

# FM-75 SPECIFICATIONS

## COMPOSITION

**Fastener:** Precision formed from polymer coated steel to prevent corrosion. Rectangular dual gripping legs, 1.2" long.

**Disk:** Precision formed from coated steel to prevent corrosion. Integrally locked to fastener. Rib reinforced cap, 2.7" diameter.

## TECHNICAL DATA

**Approvals:** FM-75 fasteners maintain Factory Mutual, Underwriters Lab Approvals, and Miami-Dade County Approvals.

**Fastening Pattern:** Consult Factory Mutual, Underwriters Lab, or Miami-Dade requirements for recommended pattern in normal, exposed, and hurricane areas.

**Field Testing:** On-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastener selection and modify applicable fastening patterns.

## INSTALLATION

**Equipment:** Always use the ES Magnetic Driver to assure proper fastener installation.

**Method:** Drive FM-75 as an ordinary nail. DO NOT TOE. Seat cap flush with roofing surface (see illustration).

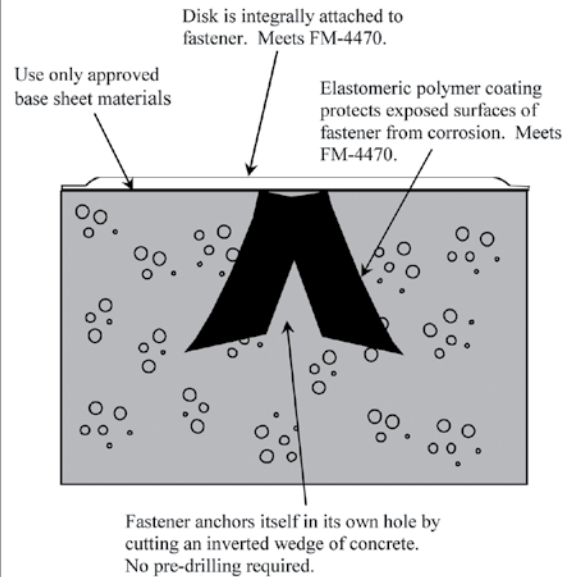
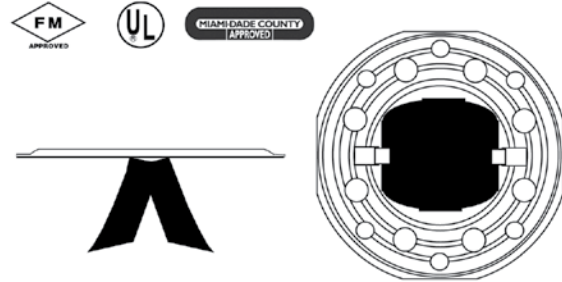
**Operation:** As FM-75 is driven, dual legs diverge and cut a plug of deck material that wedge and anchor the FM-75 in its own hole. No pre-drilling is required.

**Availability:** FM-75 is a proprietary product manufactured only by ES Products, Inc. and distributed by leading roofing material and equipment wholesalers throughout the United States.

**Packaging:** 1,000 FM-75 fasteners per carton. Gross weight: 36 lbs. Shrink wrapped and palletized.

**PROUDLY MADE IN THE U.S.A.**

**BASE SHEET TO HIGHER DENSITY  
LIGHTWEIGHT INSULATING CONCRETE,  
NVS CONCRETE, AND VARIOUS GYPSUM  
ROOFDECKS**



## FASTENING GUIDE CLASS I-90 WINDSTORM CLASSIFICATION

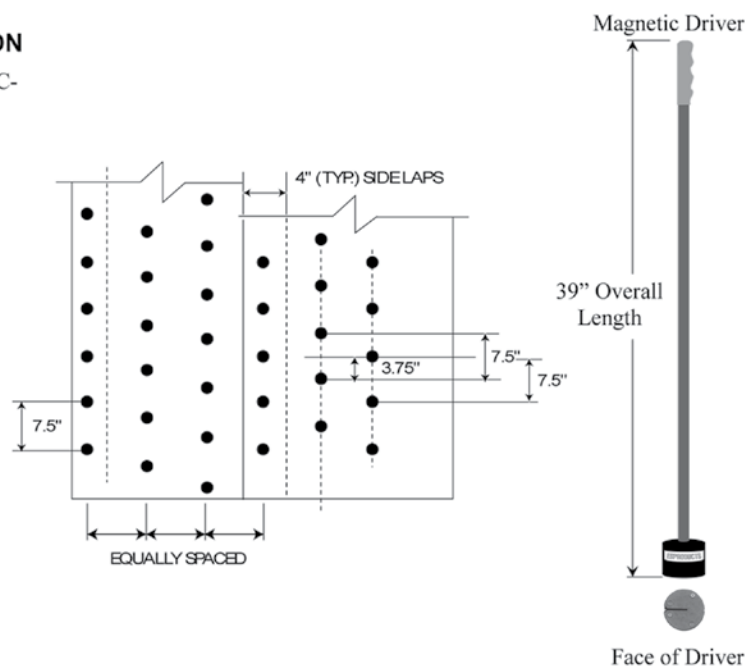
An FMRC-approved base sheet is secured to an FMRC-approved lightweight insulating concrete roofdeck as outlined in the current edition of the FMRC Approval Guide and/or RoofNav.

The base sheet is secured in the field on the roof with FM-75 fasteners installed 7.5" on center in 4" wide side laps and 7.5" on center, staggered in 2 rows, equally spaced, between the base sheet side laps.

When fastening meter-wide material with this pattern, expect to use approximately 165 fasteners per square (100 ft<sup>2</sup>).

### IMPORTANT:

Prior to roofing, on-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastening selection and modify applicable fastening patterns.



# FM-90 SPECIFICATIONS

## COMPOSITION

**Fastener:** Precision formed from polymer coated steel to prevent corrosion. Rectangular dual gripping legs, 1.7" long.

**Disk:** Precision formed from coated steel to prevent corrosion. Integrally locked to fastener. Rib reinforced cap, 2.7" diameter.

## TECHNICAL DATA

**Approvals:** FM-90 fasteners maintain Factory Mutual, Underwriters Lab Approvals, and Miami-Dade County Approvals.

**Fastening Pattern:** Consult Factory Mutual, Underwriters Lab, or Miami-Dade requirements for recommended pattern in normal, exposed, and hurricane areas.

**Field Testing:** On-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastener selection and modify applicable fastening patterns.

## INSTALLATION

**Equipment:** Always use the ES magnetic driver to assure proper fastener installation.

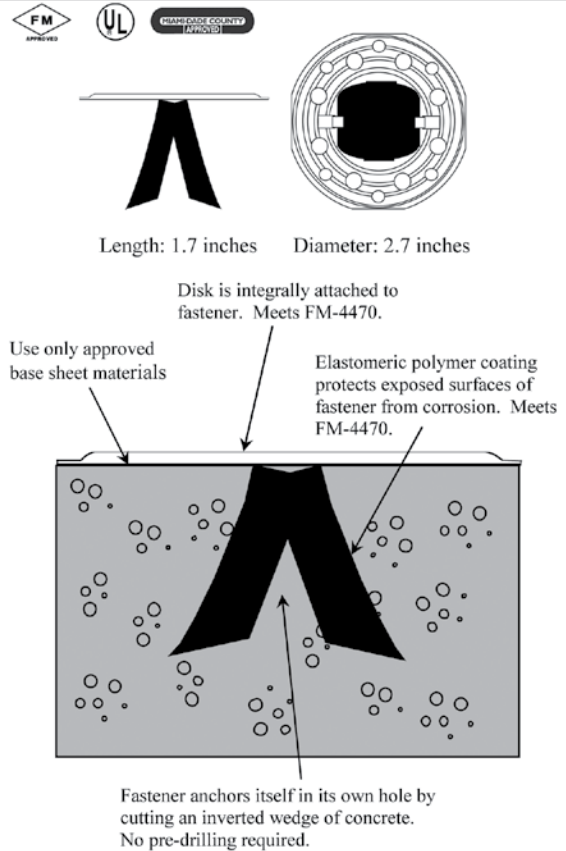
**Method:** Drive like an ordinary nail. DO NOT TOE. Seat cap flush with roof membrane.

**Operation:** As FM-90 is driven, dual legs diverge and cut a plug of deck material that wedge and anchor in it's own hole. No pre-drilling required.

**Packaging:** 1,000 per carton. Gross wt 40 lbs.

**PROUDLY MADE IN THE U.S.A.**

## BASE SHEET TO LIGHTWEIGHT INSULATING CONCRETE AND VARIOUS GYPSUM ROOFDECKS



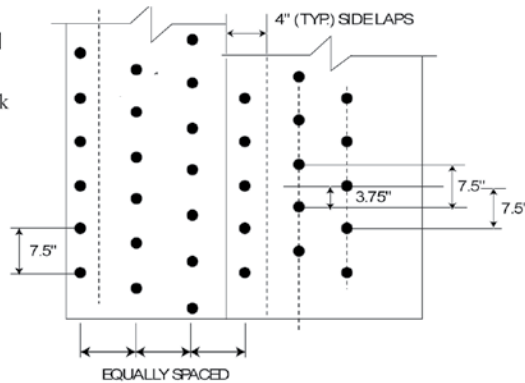
## FASTENING GUIDE

### CLASS 1-90 WINDSTORM CLASSIFICATION

An FMRC-approved base sheet is secured to an FMRC-approved lightweight insulating concrete roofdeck as outlined in the current edition of the FMRC Approval Guide and/or RoofNav.

The base sheet is secured in the field of the roof with FM-90 fasteners installed 7.5" on center in 4" wide side laps and 7.5" on center in two staggered rows, equally spaced, between the side laps.

When fastening meter-wide material with this pattern, expect to use approximately 165 fasteners per square (100 ft<sup>2</sup>).



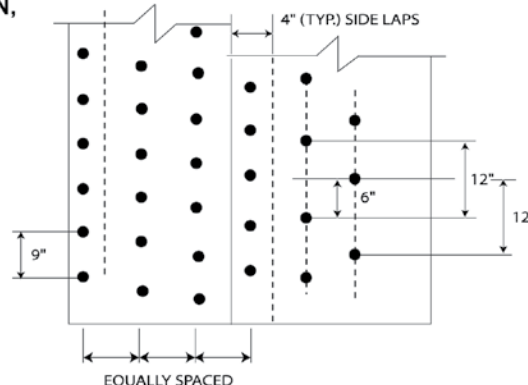
## FASTENING GUIDE

### CLASS 1-120 WINDSTORM CLASSIFICATION, CELCORE NEW CONSTRUCTION ONLY

An FMRC-approved base sheet is secured to an FMRC-approved lightweight insulating concrete roofdeck as outlined in the current edition of the FMRC Approval Guide and/or RoofNav.

The base sheet is secured in the field of the roof with FM-90 fasteners installed 9" on center in 4" wide side laps and 12" on center in two staggered rows, equally spaced, between the side laps.

When fastening meter-wide material with this pattern, expect to use approximately 113 fasteners per square (100 ft<sup>2</sup>).



# FM-260 SPECIFICATIONS

## BASE SHEET ATTACHMENT TO LIGHTWEIGHT INSULATING CONCRETE

### DESCRIPTION

Two legged fastener for attachment of base sheet to lightweight insulating concrete roofdecks. Designed specifically for applications that require maximum withdrawal resistance.

### COMPOSITION

**Fastener:** Precision formed from coated steel. Exposed surfaces are protected with an elastomeric polymer coating to prevent corrosion. 2.4" x 1.2" rectangular rib reinforced head. Two rectangular dual gripping legs, 1.7" long.

### TECHNICAL DATA

**Approvals:** FM-260 fasteners maintain Factory Mutual and Underwriters Lab Approvals.

**Fastening Pattern:** Consult Factory Mutual, Underwriters Lab, or Miami-Dade requirements for recommended pattern in normal, exposed, and hurricane areas.

**Field Testing:** On-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastener selection and modify applicable fastening patterns.

**Note:** FM-260 fasteners must be used in conjunction with higher strength base sheets (listed on back) that provide the pullover performance necessary to match the additional withdrawal resistance the FM-260 delivers.

### INSTALLATION

**Equipment:** Always use the ES Magnetic Driver to assure proper fastener installation.

**Method:** Drive FM-260 as an ordinary nail. DO NOT TOE. Seat head flush with roofing surface (see installation).

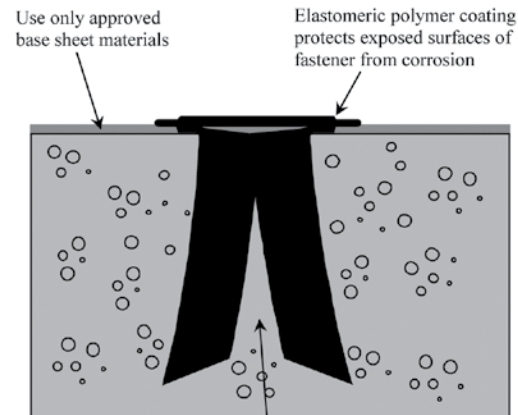
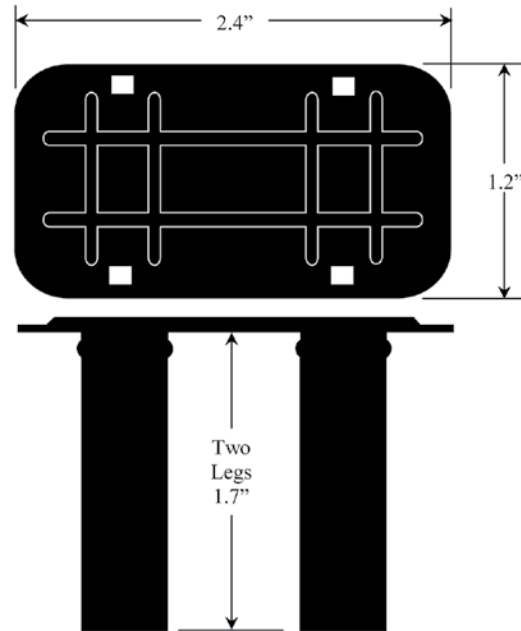
**Operation:** As FM-260 is driven, dual legs diverge and cut plugs of deck material that wedge and anchor the FM-260 in its own hole. No pre-drilling is required.

**Availability:** FM-260 is a patented product manufactured only by ES Products, Inc. and distributed by leading roofing material and equipment wholesalers throughout the United States.

**Packaging:** 1,000 FM-260 fasteners per carton. Gross weight: 42 lbs. Shrink wrapped and palletized.

### PROUDLY MADE IN THE U.S.A.

**Warranty:** ES Products, LLC warrants its products for one year from date of sale against defective workmanship and material, and its liability therefore shall be limited to replacing defective products reported defective during the warranty period. ES Products is not responsible for any failure attributable to improper use or installation in any manner inconsistent with manufacturer's specifications. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, ALL OF WHICH ARE EXPRESSLY DISCLAIMED INCLUDING ANY WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR PARTICULAR USE. This warranty provides specific legal rights and remedies that may vary from state to state.



Fastener anchors itself in its own hole by cutting an inverted wedge of concrete. No pre-drilling required.



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## BASE SHEET ATTACHMENT TO LIGHTWEIGHT INSULATING CONCRETE

### USING THE FM-260

Fastener density and spacing vary depending on applicable uplift requirements. Local codes, governing approval bodies, membrane manufacturers, and individual roofdeck manufacturers all may have specific requirements that need to be addressed prior to beginning any roofing project. The following illustrates a typical Factory Mutual Approved fastening pattern widely accepted for use by membrane and roofdeck manufacturers.

#### FASTENING GUIDE

##### CLASS I-90 WINDSTORM CLASSIFICATION

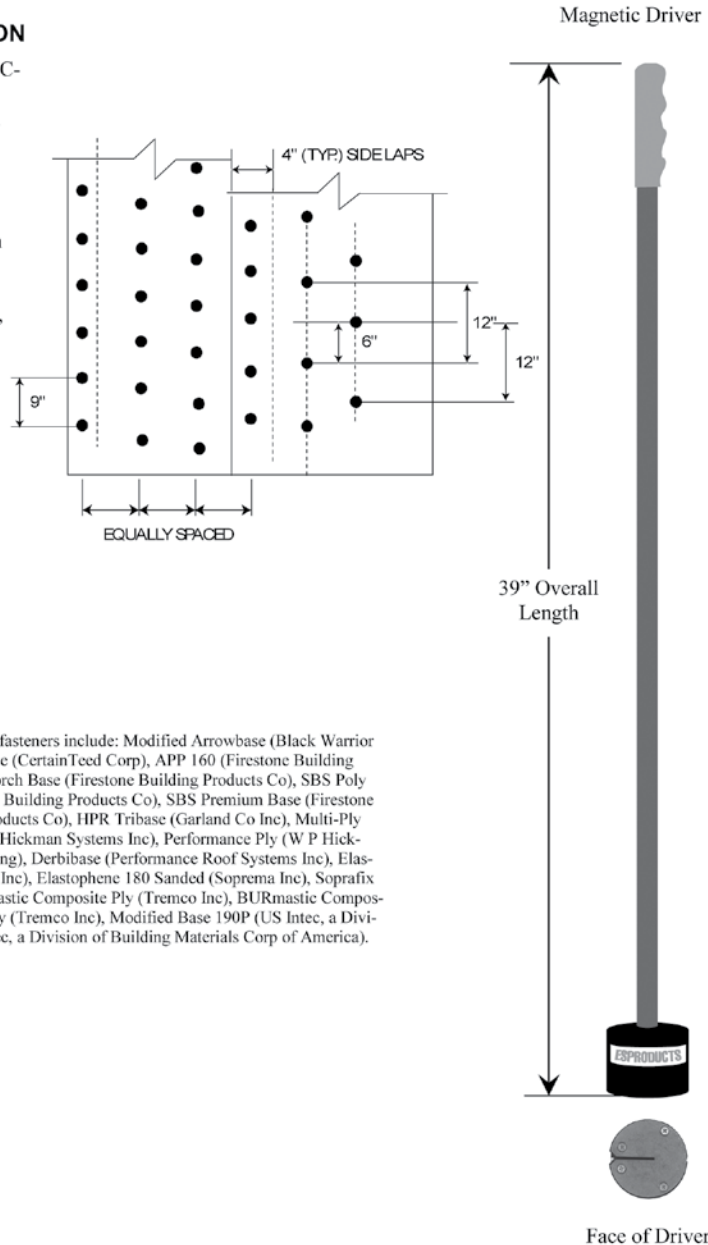
An FMRC-approved base sheet is secured to an FMRC-approved lightweight insulation concrete roofdeck as outlined in the current edition of the FMRC Approval Guide and/or RoofNav.

The base sheet is secured in the field of the roof with FM-260 fasteners installed 9" on center in the side laps and 12" on center in two staggered rows between the side laps.

When fastening meter-wide material with this pattern, expect to use approximately 113 fasteners per square (100 ft<sup>2</sup>).

#### IMPORTANT:

Prior to roofing, on-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastening selection and modify applicable fastening patterns.



Typical high strength base sheets compatible for use with FM-260 fasteners include: Modified Arrowbase (Black Warrior Roofing), Flex-I-Glas FR Base (CertainTeed Corp), Poly SMS Base (CertainTeed Corp), APP 160 (Firestone Building Products Co), SBS Base (Firestone Building Products Co), SBS Torch Base (Firestone Building Products Co), SBS Poly Torch (Firestone Building Products Co), SBS Poly Base (Firestone Building Products Co), SBS Premium Base (Firestone Building Products Co), SBS Smooth Torch (Firestone Building Products Co), HPR Tribase (Garland Co Inc), Multi-Ply Glass CL (W P Hickman Systems Inc), Pika-Ply Hi-Tech 60 (W P Hickman Systems Inc), Performance Ply (W P Hickman Systems Inc), #605 Panoply SBS Base Sheet (Malarkey Roofing), Derbibase (Performance Roof Systems Inc), Elastobase (Polyglass USA Inc), Irex 30 (Siplast Inc), Irex HT (Siplast Inc), Elastophene 180 Sanded (Soprema Inc), Soprafix (Soprema Inc), Versa Base (Tamko Roofing Products Inc), BURmastic Composite Ply (Tremco Inc), BURmastic Composite Ply Premium (Tremco Inc), BURmastic Supreme Composite Ply (Tremco Inc), Modified Base 190P (US Intec, a Division of Building Material Corp of America), Flex Base 60 (US Intec, a Division of Building Materials Corp of America).

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# FM-290 SPECIFICATIONS

## BASE SHEET ATTACHMENT TO LIGHTWEIGHT INSULATING CONCRETE

### DESCRIPTION

Two legged fastener for attachment of base sheet to lightweight insulating concrete roofdecks. Designed specifically for applications that require maximum withdrawal resistance.

### COMPOSITION

**Fastener:** Precision formed from polymer coated steel to prevent corrosion. 2.4" x 1.3" rectangular rib reinforced head. Two rectangular dual gripping legs, 1.7" long.

**Disk:** Precision formed from coated steel to prevent corrosion. Rib reinforced cap, 3.6" x 2.5".

### TECHNICAL DATA

**Approvals:** FM-290 fasteners maintain Factory Mutual, Underwriters Lab Approvals and Miami-Dade County Approvals.

**Fastening Pattern:** Consult Factory Mutual, Underwriters Lab, or Miami-Dade requirements for recommended pattern in normal, exposed, and hurricane areas.

**Field Testing:** On-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastener selection and modify applicable fastening patterns.

### INSTALLATION

**Equipment:** Always use the ES Magnetic Driver to assure proper fastener installation.

**Method:** Drive FM-290 as an ordinary nail. DO NOT TOE. Seat disk flush with roofing surface (see installation).

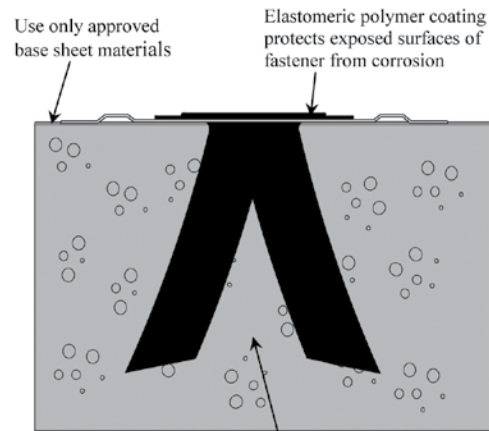
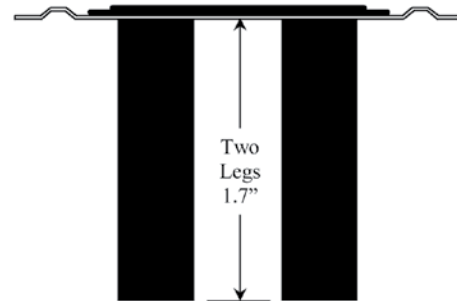
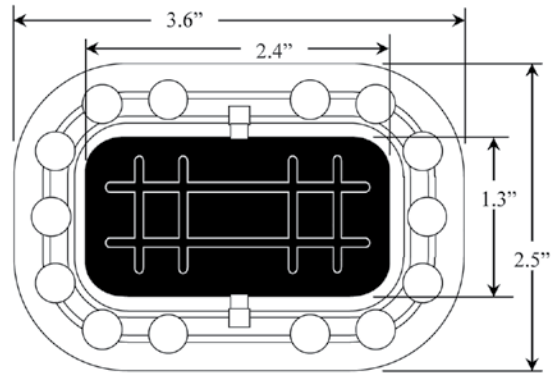
**Operation:** As FM-290 is driven, dual legs diverge and cut plugs of deck material that wedge and anchor the FM-290 in its own hole. No pre-drilling is required.

**Availability:** FM-290 is a patented product manufactured only by ES Products, Inc. distributed by leading roofing material and equipment wholesalers throughout the United States.

**Packaging:** 500 FM-290 fasteners per carton. Gross weight: 35lbs. Shrink wrapped and palletized.

### PROUDLY MADE IN THE U.S.A.

**Warranty:** ES Products, LLC warrants its products for one year from date of sale against defective workmanship and material, and its liability therefore shall be limited to replacing defective products reported defective during the warranty period. ES Products is not responsible for any failure attributable to improper use or installation in any manner inconsistent with manufacturer's specifications. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, ALL OF WHICH ARE EXPRESSLY DISCLAIMED INCLUDING ANY WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR PARTICULAR USE. This warranty provides specific legal rights and remedies that may vary from state to state.



Fastener anchors itself in its own hole by cutting an inverted wedge of concrete. No pre-drilling required.



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## BASE SHEET ATTACHMENT TO LIGHTWEIGHT INSULATING CONCRETE

### USING THE FM-290

Fastener density and spacing vary depending on applicable uplift requirements. Local codes, governing approval bodies, membrane manufacturers, and individual roofdeck manufacturers all may have specific requirements that need to be addressed prior to beginning any roofing project. The following illustrates a typical Factory Mutual Approved fastening pattern widely accepted for use by membrane and roofdeck manufacturers.

#### FASTENING GUIDE

##### CLASS I-90 WINDSTORM CLASSIFICATION

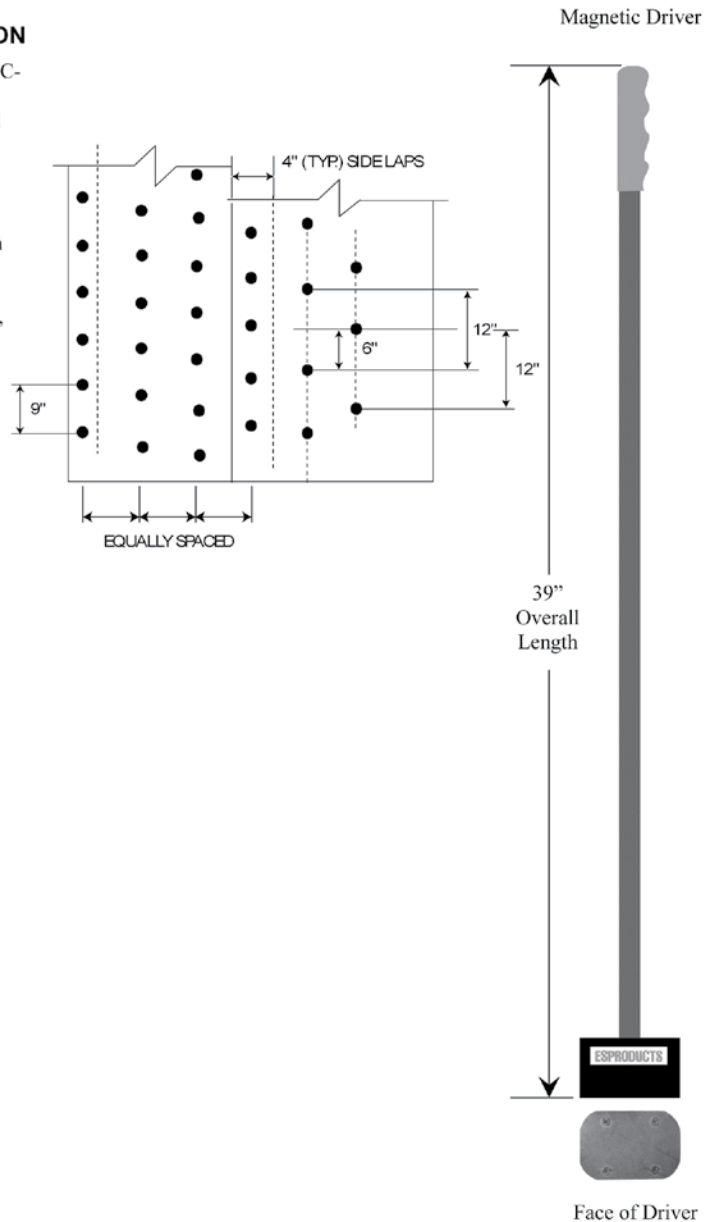
An FMRC-approved base sheet is secured to an FMRC-approved lightweight insulation concrete roofdeck as outlined in the current edition of the FMRC Approval Guide and/or RoofNav.

The base sheet is secured in the field of the roof with FM-290 fasteners installed 9" on center in the side laps and 12" on center in two staggered rows between the side laps.

When fastening meter-wide material with this pattern, expect to use approximately 113 fasteners per square (100 ft<sup>2</sup>).

#### IMPORTANT:

Prior to roofing, on-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastening selection and modify applicable fastening patterns.



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# TWIN LOC-NAIL SPECIFICATIONS

**BASE SHEET, RECOVERY BOARD, AND INSULATION TO LIGHTWEIGHT INSULATING CONCRETE, STRUCTURAL WOOD FIBER, AND POURED GYPSUM**

## COMPOSITION

**Factory pre-assembled components consisting of:**

**Tube:** Precision formed from coated steel to prevent corrosion. The tube is shaped to easily penetrate decking and existing membranes.

**Disk:** Precision formed from coated steel to prevent corrosion, 2.7" diameter. Securely clamped to tube and rib reinforced to resist cupping.

**Locking Staple:** Precision formed from high tensile steel wire. Coated to prevent corrosion.

## TECHNICAL DATA

**Approvals:** Twin Loc-Nails maintain Factory Mutual and Miami-Dade County Approvals.

**Fastening Pattern:** Consult Factory Mutual or Miami-Dade County requirements for recommended pattern in normal, exposed, and hurricane areas.

**Field Testing:** On-site withdrawal testing should always be performed to evaluate the ability of the roofing substrate to satisfactorily accept and retain fasteners. Such testing may alter fastener selection and modify applicable fastening patterns. The Twin Loc-Nail should always be embedded into the structural roof deck to a depth of at least 1"

## INSTALLATION

**Equipment:** Always use an ES Twin Loc Driver. Consult ES Products for the specific driver for your application.

**Method:** Drive Twin Loc-Nail perpendicular to roof deck, seating cap flush with roofing surface. Once tube is set, drive the locking staple into the tube/disk unit until the top of the staple is flush with the cap (see illustration).

**Operation:** When locking staple is driven, its dual wire legs diverge, anchoring the fastener in place (see illustration). Uplift resistance may vary depending on the density and integrity of the substrate.

**Availability:** The Twin Loc-Nail is a patented product manufactured only by ES Products, Inc. and distributed by leading roofing material and equipment wholesalers throughout the United States.

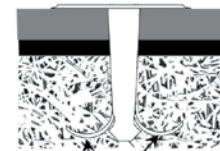
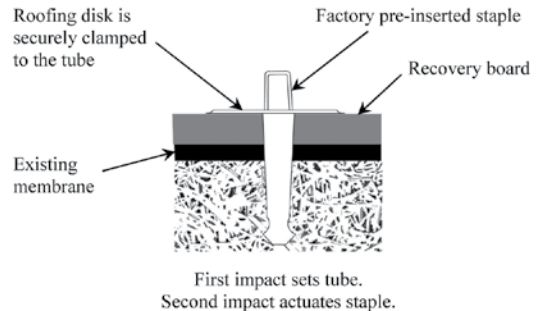
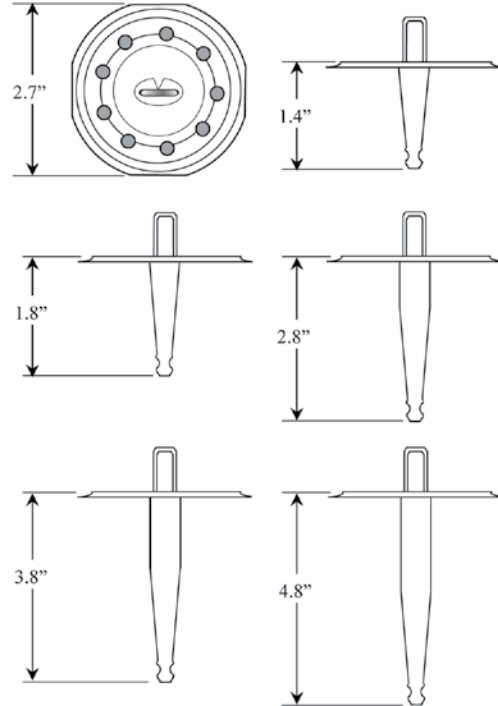
**Packaging:** 1.4", 1.8", 2.8", and 3.8" Twin Loc-Nails packaged 500 per carton. Gross weight: 1.4"- 26 lbs; 1.8"- 28 lbs; 2.8"- 34 lbs; 3.8"- 42 lbs. 4.8" Twin Loc-Nails packaged 250 per carton. Gross weight: 27 lbs. Shrink wrapped and palletized.

## PROUDLY MADE IN THE U.S.A.

**Warranty:** ES Products, LLC warrants its products for one year from date of sale against defective workmanship and material, and its liability therefore shall be limited to replacing defective products reported defective during the warranty period. ES Products is not responsible for any failure attributable to improper use or installation in any manner inconsistent with manufacturer's specifications. THIS WARRANTY IS IN LIEU OF ANY OTHER WARRANTY, EXPRESS OR IMPLIED, ALL OF WHICH ARE EXPRESSLY DISCLAIMED INCLUDING ANY WARRANTY OF MERCHANTABILITY AND ANY WARRANTY OF FITNESS FOR PARTICULAR USE. This warranty provides specific legal rights and remedies that may vary from state to state.



### 5 LENGTHS



As locking staple is driven, its dual wire legs diverge, anchoring the fastener in substrate

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**BASE SHEET, RECOVERY BOARD, AND INSULATION ATTACHMENT TO LIGHTWEIGHT INSULATING CONCRETE, STRUCTURAL WOOD FIBER, AND POURED GYPSUM**

**USING THE TWIN LOC-NAIL**

Fastener density and spacing vary depending on applicable uplift requirements. Local codes, governing approval bodies, membrane manufacturers, and individual roofdeck manufacturers all may have specific requirements that need to be addressed prior to beginning any roofing project. **The Twin Loc-Nail should always be embedded into the structural roofdeck to a depth of at least 1".** The following illustrates typical Factory Mutual recommended fastening patterns widely accepted by membrane and roofdeck manufacturers.

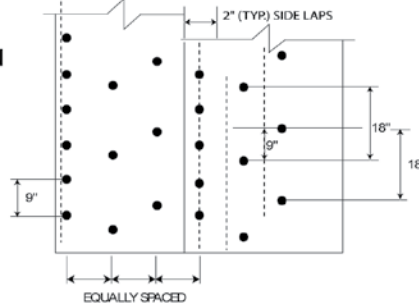
**FASTENING GUIDE I**

**BASE SHEET ATTACHMENT FOR BUILT-UP OR MODIFIED BITUMEN ROOF COVERS**

**CLASS I-90 WINDSTORM CLASSIFICATION**

An FMRC-approved base sheet is fastened in the field on the roof with Twin Loc-Nails installed 9" on center in 2" wide base sheet side laps and 18" on center staggered in 2 rows, equally spaced, between the base sheet side laps.

When fastening meter-wide material with this pattern, expect to use approximately 86 fasteners per square (100 ft<sup>2</sup>).



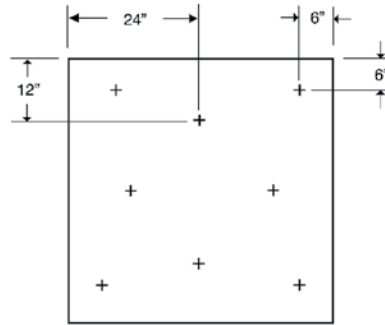
**FASTENING GUIDE II**

**RECOVERY BOARD AND INSULATION ATTACHMENT UNDER BUILT-UP AND MODIFIED BITUMEN ROOF COVERS**

**CLASS I-90 WINDSTORM CLASSIFICATION**

An FMRC-approved recovery board/insulation, suitable for use with minimum 3-ply built-up or modified membranes, is fastened with 8 Twin Loc-Nails per 4' x 4' board in a diamond in a box pattern (1 fastener per 2 ft<sup>2</sup>).

Consult FMRC for a complete listing of approved recovery boards/insulations.



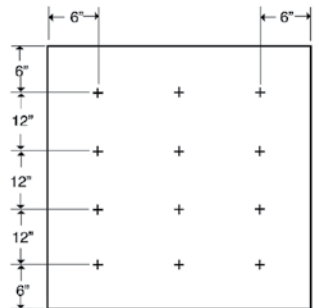
**FASTENING GUIDE III**

**RECOVERY BOARD AND INSULATION ATTACHMENT UNDER FULLY ADHERED SINGLE PLY MEMBRANES**

**CLASS I-90 WINDSTORM CLASSIFICATION**

An FMRC-approved recovery board/insulation, suitable for use with fully adhered single ply membranes, is fastened with 12 Twin Loc-Nails per 4' x 4' board in 4 rows of 3 fasteners per row (1 fastener per 1.33 ft<sup>2</sup>).

Consult FMRC for a complete listing of approved recovery boards/insulations.



12 Fasteners