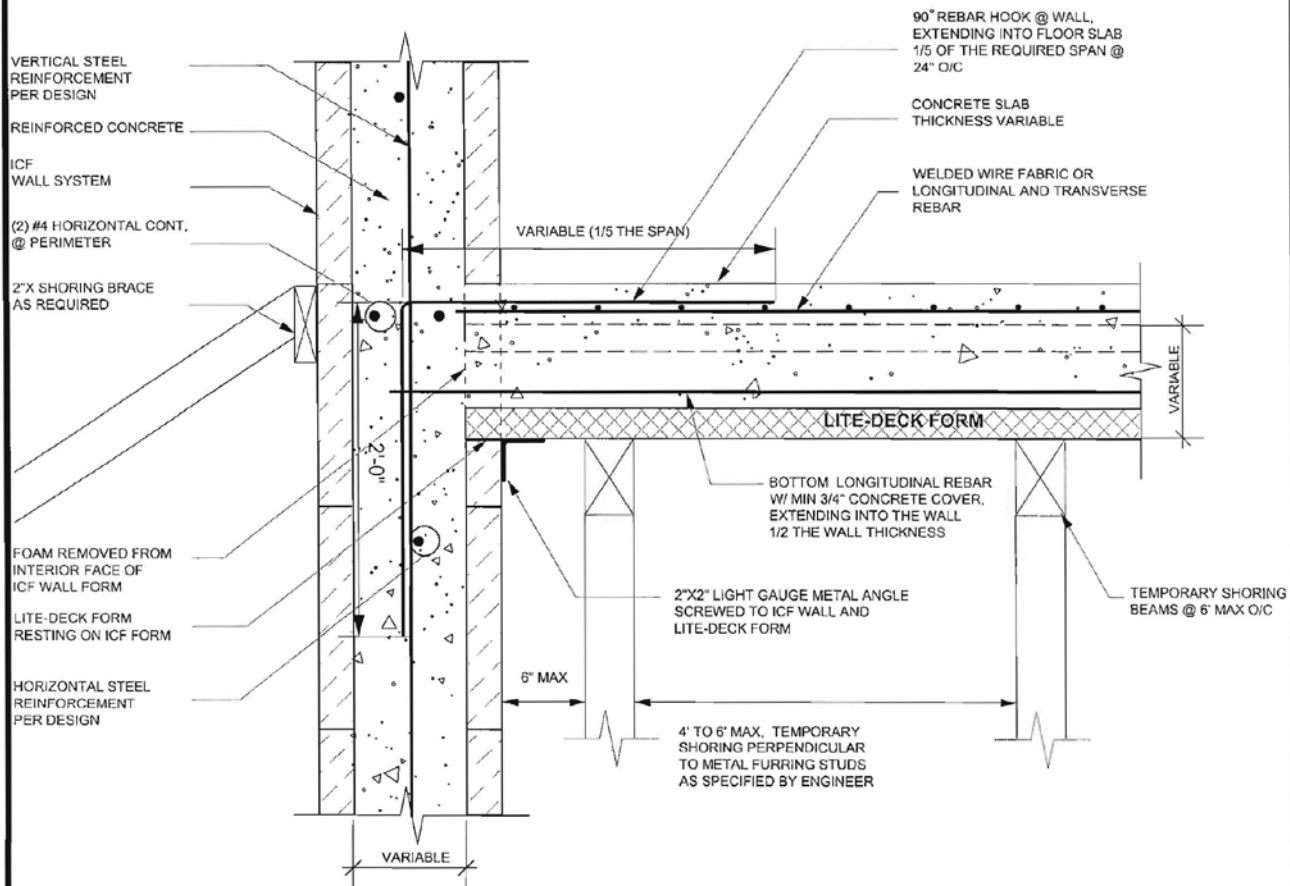
TRANSVERSE SECTION @ LITE-DECK FLOOR TO ICF WALL (LITE-DECK FORM ABUTTING ICF WALL)



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| | <p style="margin: 0;">DRAWN BY: LFT</p> <p style="margin: 0;">DATE: 10/14/08</p> | <p style="margin: 0;">REVISION DATE:</p> <p style="margin: 0;">SCALE: 1" = 1'-0"</p> | |
| <p style="margin: 0;">DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.</p> | | <p style="margin: 0; font-size: large;">DETAIL NO:</p> | <p style="margin: 0; font-size: large;">LD-2.6</p> |

LONGITUDINAL SECTION @ LITE-DECK FLOOR TO ICF WALL (LITE-DECK FORM RESTING ON ICF WALL)



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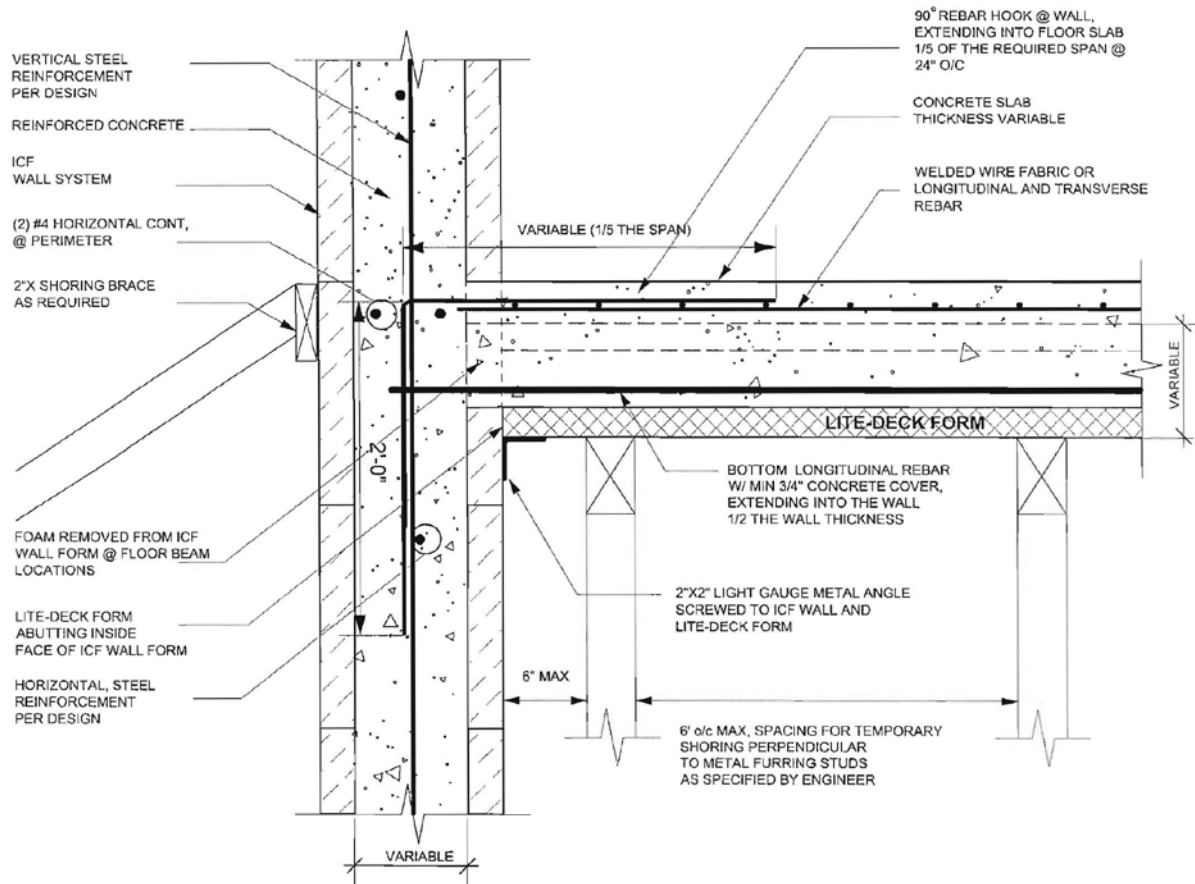
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| DRAWN BY: LFT | REVISION DATE: |
| DATE: 10/14/08 | SCALE: 1" = 1'-0" |

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| DETAIL NO: | LD-2.7 |
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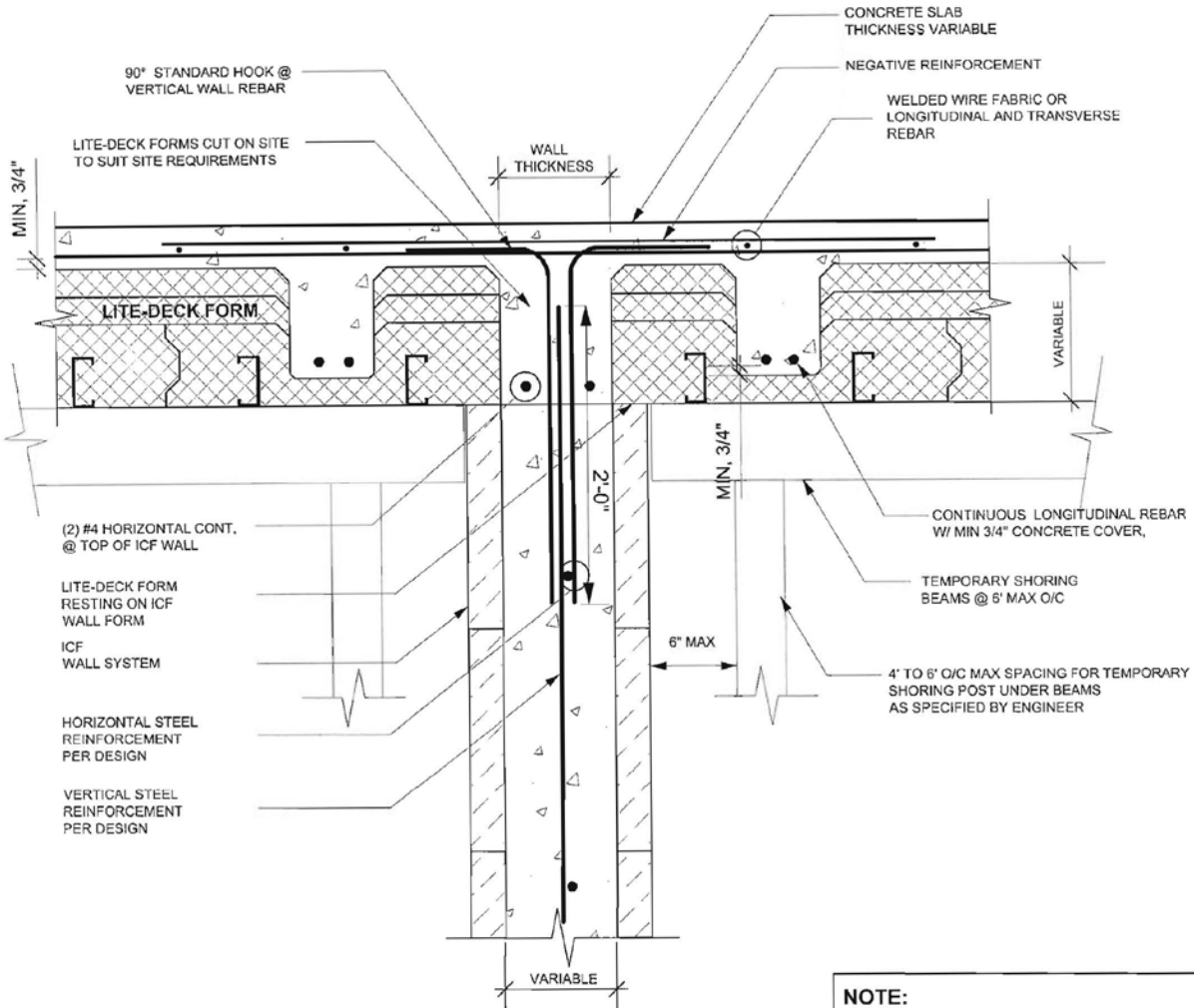
**LONGITUDINAL SECTION @ LITE-DECK FLOOR TO ICF WALL
(LITE-DECK FORM ABUTTING ICF WALL)**



NOTE:
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| | | <p>DRAWN BY: LFT</p> | <p>REVISION DATE:</p> |
| <p>DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.</p> | | <p>DATE: 10/14/08</p> | <p>SCALE:</p> |
| | | <p>DETAIL NO:</p> | <p>LD-2.8</p> |

TRANSVERSE SECTION @ INTERIOR ICF WALL TO LITE-DECK FLOOR CONNECTION



NOTE:
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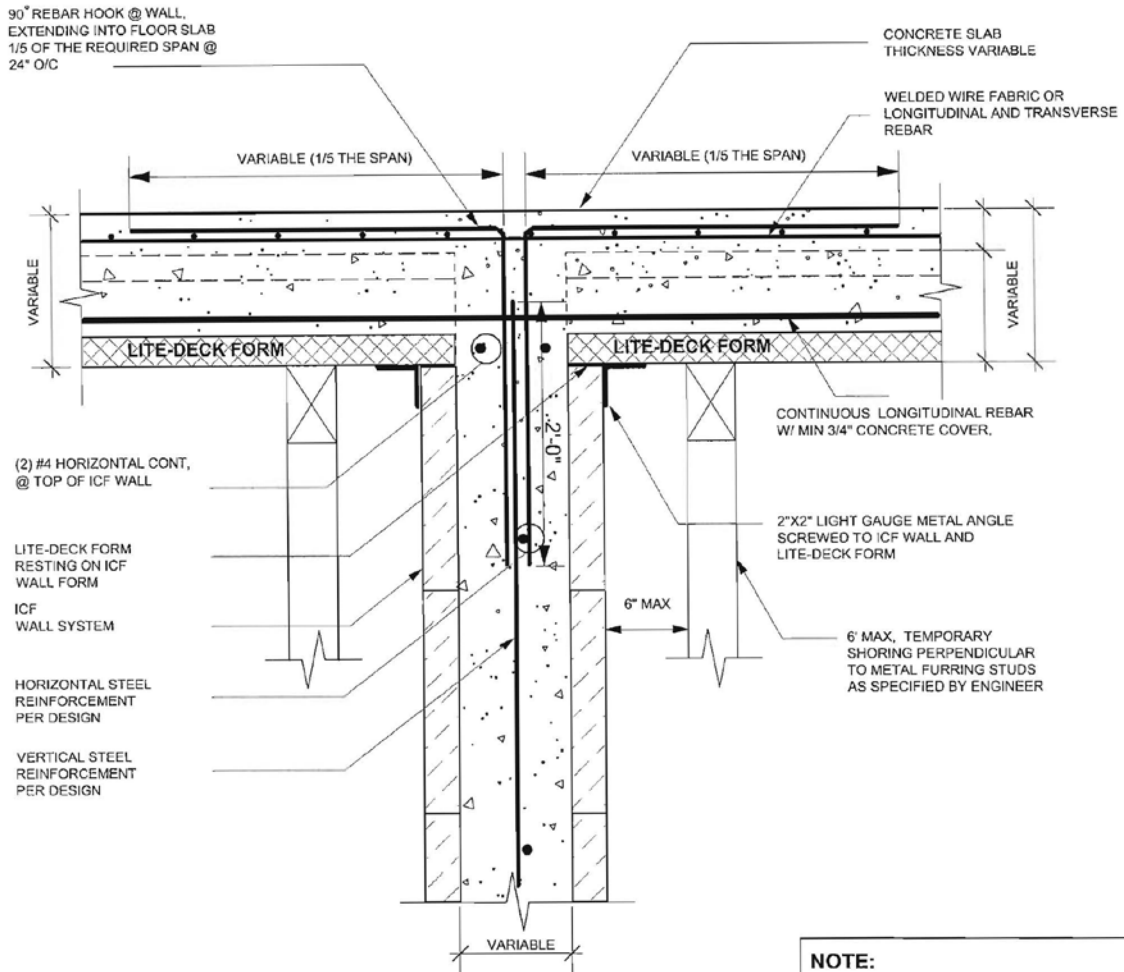
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| TRANSVERSE SECTION @ INTERIOR ICF WALL | |
| DRAWN BY: LFT | REVISION DATE: |
| DATE: 10/14/08 | SCALE: 1" = 1'-0" |

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

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| DETAIL NO: | LD-2.9 |
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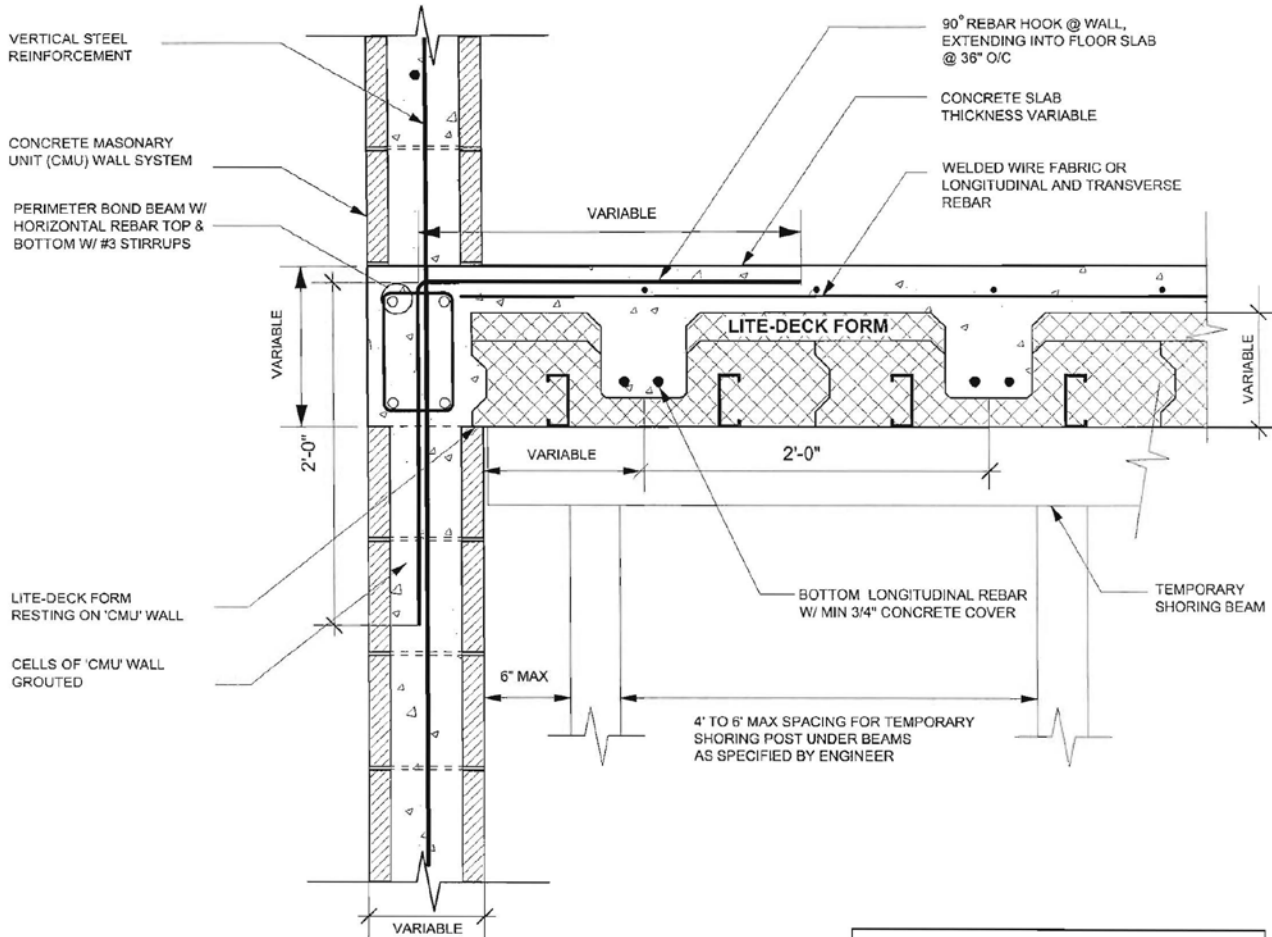
LONGITUDINAL SECTION @ INTERIOR ICF WALL TO LITE-DECK FLOOR CONNECTION



NOTE:
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| | | DRAWN BY: LFT | REVISION DATE: |
| | | DATE: 10/14/08 | SCALE: 1" = 1'-0" |
| <p>DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.</p> | | <p style="margin: 0;">DETAIL NO:</p> | <p style="margin: 0; font-weight: bold; font-size: 1.2em;">LD-2.10</p> |

TRANSVERSE SECTION @ LITE-DECK FLOOR TO 'CMU' WALL (LITE-DECK FORM RESTING ON CMU WALL)



NOTE:
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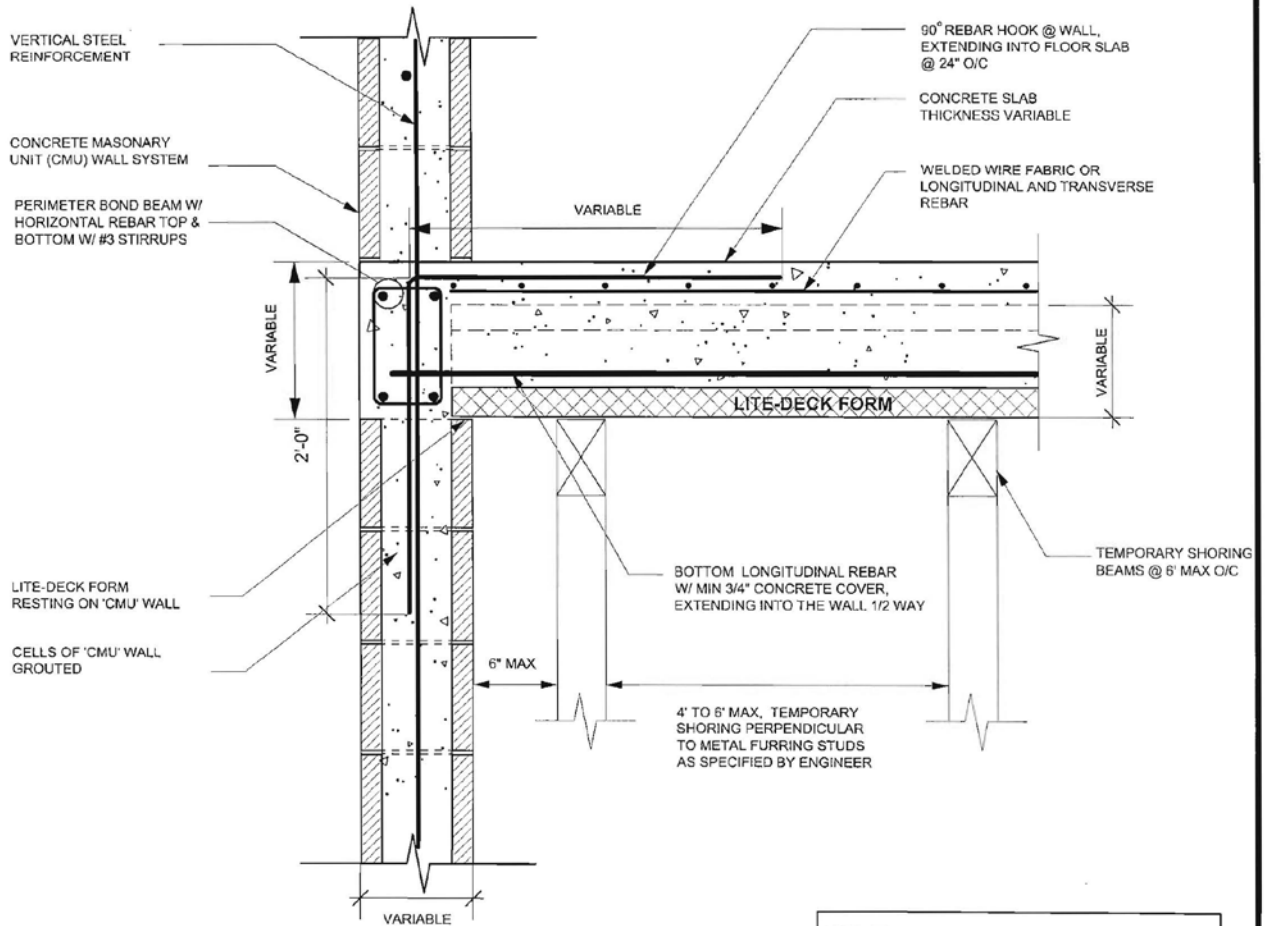
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| TRANS. SECTION @ LITE-DECK FLOOR TO CMU WALL | |
| DRAWN BY: LFT | REVISION DATE: |
| DATE: 10/14/08 | SCALE: 1" = 1'-0" |

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

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| DETAIL NO: | LD-2.11 |
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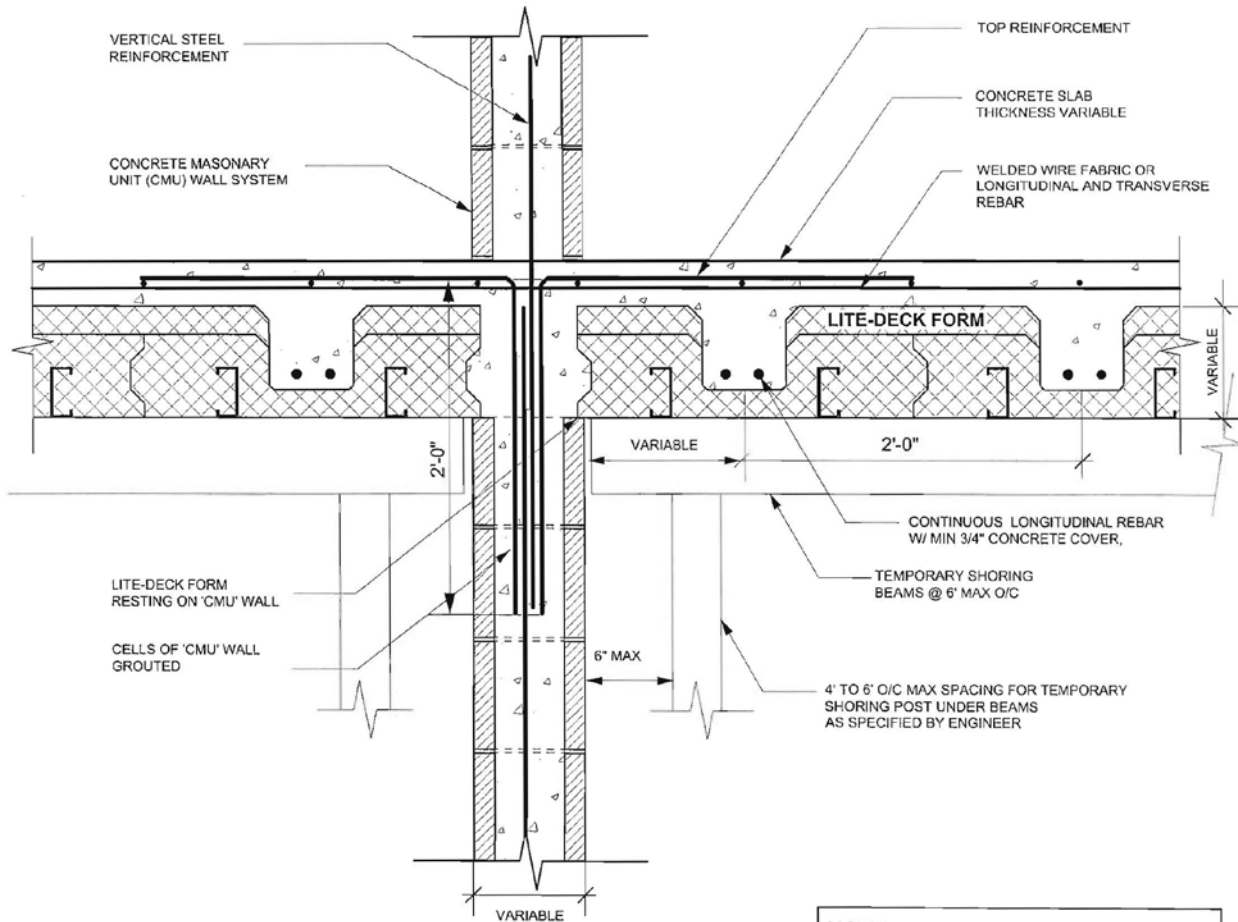
LONGITUDINAL SECTION @ LITE-DECK FLOOR TO 'CMU' WALL
 (LITE-DECK FORM RESTING ON CMU WALL)



NOTE:
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| | | DRAWN BY: LFT | REVISION DATE: |
| | | DATE: 10/14/08 | SCALE: 1" = 1'-0" |
| DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE. | | DETAIL NO: | LD-2.12 |

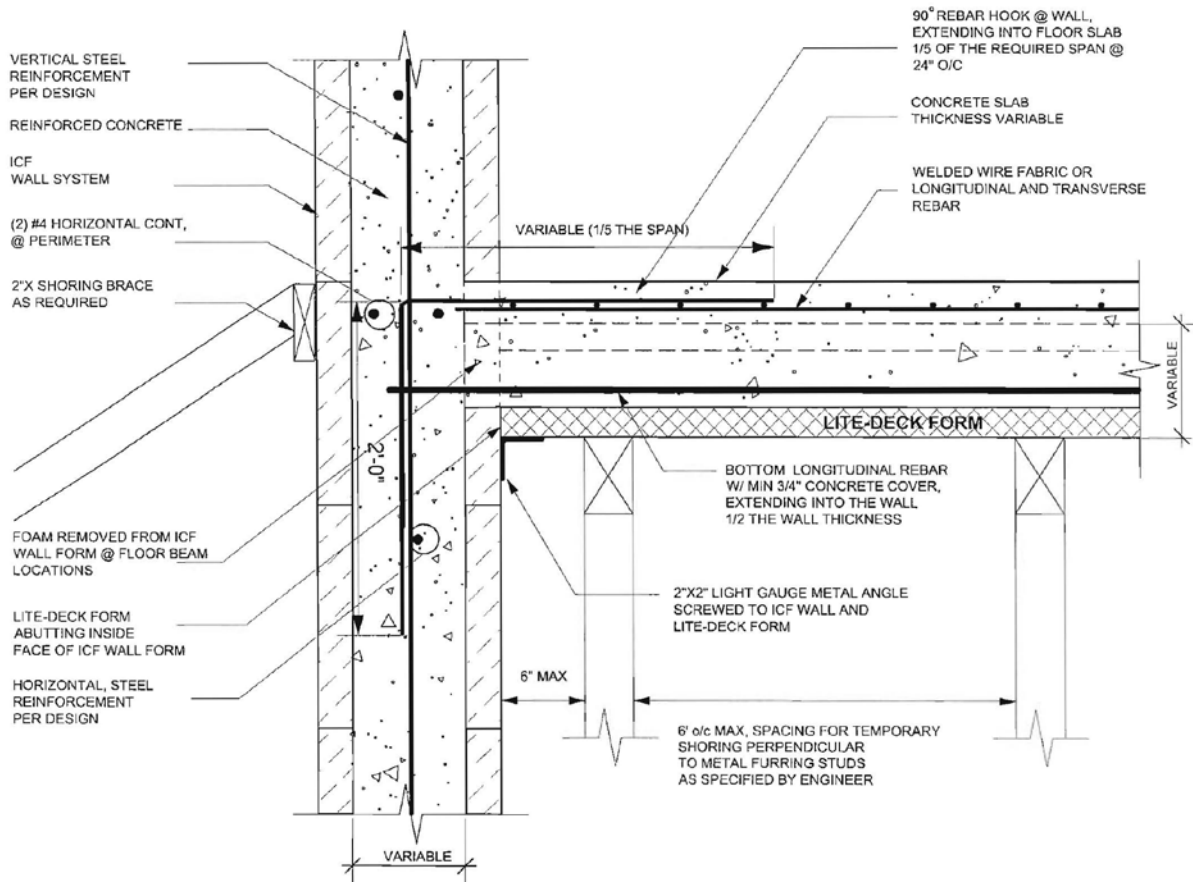
TRANSVERSE SECTION @ INTERIOR 'CMU' WALL TO LITE-DECK FLOOR (LITE-DECK FORM RESTING ON CMU WALL)



NOTE:
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| | | DRAWN BY: LFT | REVISION DATE: |
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| <small>DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.</small> | | DETAIL NO: | LD-2.13 |

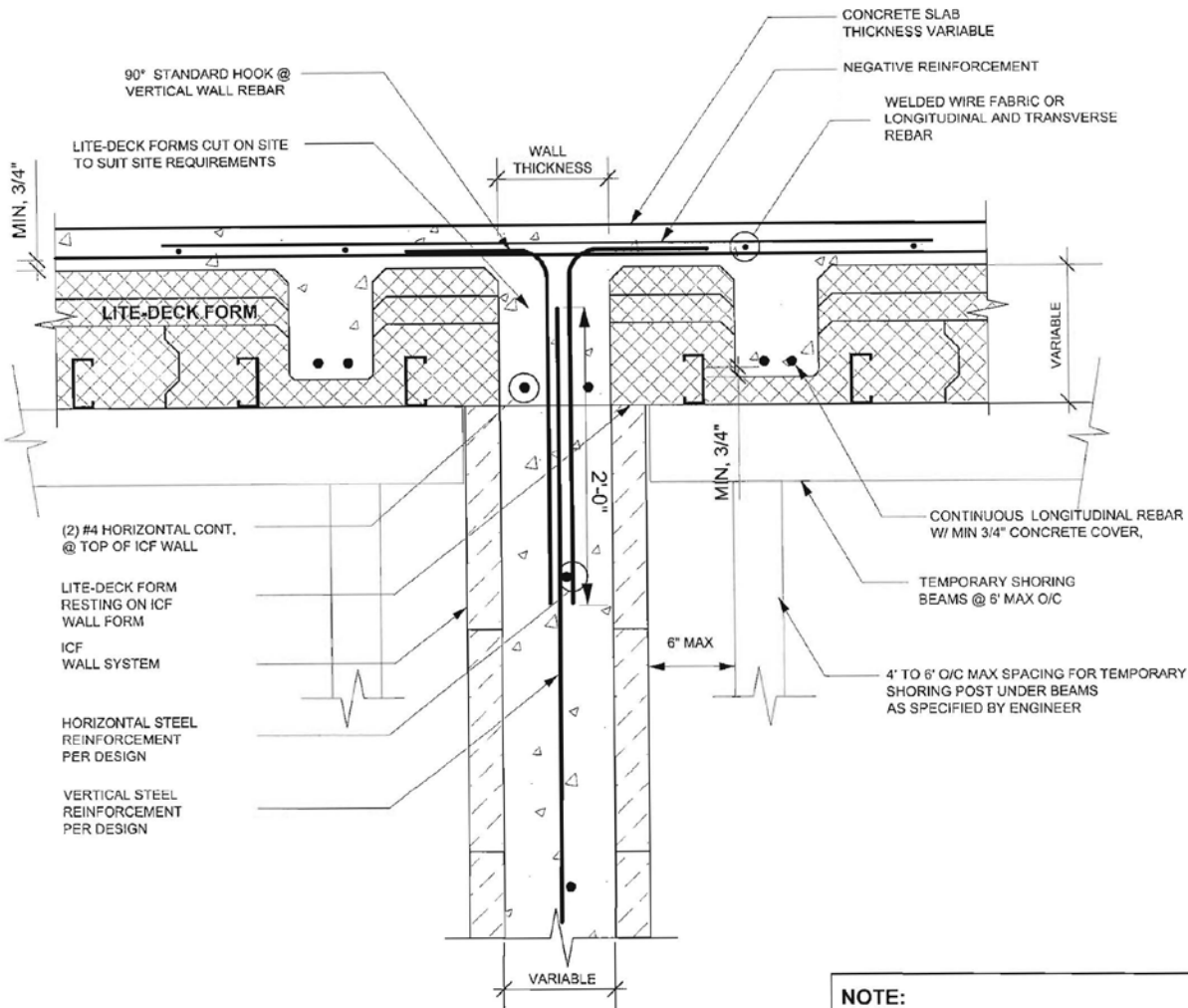
LONGITUDINAL SECTION @ LITE-DECK FLOOR TO ICF WALL (LITE-DECK FORM ABUTTING ICF WALL)



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| | | DRAWN BY: LFT | REVISION DATE: |
| | | DATE: 10/14/08 | SCALE: |
| DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE. | | DETAIL NO: | LD-2.8 |

TRANSVERSE SECTION @ INTERIOR ICF WALL TO LITE-DECK FLOOR CONNECTION



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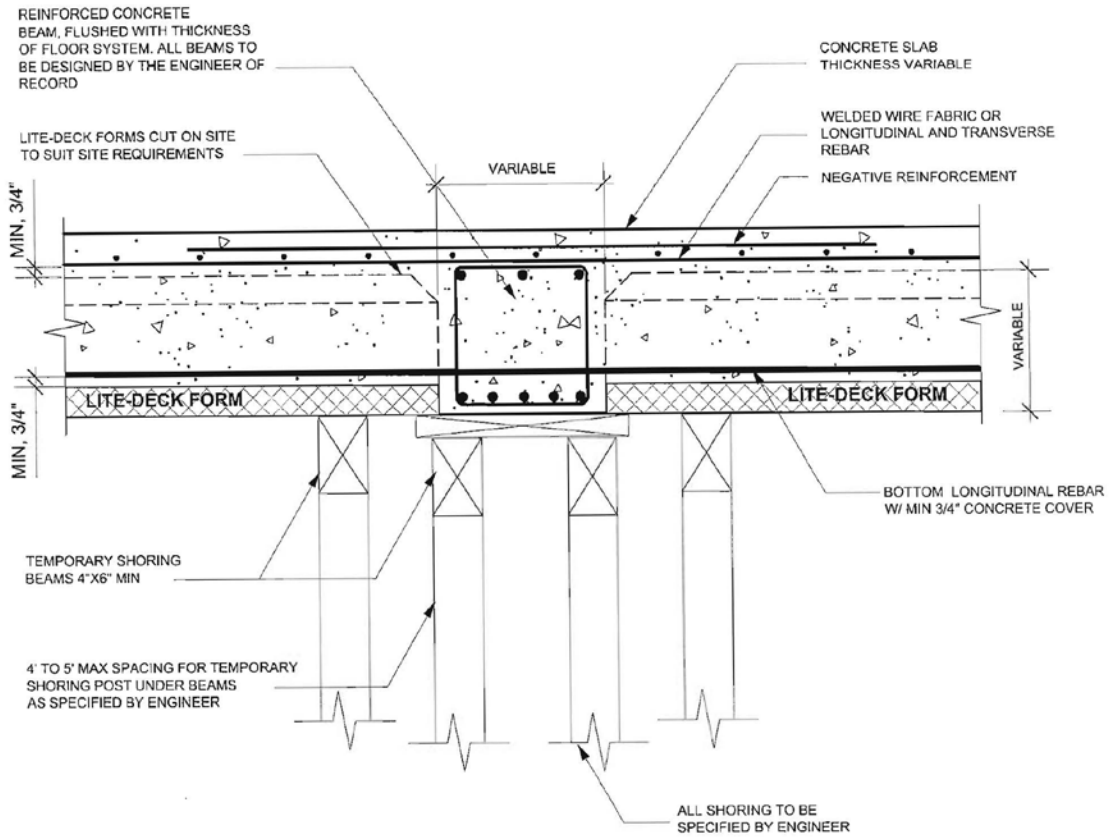
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| TRANSVERSE SECTION @ INTERIOR ICF WALL | |
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| DATE: 10/14/08 | SCALE: 1" = 1'-0" |

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| DETAIL NO: | LD-2.9 |
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LONGITUDINAL SECTION @ FLUSH CONCRETE BEAM



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LONGITUDINAL SECTION @ FLUSH CONCRETE BEAM

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REVISION DATE:

DATE: 10/14/08

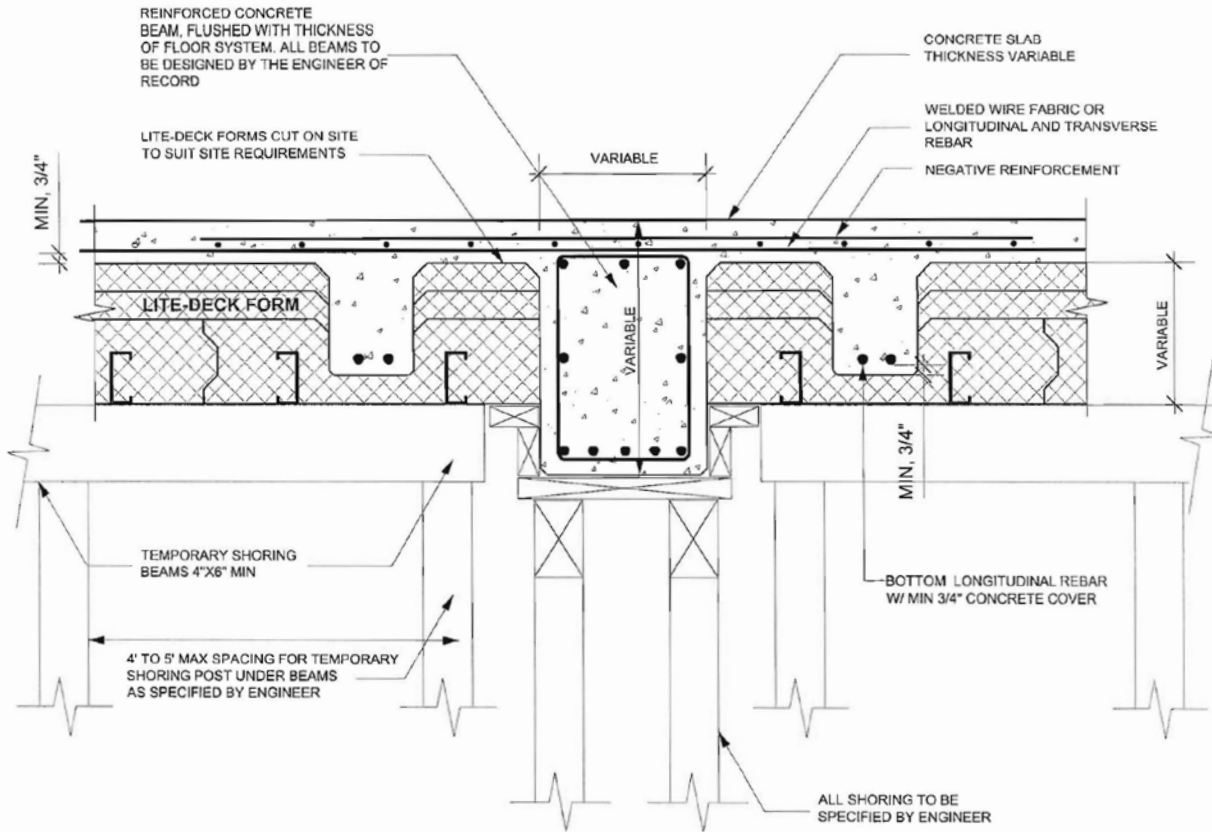
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DETAIL NO:

LD-2.16

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

TRANSVERSE SECTION @ DROPPED CONCRETE BEAM



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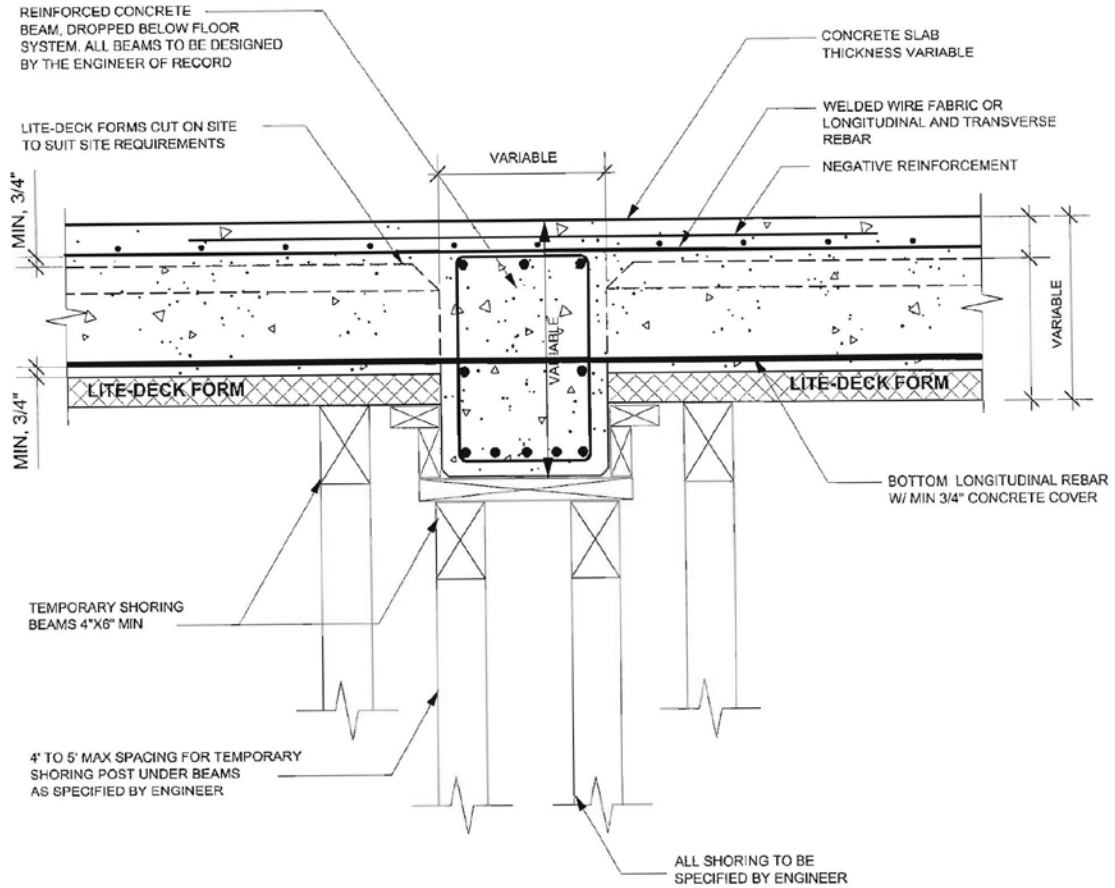
TRANSVERSE SECTION @ DROPPED CONCRETE BEAM

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| DATE: 10/14/08 | SCALE: 1" = 1'-0" |

DETAIL NO: LD-2.17

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

LONGITUDINAL SECTION @ DROPPED CONCRETE BEAM



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LONGITUDINAL SECTION @ FLUSH CONCRETE BEAM

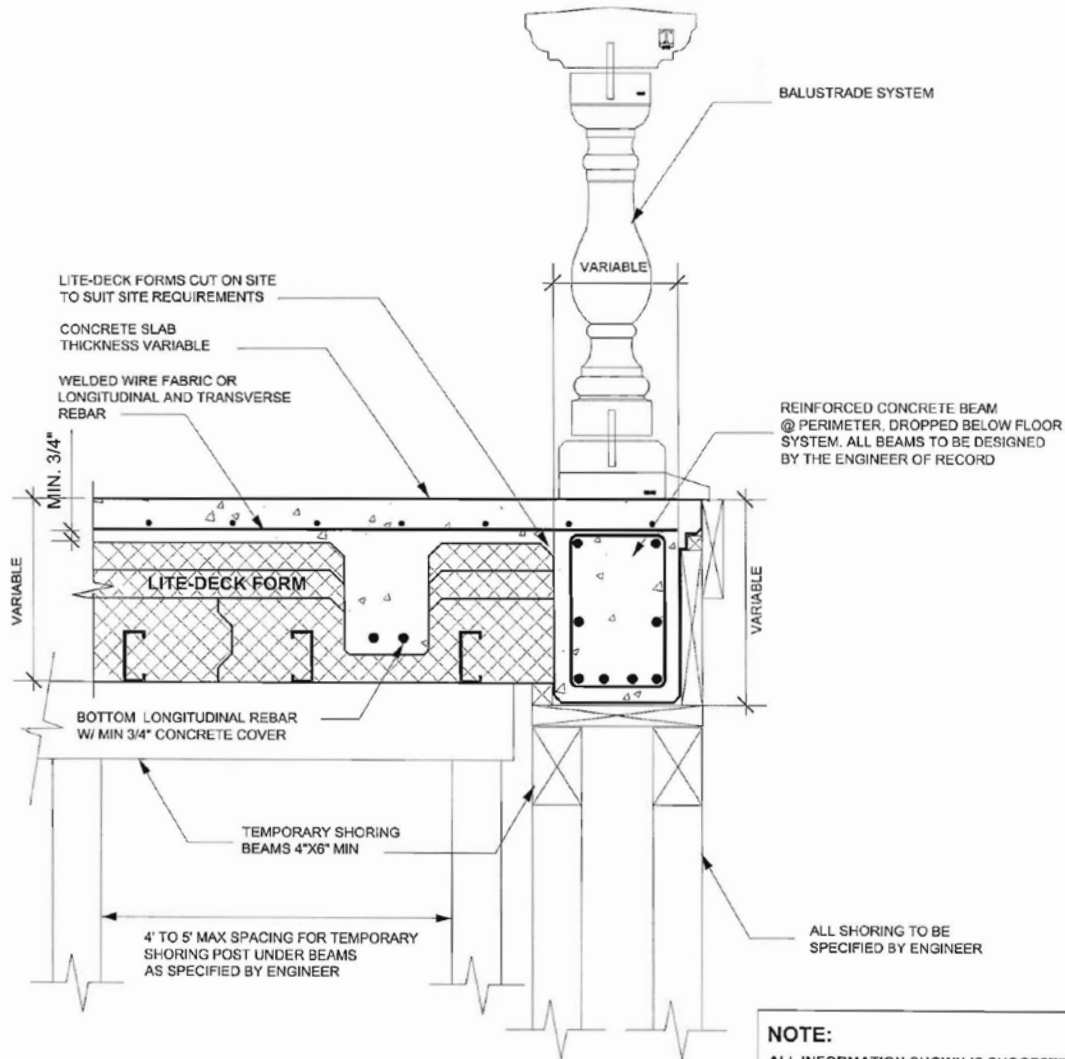
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| DATE: 10/14/08 | SCALE: 1" = 1'-0" |

DETAIL NO: LD-2.18

DUE TO VARIANCES IN LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS ALL DETAILS SHALL BE CONSTRUCTED IN ACCORDANCE WITH SUCH LOCAL CODES, CONSTRUCTION PRACTICES, AND REQUIREMENTS REGARDLESS OF DETAIL CONSTRUCTION SHOWN IN DRAWING. LITEFORM TECHNOLOGIES RESERVES THE RIGHT TO CHANGE INFORMATION SHOWN WITHOUT NOTICE.

TRANSVERSE SECTION @ PORCH PERIMETER BEAM

(LITE-DECK FORM W/ REINFORCED CONCRETE BEAM)



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TRANSVERSE SECTION @ PORCH PERIMETER BEAM

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DETAIL NO: **LD-2.19**

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