



**South Florida Building Code
Broward County
1999 Edition**



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EVALUATION REPORT #9744A
Refer to this evaluation report for code compliance.

TILE BOND™

Roof Tile Adhesive

For Concrete & Clay Roof Tile

OPERATING INSTRUCTIONS AND MAINTENANCE BOOKLET

The Dow Chemical Company
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TILE BOND™ Roof Tile Adhesive

OPERATING INSTRUCTIONS AND MAINTENANCE

Before using TILE BOND Roof Tile Adhesive, please read and follow the operating instructions to ensure safety and maximize yield.

PRECAUTIONS

DO NOT STORE IN DIRECT SUNLIGHT.

Always wear gloves, protective clothing, and eyewear when handling. Use only with adequate ventilation. **IMPORTANT:** A self-contained breathing apparatus is needed in areas of insufficient ventilation.

Do not puncture or expose cylinders to temperatures above 120°F (48.9°C).

Do not apply adhesive to areas exposed to flame or excessive heat above 240°F (116°C).

TO USE, REMOVE CYLINDER FROM CARTON.

Shake the cylinder vigorously for at least 15 seconds before attaching the hose or before reusing TILE BOND adhesive.

STORAGE

DO NOT STORE IN DIRECT SUNLIGHT.

Store TILE BOND adhesive between 40° - 80° F (4.4° - 26.7°C) to ensure adhesive quality, maximum yield and shelf life.

Do not exceed 120° F (48.9°C).

Store partially used TILE BOND adhesive upright with the hose attached and pressurized. The cylinder valve must be in the off position.

SURFACE PREPARATION

All roof surfaces must be free of any debris, dirt, grease, oil, and standing water before TILE BOND adhesive is applied.

APPLICATION TEMPERATURES

The recommended product temperature at time of application should be 70°F (21.1°C). The minimum ambient and surface temperatures should be 50°F (10.0°C). Lower temperatures extend cure time.

OPERATING INSTRUCTIONS

1. Shake cylinder vigorously for at least 15 seconds before using.
2. With the cylinder upright, securely attach assembly hose of TILE BOND adhesive to cylinder with 9/16" wrench.
3. Open valve counterclockwise 1/2 to 1 full turn to activate the kit.

CAUTION: Do not open or dispense adhesive with the cylinder in an inverted position.

4. Point dispenser in safe direction. Pull trigger to fill the hose and dispenser with adhesive.
5. Control adhesive flow by adjusting yellow cylinder valve. If flow is insufficient, open valve in quarter turn increments until sufficient flow is achieved.
6. Flow can also be controlled by metering the dispenser trigger.
7. Apply TILE BOND adhesive as indicated on the application pages 3-11.
8. Release the trigger to stop the flow of adhesive.

CLEANING / SHUT DOWN PROCEDURE

1. Turn cylinder valve clockwise to the off position.
2. Do not empty material from the hose. Leave the dispenser and hose pressurized.
3. **DO NOT CLEAN DISPENSER OR NOZZLE. DO NOT USE SOLVENT.** Cured adhesive in the nozzle protects the dispenser from setting up during storage.

Once activated, the dispenser has a useful life of approximately 72 hours. Adhesive may harden in dispenser over longer periods of time. Dispenser can be reused on another unit of TILE BOND adhesive if the hose is immediately transferred to a new cylinder and activated.

REUSE OF TILE BOND ADHESIVE

1. Upon reuse, clear cured adhesive plug from nozzle tip. **DO NOT USE SOLVENT.**
 - a. Turn nozzle counter-clockwise 1/2 turn and remove from dispenser.
 - b. Insert screwdriver or other similar object through nozzle to remove plug.
 - c. Reattach nozzle.
2. Shake cylinder vigorously for at least 15 seconds.
3. With cylinder upright, open valve counterclockwise 1/2 to 1 full turn.
4. Reactivate by pulling trigger until adhesive starts flowing from the nozzle.

TROUBLESHOOTING

1. **RESTRICTED OR SLOW FLOW RATE:**
 - a. Confirm that cylinder valve is open.
 - b. Check the nozzle for adhesive plug.
 - c. If product application temperature is below recommended 70°F (21.1°C), place the cylinder in warm area of approximately 70°F (21.1°C) until cylinder reaches proper application temperature.
2. **TRIGGER WILL NOT PULL BACK:** Adhesive is cured in dispenser. Replace with new dispenser for TILE BOND adhesive.
3. **CONTINUOUS BURST OF PRESSURE:** Cylinder valve is pointed down or the cylinder is empty. Turn cylinder upright or replace cylinder.
4. **LEAKING DISPENSER:** Reduce pressure by turning yellow cylinder valve clockwise in 1/4 turn increments.

5. **UNABLE TO SOLVE PROBLEM:**
Call (888)868-1183 for technical assistance.

FIRST AID

EYE: Flush with water for 15 minutes.

SKIN: First allow adhesive to cure. Then rub repeatedly with a washcloth, while soaking in water. **INHALATION:** Remove to fresh air.

INGESTION: Give large quantities of liquids. **DO NOT** induce vomiting. **IN ALL CASES, CONSULT PHYSICIAN.**

WARNING

CONTENTS UNDER PRESSURE. Do not puncture or incinerate container. Do not expose to heat or store at temperatures above 120°F (48.9°C). The adhesive produced is combustible and may present a fire hazard if exposed to flame or temperatures above 240°F (116°C). Irritating to the eyes, respiratory system and skin. May cause sensitization by inhalation and skin contact. Do not breathe vapour/gas/fumes/spray. Use only in well ventilated areas. Wear suitable protective clothing, eyewear and gloves. **KEEP OUT OF THE REACH OF CHILDREN.** In case of accident or if you feel unwell, seek medical advice immediately (show the label where possible).

DISPOSAL

All pressure must be released from cylinder before disposal. Disposal of residue of TILE BOND adhesive must be done with adequate ventilation. **NEVER PUNCTURE OR INCINERATE CYLINDER.** Always wear gloves and goggles when disposing of cylinders.

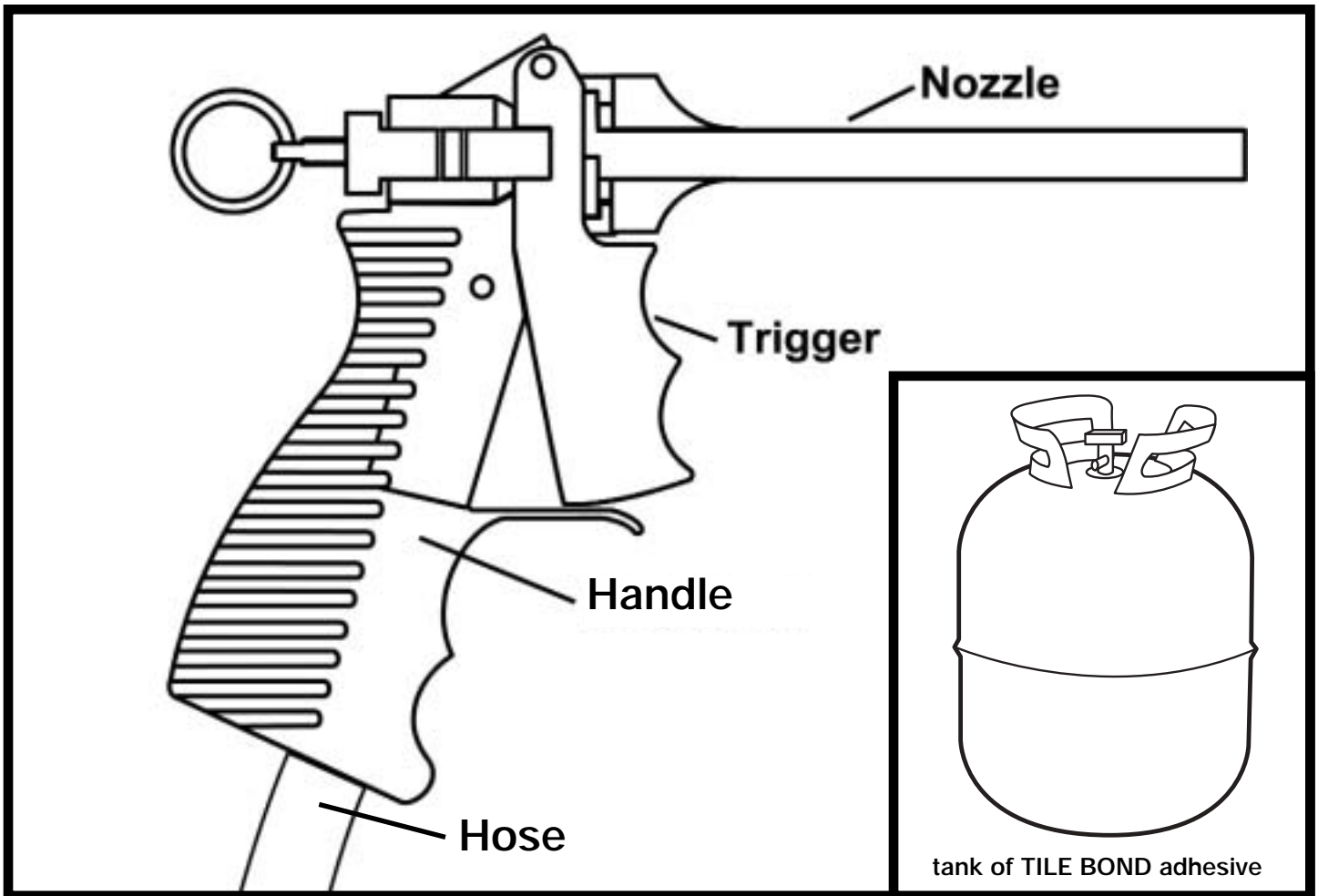
1. Close cylinder valve.
2. Remove dispensing hose from cylinder.
3. Hold tank upside down over waste container with valve facing away from you and any others in the area.
4. Slowly open valve on the cylinder.
5. Set cylinder into waste container and allow residual pressure and chemical to escape.
6. Cover waste container with loosely fitting covers and allow contents to set for several days.

7. Dispose of in accordance with federal, state and local environmental regulations.
NOTE: If no waste container is available, the cylinder of TILE BOND adhesive can be inverted in its original carton using the method described above and allowed to empty.

CONTENTS

- Cylinder with 23 pounds of TILE BOND adhesive
- Dispenser for TILE BOND adhesive with 8 1/2" hose
- Operating Instruction and Maintenance Booklet
- 1 1/2"W x 4"L x 1"H adhesive pad sample

Dispenser for TILE BOND Roof Tile Adhesive



LIMITATIONS AND RECOMMENDATIONS

TILE BOND Roof Tile Adhesive must be applied to an underlayment installed in compliance with application instructions detailed in the following documents:

- FRSA/ROOF TILE INSTITUTE Adhesive Set Tile Specification "system 4" as per the June, 2001 edition.
- Chapter 15 of the Standard Building Code
- Chapter 34 of the South Florida Building Code - Broward Edition
- Compliance with Metro Dade County RAS 127

Note: Glazed Tile - If a ceramic glazed or slate roof tile is going to be installed, please contact The Dow Chemical Company - Technical Dept., or your local representative from The Dow Chemical Company for compatibility. Some glazed roof tiles may not be compatible with TILE BOND.

Note: **BROWARD COUNTY INSTALLATIONS**
With the exceptions of eave and field tile pad placements as detailed in these instructions, all components of the roofing system shall be installed in accordance with Chapter 34 South Florida Building Code - Broward County 1999 Edition.

TILE BOND adhesive will become tack free (not sticky to touch) in 5 to 15 minutes.

High temperature and humidity will accelerate the curing process. Set tile into adhesive pad within 4 minutes of dispensing adhesive.

Approximately 750 Flat field tiles, up to 120 MPH from a

23 lb. cylinder - See SBCCI report 9744A

Do not place TILE BOND adhesive on fresh asphalt plastic roof cement.

TILE BOND adhesive must not be left exposed to sunlight (ultraviolet light) or discoloration will occur. After adhesive cures (approximately 4 hours), point up with mortar or coat with an approved UV protective coating.

Installers should be trained & certified.

The Dow Chemical Company offers free training & certification.

WARRANTY

The Dow Chemical Company will warrant TILE BOND Roof Tile Adhesive to be free of any manufactured defects for a period of one year from the date of manufacture. The Dow Chemical Company will only credit, at our discretion, the purchase price of any defective product.

LOW/FLAT PROFILE TILE APPLICATION

Read Limitations and Recommendations before applying TILE BOND Roof Tile Adhesive

For areas and sections of the Roof System not covered by these instructions, please refer to the FRSA/ROOF TILE INSTITUTE CONCRETE AND CLAY ROOF TILE INSTALLATION MANUAL "System 4" June 2001 edition.

Refer to Anchor Sheet Fastening Tables included in the instructions for decking and underlayment requirements.

1. For pitches above 6:12 up to and including 7:12 nail every third (3rd) tile in every fifth (5th) course in addition to the adhesive. Horizontal batten strips may need to be installed, depending upon the roof pitch and other attributes of the roof.
2. For pitches above 7:12, nail every tile in addition to adhesive, or use horizontal batten strips in addition to the adhesive.
3. Check local building code for additional nailing requirements.

EAVE TILE: UP TO 110 MPH WIND UPLIFT RESISTANCE (CHOOSE EITHER A OR B)

OPTION "A"

1. When using this method, you usually have a distance of approximately 1 1/2" from the top of the drip edge deck, to the bottom of the tile. Using a nominal 1"W x 2"H x 6"L or longer wood filler strip, batten strip, cant, or raised fascia board, will bridge the underside portion of the tile to the cap sheet.
2. Fully adhere wood starter or batten strip to cap sheet at butt of the tile, between the center of the tile, and the overlock side. The height of the starter strip should be 1/2" less than the height of the space under the tile at the eave closure.
3. Dispense a 1 1/2" wide x 1" high x 6" long adhesive pad directly on to the wood filler strip. Do not block the weep holes with the adhesive. Maximize the contact area to the pan portion of the tile.
4. Apply a second adhesive pad a minimum 1 1/2" wide x 1" high x 4" long at the head of the tile directly onto the cap sheet, diagonally across from the first pad. The anchor lug should be embedded in the adhesive. Maximize the contact area to the batten lug.
5. Set the tile in both pads of adhesive.
6. Continue to set the eave course of tile in a similar manner.

OPTION "B"

1. Apply an adhesive pad a minimum of 1 1/2" W x 1" H x 4"L directly on the cap sheet, at the head of the tile, making sure the batten lug is embedded in the adhesive.
2. Additionally secure the eave tile with two (2) screws. Said screws shall meet the requirements of the tile screw, as detailed in the FRSA/ROOF TILE INSTITUTE CONCRETE AND CLAY ROOF TILE INSTALLATION MANUAL June 2001 edition, or the local Building Code requirements, which ever apply. Apply approved plastic roof cement at all roof deck penetrations.
3. Continue to install the remaining eave tile in a similar manner.

FIELD TILE INSTALLATION - FOR UP TO 110 MPH WIND UPLIFT RESISTANCE USE A 1 1/2" W x 1" H x 4" L ADHESIVE PAD.

ABOVE 110 MPH - 140 MPH WIND UPLIFT RESISTANCE (ASCE 7-98 EXPOSURE B&C) USE A 1" W x 1" H x 8" L ADHESIVE PAD.

Note: Two (2) pads of TILE BOND adhesive are required for each Field Tile. Use adhesive pad sample as a guide for proper pad size for up to 110 MPH wind uplift resistance.

1. Apply the first proper size adhesive pad directly onto the head lap area of the preceding course on the overlock side of the tile.
2. Apply the second proper adhesive pad directly onto the cap sheet or batten strip, diagonally cross from the first adhesive pad.
3. When setting tile, angle the tile forward past the adhesive pad on the headlap and slide the tile into the adhesive before setting it down. This prevents the adhesive from being exposed on the face of the previous course. The batten lug must be embedded in the adhesive. Maximize the contact area to the batten lug.
4. Each adhesive pad shall provide a minimum of 10 square inches (above 110 MPH to 140 MPH, 22 square inches) of total tile contact area. At least one tile per square shall be pulled up to confirm contact area.
5. Continue to install the remaining tile in a similar manner.

OPTIONAL: HIP AND RIDGE TILE INSTALLATION WITH A WOOD RIDGE NAILER BOARD, OR METAL RIDGE BOARD WITH "V" TOP EDGE: UP TO 110 MPH WIND UPLIFT RESISTANCE.

1. Install wood, or metal ridge board according to Local Building Code Requirements.
2. Apply a 1 1/2" wide x 1 1/2" high x a minimum 12" long bead of adhesive on top of the nailer board (s) and set the ridge tile into the adhesive. Make sure the bottom of the ridge tile makes contact with the foam adhesive. When set in the adhesive, the ridge tile will push excess foam down the sides of the ridge board.
3. Apply a bead of TILE BOND adhesive across the top of the ridge tile, in the head lap area. This bead of adhesive should be approximately 4" long x 1" wide x 1" high. Set the next ridge tile, making sure the tile overlaps the first tile with the proper head lap and the bead of adhesive is between both tiles in the head lap area, and the bottom of the ridge tile makes contact with the adhesive bead on top of the ridge board, as described in #2.
4. Proceed to install the remaining ridge tile in a similar manner.
5. Point-up with mortar to the open space between the top of the field tile and the bottom of the edge of the ridge tile. Point up to a proper finish.

Do not leave TILE BOND adhesive exposed to sunlight (ultra violet light). After adhesive cures (approximately 4 hours), point up with mortar or coat exposed adhesive pad with an approved UV protective coating.

Note: An adhesive pad 1 1/2" W x 4" L x 1" H when compressed should expand to a contact area of 2" x 5". A contact area of approximately 10 square inches per adhesive pad is required. Pad dimensions can be modified to accommodate differences in tile configurations as long as the adhesive contact area is not reduced. Check at least one tile per square to confirm contact area.

To make any adjustments to tiles after tack free time, you must have old adhesive pads removed and new adhesive pads applied.

Walking on the tile before adhesive has cured may cause a slipping hazard.

LOW/FLAT PROFILE

APPLY A BEAD OF *TILE BOND* ADHESIVE
ACROSS THE TOP OF THE RIDGE
TILE IN THE HEAD LAP AREA

HIP AND RIDGE:
A PAD OF *TILE BOND* ADHESIVE
PLACED ON TOP OF RIDGE BOARD
TO ADHERE RIDGE TILE

FIELD TILE:
APPLY ADHESIVE PAD DIRECTLY ON
THE CAP SHEET OR BATTEN STRIP

APPLY ADHESIVE PAD DIRECTLY ONTO
THE HEADLAP AREA OF THE
PRECEDING COURSE ON THE
OVER-LOCK SIDE OF THE TILE

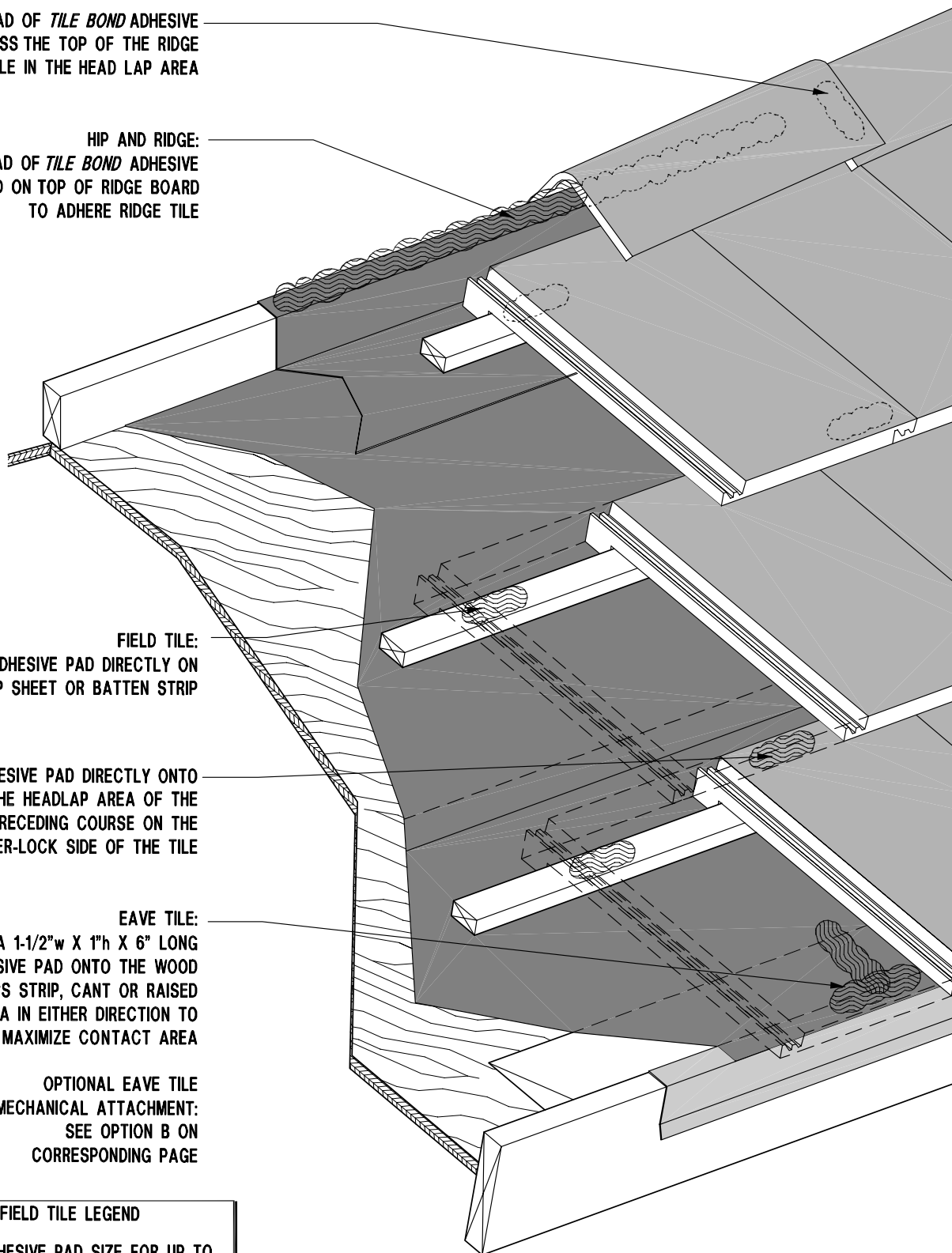
EAVE TILE:
DISPENSE A 1-1/2" w X 1" h X 6" LONG
ADHESIVE PAD ONTO THE WOOD
FILLERS STRIP, CANT OR RAISED
FASCIA IN EITHER DIRECTION TO
MAXIMIZE CONTACT AREA

OPTIONAL EAVE TILE
MECHANICAL ATTACHMENT:
SEE OPTION B ON
CORRESPONDING PAGE

FIELD TILE LEGEND

PROPER ADHESIVE PAD SIZE FOR UP TO
110 MPH = 1-1/2"W x 1"H x 4"L

PROPER ADHESIVE PAD SIZE FOR UP TO
140 MPH = 1"W x 1"H x 8"L



Drawing not to scale

MEDIUM PROFILE TILE APPLICATION

Read limitations and Recommendations before applying TILE BOND Roof Tile Adhesive

For areas and sections of the Roof System not covered by these instructions, please refer to the FRSA/ROOF TILE INSTITUTE CONCRETE AND CLAY ROOF TILE INSTALLATION MANUAL "System 4" June 2001 edition.

Refer to Anchor Sheet Fastening Tables included in the instructions for decking and underlayment requirements.

1. For pitches above 6:12 up to and including 7:12 nail every third (3rd) tile in every fifth (5th) course in addition to the adhesive. Horizontal batten strips may need to be installed, depending upon the roof pitch and other attributes of the roof.
2. For pitches above 7:12, nail every tile in addition to adhesive, or use horizontal batten strips in addition to the adhesive.
3. Check local building code for additional nailing requirements.

EAVE TILE: UP TO 110 MPH WIND UPLIFT RESISTANCE (CHOOSE EITHER A OR B)

OPTION "A"

1. When using this method, you usually have a distance of approximately 1 1/2" from the top of the drip edge deck, to the bottom of the tile. Using a nominal 1"W x 2"H x 6"L or longer wood filler strip, batten strip, cant, or raised fascia board, will bridge the underside portion of the tile to the cap sheet.
2. Fully adhere wood starter or batten strip to cap sheet at butt of the tile, between the center of the tile, and the overlock side. The height of the starter strip should be 1/2" less than the height of the space under the tile at the eave closure.
3. Dispense a 1 1/2" wide x 1" high x 6" long adhesive pad directly on to the wood filler strip. Do not block the weep holes with the adhesive. Maximize the contact area to the pan portion of the tile.
4. Apply a second adhesive pad a minimum 1 1/2" wide x 1" high x 4" long at the head of the tile directly onto the cap sheet, diagonally across from the first pad. The batten lug must be embedded in the adhesive. Maximize the contact area to the batten lug.
5. Set the tile in both pads of adhesive.
6. Continue to set the eave course of tile in a similar manner.

OPTION "B"

1. Apply an adhesive pad a minimum of 1 1/2" W x 1" H x 4"L directly on the cap sheet, at the head of the tile, making sure the batten lug is embedded in the adhesive.
2. Additionally secure the eave tile with two (2) screws. Said screws shall meet the requirements of the tile screw, as detailed in the FRSA/ROOF TILE INSTITUTE CONCRETE AND CLAY ROOF TILE INSTALLATION MANUAL June 2001 edition, or the local Building Code requirements, which ever apply. Apply approved plastic roof cement at all roof deck penetrations.
3. Continue to install the remaining eave tile in a similar manner.

FIELD TILE INSTALLATION - FOR UP TO 110 MPH WIND UPLIFT RESISTANCE USE A 1 1/2" W x 1" H x 4" L ADHESIVE PAD.

ABOVE 110 MPH - 140 MPH WIND UPLIFT RESISTANCE (ASCE 7-98 EXPOSURE B&C) USE A 1" W x 1" H x 8" L ADHESIVE PAD.

Note: Two (2) pads of TILE BOND adhesive are required for each Field Tile. Use adhesive pad sample as a guide for proper pad size for up to 110 MPH wind uplift resistance.

1. Apply the first proper size adhesive pad directly onto the head lap area of the preceding course on the overlock side of the tile.
2. Apply the second proper adhesive pad directly onto the cap sheet or batten strip, diagonally cross from the first adhesive pad.
3. When setting tile, angle the tile forward past the adhesive pad on the headlap and slide the tile into the adhesive before setting it down. This prevents the adhesive from being exposed on the face of the previous course. The batten lug must be embedded in the adhesive. Maximize the contact area to the batten lug.
4. Each adhesive pad shall provide a minimum of 10 square inches (above 110 MPH to 140 MPH, 22 square inches) of total tile contact area. At least one tile per square shall be pulled up to confirm contact area.
5. Continue to install the remaining tile in a similar manner.

OPTIONAL: HIP AND RIDGE TILE INSTALLATION WITH A WOOD RIDGE NAILER BOARD, OR METAL RIDGE BOARD WITH "V" TOP EDGE: UP TO 110 MPH WIND UPLIFT RESISTANCE.

1. Install wood, or metal ridge board according to Local Building Code Requirements.
2. Apply a 1 1/2" wide x 1 1/2" high x a minimum 12" long bead of adhesive on top of the nailer board (s) and set the ridge tile into the adhesive. Make sure the bottom of the ridge tile makes contact with the foam adhesive. When set in the adhesive, the ridge tile will push excess foam down the sides of the ridge board.
3. Apply a bead of TILE BOND adhesive across the top of the ridge tile, in the head lap area. This bead of adhesive should be approximately 4" long x 1" wide x 1" high. Set the next ridge tile, making sure the tile overlaps the first tile with the proper head lap and the bead of adhesive is between both tiles in the head lap area, and the bottom of the ridge tile makes contact with the adhesive bead on top of the ridge board, as described in #2
4. Proceed to install the remaining ridge tile in a similar manner.
5. Point-up with mortar to the open space between the top of the field tile and the bottom of the edge of the ridge tile. Point up to a proper finish.

Do not leave TILE BOND adhesive exposed to sunlight (ultra violet light). After adhesive cures (approximately 4 hours), point up with mortar or coat exposed adhesive pad with an approved UV protective coating.

Note: An adhesive pad 1 1/2" W x 4" L x 1" H when compressed should expand to a contact area of 2" x 5". A contact area of approximately 10 square inches per adhesive pad is required. Pad dimensions can be modified to accommodate differences in tile configurations as long as the adhesive contact area is not reduced. Check at least one tile per square to confirm contact area.

To make any adjustments to tiles after tack free time, you must have old adhesive pads removed and new adhesive pads applied.

Walking on the tile before adhesive has cured may cause a slipping hazard.

MEDIUM PROFILE

APPLY A BEAD OF *TILE BOND* ADHESIVE
ACROSS THE TOP OF THE RIDGE
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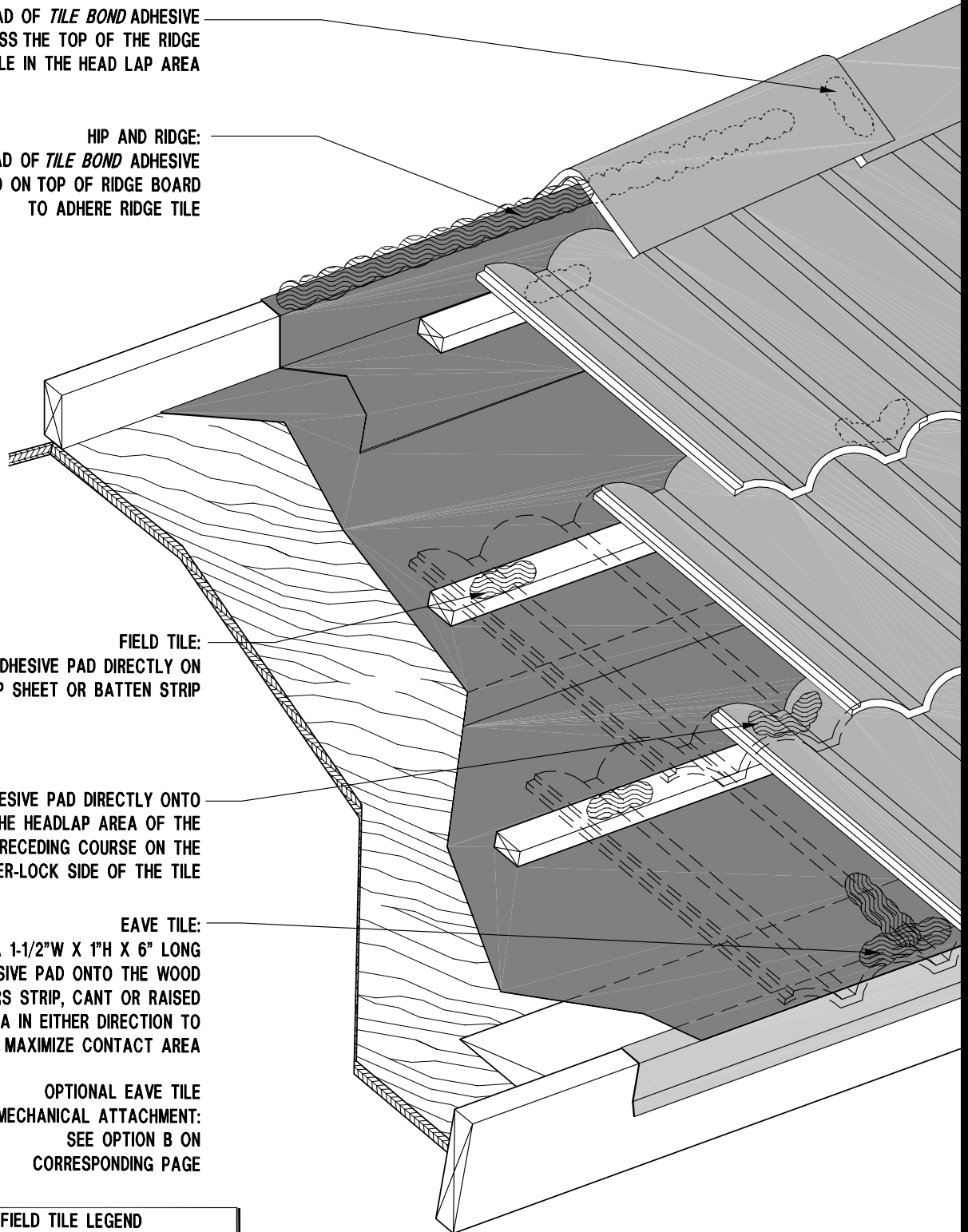
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OPTIONAL EAVE TILE
MECHANICAL ATTACHMENT:
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FIELD TILE LEGEND

PROPER ADHESIVE PAD SIZE FOR UP TO
110 MPH = 1-1/2"W x 1"H x 4"L

PROPER ADHESIVE PAD SIZE FOR UP TO
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Drawing not to scale

HIGH PROFILE TILE APPLICATION

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1. For pitches above 6:12 up to and including 7:12 nail every third (3rd) tile in every fifth (5th) course in addition to the adhesive. Horizontal batten strips may need to be installed, depending upon the roof pitch and other attributes of the roof.
2. For Pitches above 7:12, nail every tile in addition to adhesive, or use horizontal batten strips in addition to the adhesive.
3. Check local building code for additional nailing requirements.

EAVE TILE: UP TO 110 MPH WIND UPLIFT RESISTANCE (CHOOSE EITHER A OR B)

OPTION "A"

1. When using this method, you usually have a distance of approximately 1 1/2" from the top of the drip edge deck, to the bottom of the tile. Using a nominal 1"W x 2"H x 6"L or longer wood filler strip, batten strip, cant, or raised fascia board, will bridge the underside portion of the tile to the cap sheet.
2. Fully adhere wood starter or batten strip to cap sheet at butt of the tile under the pan portion of the tile. The height of the starter strip should be 1/2" less than the height of the space under the tile at the eave closure.
3. Dispense a 1 1/2" wide x 1" high x 6" long adhesive pad directly on to the wood filler strip. Do not block the weep holes with the adhesive. Maximize the contact area to the pan portion of the tile.
4. Apply a second adhesive pad a minimum 1 1/2" wide x 1" high x 4" long at the head of the tile directly onto the cap sheet, diagonally across from the first pad. The anchor lug should be embedded in the adhesive. Maximize the contact area to the batten lug.
5. Set the tile in both pads of adhesive.
6. Continue to set the eave course of tile in a similar manner.

OPTION "B"

1. Apply an adhesive pad a minimum of 1 1/2" W x 1" H x 4"L directly on the cap sheet, at the head of the tile, making sure the batten lug is embedded in the adhesive.
2. Additionally secure the eave tile with two (2) screws. Said screws shall meet the requirements of the tile screw, as detailed in the FRSA/ROOF TILE INSTITUTE CONCRETE AND CLAY ROOF TILE INSTALLATION MANUAL June 2001 edition, or the local Building Code requirements, which ever apply. Apply approved plastic roof cement at all roof deck penetrations.
3. Continue to install the remaining eave tile in a similar manner.

FIELD TILE INSTALLATION - FOR UP TO 110 MPH WIND UPLIFT RESISTANCE USE A 1" W x 1" H x 6" L ADHESIVE PAD AT THE HEAD LAP AND USE A 1 1/2" W x 1 1/2" H x 6" L ADHESIVE PAD AT THE ANCHOR LUG UNDER THE PAN PORTION OF THE TILE.

ABOVE 110 MPH - 140 MPH WIND UPLIFT RESISTANCE (ASCE 7-98 EXPOSURE B&C) USE A 1" W x 1" H x 8" L ADHESIVE PAD AT THE HEAD LAP AND USE A 4" W x 2" H x 4" L ADHESIVE PAD AT THE ANCHOR LUG UNDER THE PAN PORTION OF THE TILE.

Note: Two (2) pads of TILE BOND adhesive are required for each Field Tile

Use adhesive pad sample as a guide for proper pad size for up to 110 MPH wind uplift resistance.

1. Apply the first proper size adhesive pad a minimum of 1" wide x 1" high x 6" long (above 110 MPH to 140 MPH, use a 1"W x 1"H x 8"L) directly onto the head lap area of the preceding course on the overlock side of the tile.
2. Apply the second proper adhesive pad 1 1/2" wide x 1 1/2" high x 6" long (above 110 MPH to 140 MPH, use a 4"W x 2"H x 4"L) directly onto the cap sheet or batten strip under the pan portion of the tile.
3. When setting tile, angle the tile forward past the adhesive pad on the headlap and slide the tile into the adhesive before setting it down. This prevents the adhesive from being exposed on the face of the previous course. The batten lug must be embedded in the adhesive. Maximize the contact area to the batten lug.
4. Each adhesive pad shall provide a minimum of 10 square inches (above 110 MPH to 140 MPH, 22 square inches) of total tile contact area. At least one tile per square shall be pulled up to confirm contact area.
5. Continue to install the remaining tile in a similar manner.

OPTIONAL: HIP AND RIDGE TILE INSTALLATION WITH A WOOD RIDGE NAILER BOARD, OR METAL RIDGE BOARD WITH "V" TOP EDGE: UP TO 110 MPH WIND UPLIFT RESISTANCE.

1. Install wood, or metal ridge board according to Local Building Code Requirements.
2. Apply a 1 1/2" wide x 1 1/2" high x a minimum 12" long bead of adhesive on top of the nailer board (s) and set the ridge tile into the adhesive. Make sure the bottom of the ridge tile makes contact with the foam adhesive. When set in the adhesive, the ridge tile will push excess foam down the sides of the ridge board.
3. Apply a bead of TILE BOND adhesive across the top of the ridge tile, in the head lap area. This bead of adhesive should be approximately 4" long x 1" wide x 1" high. Set the next ridge tile, making sure the tile overlaps the first tile with the proper head lap and the bead of adhesive is between both tiles in the head lap area, and the bottom of the ridge tile makes contact with the adhesive bead on top of the ridge board, as described in #2.
4. Proceed to install the remaining ridge tile in a similar manner.
5. Point-up with mortar to the open space between the top of the field tile and the bottom of the edge of the ridge tile. Point up to a proper finish.

Do not leave TILE BOND adhesive exposed to sunlight (ultra violet light). After adhesive cures (approximately 4 hours), point up with mortar or coat exposed adhesive pad with an approved UV protective coating.

Note: Pad dimensions can be modified to accommodate differences in tile configurations as long as the adhesive contact area is not reduced. Check at least one tile per square to confirm contact area.

To make any adjustments to tiles after tack free time, you must have old adhesive pads removed and new adhesive pads applied.

Walking on the tile before adhesive has cured may cause a slipping hazard.

HIGH PROFILE

APPLY A BEAD OF *TILE BOND* ADHESIVE
ACROSS THE TOP OF THE RIDGE
TILE IN THE HEAD LAP AREA

HIP AND RIDGE:
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FIELD TILE:
APPLY ADHESIVE PAD DIRECTLY ON
THE CAP SHEET OR BATTEN STRIP

APPLY ADHESIVE PAD DIRECTLY ONTO
THE HEADLAP AREA OF THE
PRECEDING COURSE STARTING FROM
THE PAN SIDE OF THE TILE

EAVE TILE:
DISPENSE A 1-1/2"W X 1"H X 6" LONG
ADHESIVE PAD ONTO THE WOOD
FILLERS STRIP, CANT OR RAISED
FASCIA IN EITHER DIRECTION TO
MAXIMIZE CONTACT AREA

OPTIONAL EAVE TILE
MECHANICAL ATTACHMENT:
SEE OPTION B ON
CORRESPONDING PAGE

FIELD TILE LEGEND

PROPER ADHESIVE PAD SIZE FOR UP TO 110 MPH

ANCHOR LUG : 1"W x 1"H x 6"L

HEAD LAP : 1-1/2"W X 1-1/2"H X 6"L

PROPER ADHESIVE PAD SIZE FOR UP TO 140 MPH

ANCHOR LUG : 4"W X 2"H X 4"L

HEAD LAP: 1"W X 1"H X 8"L

Drawing not to scale

TWO PIECE BARREL PROFILE TILE APPLICATION

Read Limitations and Recommendations before applying TILE BOND Roof Tile Adhesive

For areas and sections of the Roof System not covered by these instructions, please refer to the FRSA/ROOF TILE INSTITUTE CONCRETE AND CLAY ROOF TILE INSTALLATION MANUAL "System 4" June 2001 edition.

Refer to Anchor Sheet Fastening Tables included in the instructions for decking and underlayment requirements.

1. For pitches above 6:12 up to and including 7:12 nail every third (3rd) tile in every fifth (5th) course in addition to the adhesive. Horizontal batten strips may need to be installed, depending upon the roof pitch and other attributes of the roof.

2. For Pitches above 7:12, nail every tile in addition to adhesive, or use horizontal batten strips in addition to the adhesive.

3. Check local building code for additional nailing requirements.

EAVE TILE: EAVE CLOSURE OR MORTAR CLOSURE

1. Apply a minimum 1 1/2" wide x 1 1/2" high x 8" long adhesive strip to the cap sheet at the butt of the pan tile, in the middle of the "roll". This adhesive pad should run vertically up the tile. Place the pan tile directly into the adhesive.

2. Set the second pan tile in the same fashion, allowing for the proper spacing.

3. Apply the cover tile by applying a 1" wide x 1" high x 8" long adhesive pad to the underside of the cover, on each side of the inside of the tile. These pads should be behind the headlap of the cover. Set the cover over the two (2) pan tiles already laid. Assure that the adhesive pads on the cover make contact with the inside edge of the pan tiles.

FIELD TILE INSTALLATION

1. Apply an adhesive pad, a minimum size of 1 1/2" wide x 1 1/2" high x 8" long, directly onto the underlayment in the middle of where the pan tile will be installed, beginning at the head lap of the preceding course and running vertically up the tile. Set the pan tile directly into the adhesive pad.

2. Set the adjacent pan tile in a similar manner. Make sure of the proper spacing.

3. Apply the cover tile by applying a 1" wide x 1" high x 8" long adhesive pad to the underside of the cover, on each

side of the inside of the tile. These pads should be behind the headlap of the cover. Set the cover over the two (2) pan tiles already laid. Assure that the adhesive pads on the cover make contact with the inside edge of the pan tiles.

OPTIONAL: HIP AND RIDGE TILE INSTALLATION WITH A WOOD RIDGE NAILER BOARD, OR METAL RIDGE BOARD WITH "V" TOP EDGE: UP TO 110 MPH WIND UPLIFT RESISTANCE.

1. Install wood, or metal ridge board according to Local Building Code Requirements.

2. Apply a 1 1/2" wide x 1 1/2" high x a minimum 12" long bead of adhesive on top of the nailer board (s) and set the ridge tile into the adhesive. Make sure the bottom of the ridge tile makes contact with the foam adhesive. When set in the adhesive, the ridge tile will push excess foam down the sides of the ridge board.

3. Apply a bead of TILE BOND adhesive across the top of the ridge tile, in the head lap area. This bead of adhesive should be approximately 4" long x 1" wide x 1" high. Set the next ridge tile, making sure the tile overlaps the first tile with the proper head lap and the bead of adhesive is between both tiles in the head lap area, and the bottom of the ridge tile makes contact with the adhesive bead on top of the ridge board, as described in #2.

4. Proceed to install the remaining ridge tile in a similar manner.

5. Point-up with mortar to the open space between the top of the field tile and the bottom of the edge of the ridge tile. Point up to a proper finish.

Do not leave TILE BOND adhesive exposed to sunlight (ultra violet light). After adhesive cures (approximately 4 hours), point up with mortar or coat exposed adhesive pad with an approved UV protective coating.

Note: Pad dimensions can be modified to accommodate differences in tile configurations as long as the adhesive contact area is not reduced. Check at least one tile per square to confirm contact area.

To make any adjustments to tiles after tack free time, you must have old adhesive pads removed and new adhesive pads applied.

Walking on the tile before adhesive has cured may cause a slipping hazard.

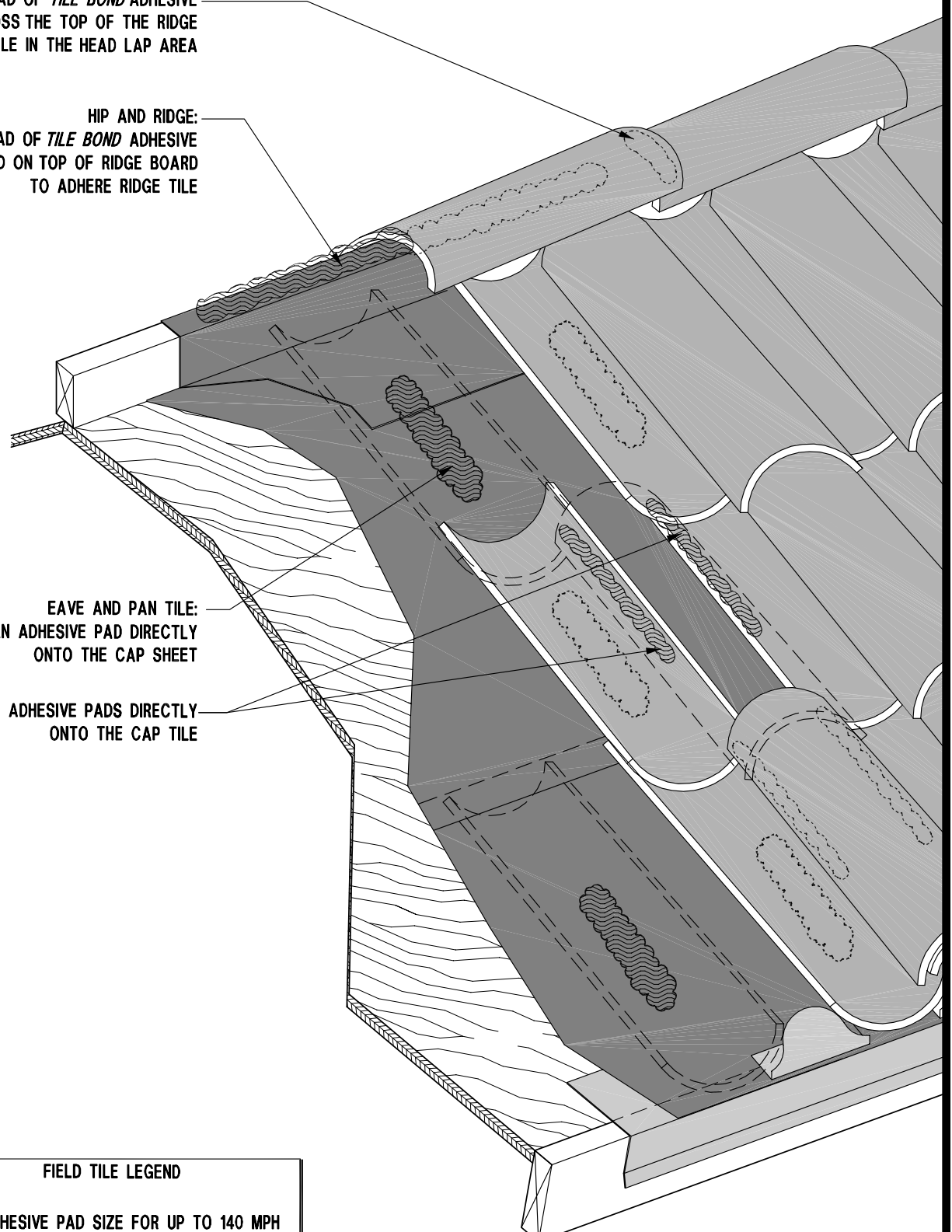
TWO PIECE BARREL PROFILE

APPLY A BEAD OF *TILE BOND* ADHESIVE
ACROSS THE TOP OF THE RIDGE
TILE IN THE HEAD LAP AREA

HIP AND RIDGE:
A PAD OF *TILE BOND* ADHESIVE
PLACED ON TOP OF RIDGE BOARD
TO ADHERE RIDGE TILE

EAVE AND PAN TILE:
APPLY AN ADHESIVE PAD DIRECTLY
ONTO THE CAP SHEET

APPLY 2 ADHESIVE PADS DIRECTLY
ONTO THE CAP TILE



FIELD TILE LEGEND

PROPER ADHESIVE PAD SIZE FOR UP TO 140 MPH

PAN TILE : 1-1/2"W x 1-1/2"H x 8"L

CAP TILE : 2 PADS AT 1"W x 1"H x 8"L

Drawing not to scale

REQUIRED DESIGN PRESSURES, P (psf)
ASCE 7-98 and International Building Code 2000 Edition

Data taken from NTRMA "VELOCITY PRESSURES AND REQUIRED DESIGN PRESSURES"
by Gary W. Walker, P.E. July 7, 2000

| Height above ground level, z | BASIC WIND SPEED, V (MPH) | |
|---------------------------------|----------------------------------|---------|
| | 110 MPH | 140 MPH |

Exposure B 10° < 30°

| | | |
|-----|------|------|
| 30' | 38.7 | 62.7 |
| 40' | 42.1 | 68.1 |
| 50' | 44.8 | 72.6 |
| 60' | 47.2 | 76.5 |

Exposure B 30° < 45°

| | | |
|-----|------|------|
| 30' | 22.1 | 35.9 |
| 40' | 24.0 | 38.9 |
| 50' | 25.6 | 41.5 |
| 60' | 27.0 | 43.7 |

Exposure C 10° < 30°

| | | |
|-----|------|-------|
| 20' | 49.9 | 80.0 |
| 30' | 54.3 | 88.0 |
| 40' | 57.7 | 93.5 |
| 50' | 60.5 | 98.0 |
| 60' | 62.8 | 101.8 |

Exposure C 30° < 45°

| | | |
|-----|------|------|
| 20' | 28.5 | 46.2 |
| 30' | 31.0 | 50.3 |
| 40' | 33.0 | 53.4 |
| 50' | 34.6 | 56.0 |
| 60' | 35.9 | 58.2 |

From the chart above, determine the following:

- 1) Which wind zone the structure is located, (B or C, and 110 or 140)?
- 2) What is the roof angle (Pitch)?
- 3) What is the roof height from ground level?
- 4) How thick is the roof decking (minimum 15/32" or 19/32")?
- 5) Are your 11-gauge tin cap nails Smooth or Deformed shank?

From the information above you can determine the minimum underlayment nailing pattern from the charts on the following page.

Example: Your building is located in Exposure C and 140 MPH, the roof angle is less than 30° and the height is 40 feet. You plan on using 19/32" plywood with 11-gauge deformed tin tabs. From the chart above you will need at least 93.5 psf. Now move to the charts below and find 93.5 psf or the next higher number. You will want to look under the 19/32" and deformed shank column. From the second chart below in the far right column you will find the closest number is 96.0 psf. Following that row to the left will give you a nailing pattern of three staggered rows in the field. Fasten every nail in each row 7-inches apart, in addition to one row at the lap 6-inches apart and one row at the top edge of the 90# back nailed every 12-inches.

| Two-Ply Underlayment Fastening Systems ³ | | | | | | | |
|--|-----------------------|---------------------|---------------------------------|---|-----------------------|---------------------|-----------------------|
| Attachment | Field (inches o/c) | Lap (inches o/c) | Backnail 90# (inches o/c) | Allowable Uplift Resistance ² (psf) | | | |
| | | | | 15/32" | | 19/32" | |
| | | | | Smooth ¹ | Deformed ¹ | Smooth ¹ | Deformed ¹ |
| Two rows staggered in field, on row at the lap, and one row at the top edge of the 90# | 12 | 6 | 12 | 41.6 | 47.4 | 52.7 | 60.0 |
| | 11 | 6 | 12 | 43.1 | 49.1 | 54.6 | 62.1 |
| | 10 | 6 | 12 | 44.9 | 51.0 | 56.8 | 64.6 |
| | 9 | 6 | 12 | 47.0 | 53.5 | 59.5 | 67.7 |
| | 8 | 6 | 12 | 49.6 | 56.5 | 62.9 | 71.5 |
| | 7 | 6 | 12 | 53.0 | 60.3 | 67.2 | 76.4 |
| | 6 | 6 | 12 | 57.6 | 65.5 | 72.9 | 82.9 |
| | 5 | 6 | 12 | 63.9 | 72.7 | 81.0 | 92.0 |
| | 4 | 6 | 12 | 73.5 | 83.6 | 93.0 | 105.8 |
| 3 | 6 | 12 | 89.3 | 101.6 | 113.2 | 128.6 | |

| Two-Ply Underlayment Fastening Systems ³ | | | | | | | |
|--|-----------------------|---------------------|---------------------------------|---|-----------------------|---------------------|-----------------------|
| Attachment | Field (inches o/c) | Lap (inches o/c) | Backnail 90# (inches o/c) | Allowable Uplift Resistance ² (psf) | | | |
| | | | | 15/32" | | 19/32" | |
| | | | | Smooth ¹ | Deformed ¹ | Smooth ¹ | Deformed ¹ |
| Three rows staggered in field, on row at the lap, and one row at the top edge of the 90# | 12 | 6 | 12 | 49.6 | 56.5 | 62.9 | 71.5 |
| | 11 | 6 | 12 | 51.8 | 58.9 | 65.6 | 74.6 |
| | 10 | 6 | 12 | 54.4 | 61.9 | 68.9 | 78.3 |
| | 9 | 6 | 12 | 57.6 | 65.5 | 72.9 | 82.9 |
| | 8 | 6 | 12 | 61.5 | 70.0 | 78.0 | 88.6 |
| | 7 | 6 | 12 | 66.6 | 75.8 | 84.4 | 96.0 |
| | 6 | 6 | 12 | 73.5 | 83.6 | 93.0 | 105.8 |
| | 5 | 6 | 12 | 83.0 | 94.4 | 105.1 | 119.5 |
| | 4 | 6 | 12 | 97.3 | 110.7 | 123.2 | 140.1 |
| 3 | 6 | 12 | 121.1 | 137.8 | 153.4 | 174.4 | |

Notes:

¹Length as required to penetrate the deck a minimum of 3/4" (19mm) or through the thickness of the roof deck a minimum of 3/16" (5 mm), whichever is less.

²140 mph is based on ASCE 7-98.

³The underlayment is a hot mop 30/90 system consisting of ASTM D 226, Type II anchor sheet and ASTM D 249 mineral surface roll roofing as the top ply. The anchor sheet is mechanically attached to the wood sheathing with 11 gauge ring shank or screw shank nails and 1 5/8 inch tin caps. The 11 gauge ring shank or screw shank nails are to be corrosion resistant meeting ASTM A 641 Class 1 or an approved equal corrosion resistance (i.e., hot dipped galvanized, aluminum, copper or stainless steel) of sufficient length to penetrate the roof deck a minimum of 3/4" or through the thickness of the roof deck a minimum of 3/16", whichever is less. The mineral surface top ply is applied on a full mopping of ASTM D 312, Type IV asphalt.

NOTES:

