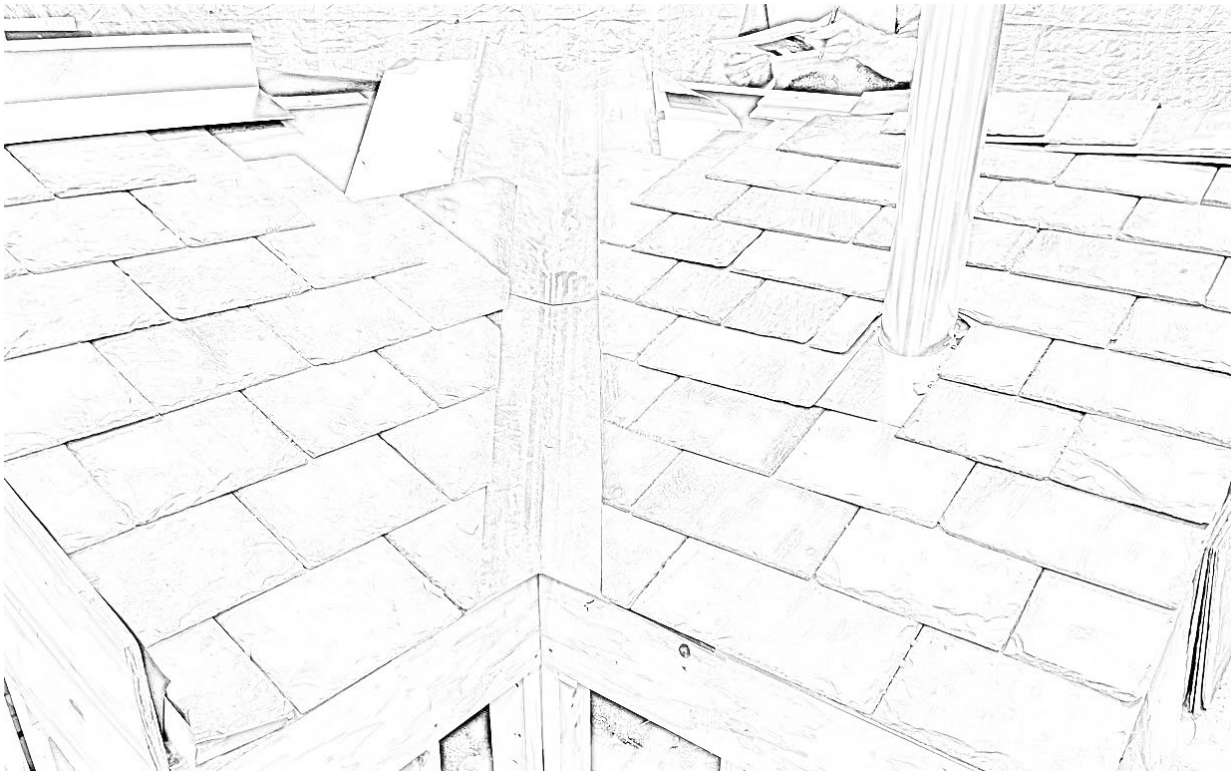




NRCA
PROCertification®

PROCertification® Slate Systems Installer Sample Assignment



PROCertification candidates are encouraged to know common slate roof system details used in the U.S. NRCA provides this **Slate Systems Installer Sample Assignment** for candidates to review and use for practice; they may be asked to perform a similar detail during the assessment to earn their professional designation of PROCertified® Slate Systems Installer. Candidates should set a goal of completing the sample assignment in six hours.

The assessment is a timed event where both quality and productivity are important. The qualified assessor can answer any questions before the exam.

**The images shown depict specific details an assessor may ask an installer to perform. The purpose of this assignment is to verify an installer can perform these skills.*



PART I: KNOWLEDGE ASSESSMENT

Sample questions, similar to those that your assessor may ask you, follow:

- ❖ Why is it important NOT to over-drive or under-drive slating nails?
- ❖ If a roof slope measures 12:12, what head lap should be used when installing field slates?
- ❖ What exposure should be used when installing 20x12 slate shingles on a 5:12 roof slope?
- ❖ Why is it important to maintain the correct offset when installing slate shingles?
- ❖ Lacking adequate attic ventilation or mechanical controls, what are the possible consequences of installing a vapor retarder, such as a self-adhering underlayment, over an entire roof deck?
- ❖ Who is responsible for inspecting the roof deck and accepting its condition as a precondition to starting a slate roof system installation?
- ❖ Is it important to comply with the drawings and specifications provided for a new slate roof?
- ❖ What is the first step in laying out a slate roof?
- ❖ What is a cramp, and on what area of a slate shingle is it acceptable to have one?
- ❖ Besides uniform- and random--width slate roofs, what other types of slate roofs can be installed?
- ❖ What is the minimum weight copper recommended for closed valley flashings and why?

PART II: SAFETY ASSESSMENT

- ❖ Inspect all components of the PFAS and explain what to look for.
- ❖ Put on and explain how to adjust the harness.
- ❖ Attach a rope grab device and lanyard to the lifeline and demonstrate how they work.
- ❖ Explain how to adjust the rope grab device and lifeline so that if you fall, you will not hit the ground or swing sideways and strike something.



PART III: INSTALLATION SKILLS EXAM



Although the mockup is framed with two 6:12 slopes, the slope on the left (with the sidewall) is labeled 9:12 and you are to install slate on this slope as if it is 9:12.

If the following conditions are found at the completion of the performance exam, they are grounds for failing the exam: Face nailed slates, upside-down slates, incorrect head lap, incorrect offset, over-nailing slates and under-nailing slates.

Acceptable material substitutions: Be aware the assignment includes certain concessions to accommodate limitations of the mockup and conserve natural resources. These may include:

- ❖ Using aluminum or galvanized steel flashings in lieu of copper flashings
- ❖ Using lighter weight copper flashings than typical
- ❖ Using galvanized steel nails in lieu of copper or stainless-steel nails
- ❖ Using shorter slating nails than required to facilitate disassembly of the mockup once you are done

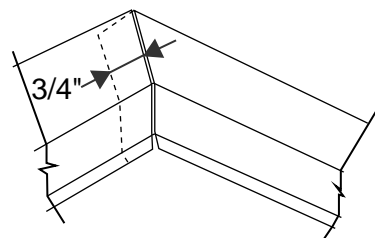
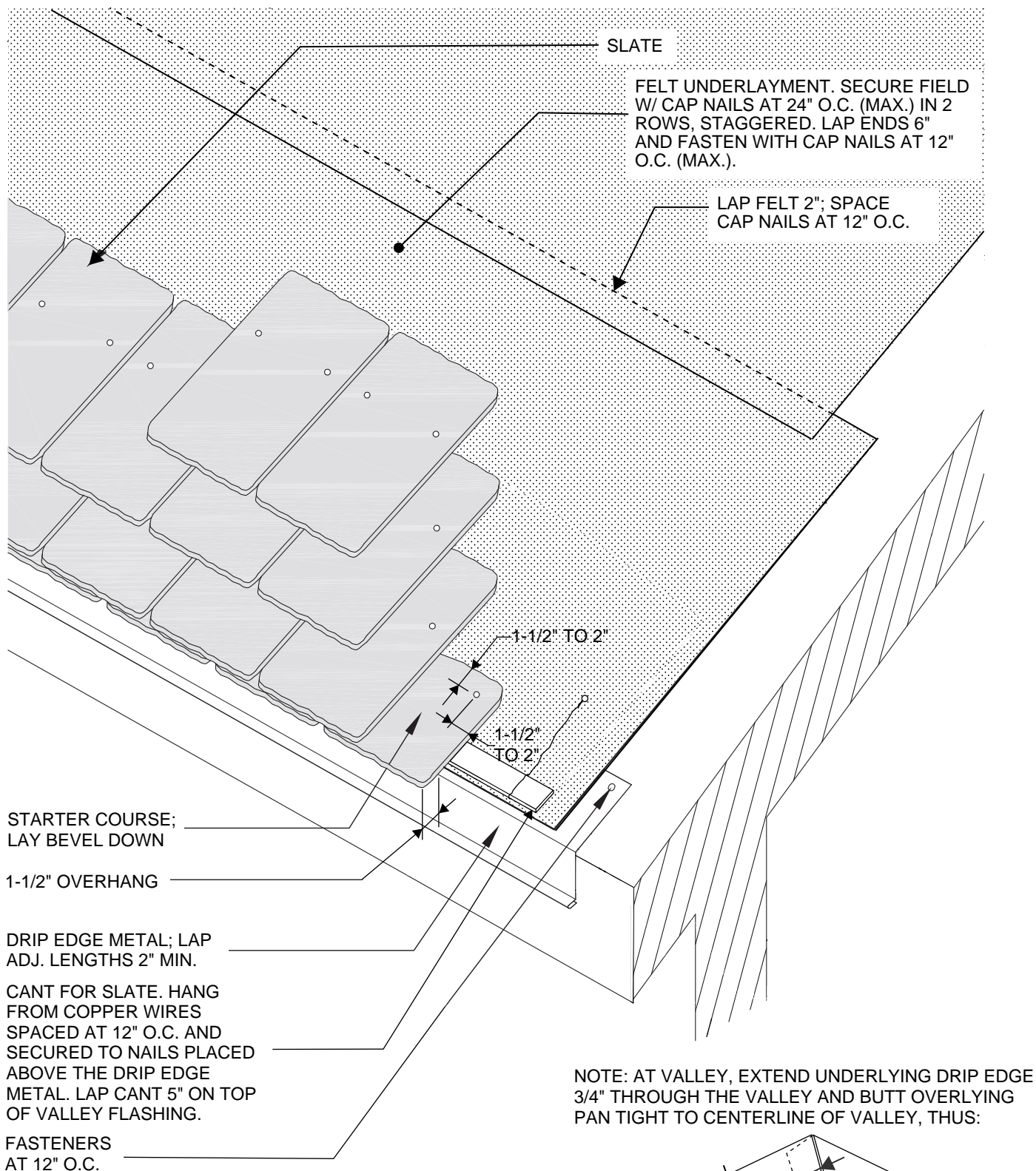
Installing 1 x 6 wood make-up blocking on the back side of the ridge to approximate the thickness of the slate shingles that would typically be installed at this location



SKILLS EXAM – ASSIGNMENT SUMMARY

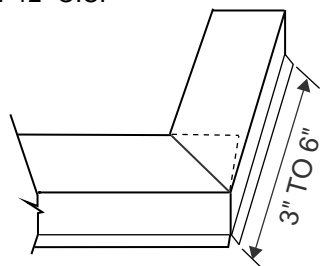
Although you will be assessed based on the instructions provided, for your convenience a summary of your assignment follows:

1. Preparation: Inspect tools, equipment, materials and roof deck for damage. Check that the eaves are square to the rake and side wall and parallel to the ridge and headwall.
2. Install drip edge at roof eaves; fasten with roofing nails spaced 12 inches on center.
3. Install felt underlayment over the entire roof deck.
4. Install open valley flashing atop rosin paper.
5. Install a uniform slate roof on the slope labeled 9:12 at the appropriate head lap, exposure and offset; make the exposure of the finishing course work out to 6¼ inches (+/- ¼ of an inch).
6. Install a random-width slate roof on the 6:12 slope at the appropriate head lap, exposure and offset; make the exposure of the finishing course work out to 4¾-inches (+/- ⅝ of an inch).
7. Minimum slate width: 5 inches; minimum butt width of valley slates: 0 inches (point) on the slope labeled 9:12, 2 inches in the first three courses of the 6:12 slope and 3 inches in courses four and above on the 6:12 slope.
8. Install base (step) flashings, kickout flashing and pipe penetration flashing along with slate shingles.
9. Install saddle ridge slates (including cant, if needed and starter).
10. Install headwall flashing at the top of the slope labeled 9:12.
11. Repair slates using the nail and bib method and slate hook method.



EXPLAIN TO YOUR ASSESSOR WHERE THE DRIP EDGE METAL SHOULD BE SOLDERED.

DIAGRAM 1: ROOF EAVE



NOTE: AT OUTSIDE CORNER BETWEEN EAVE ANDRAKE, INSTALL 1-PIECE, OR 2-PIECE MITER



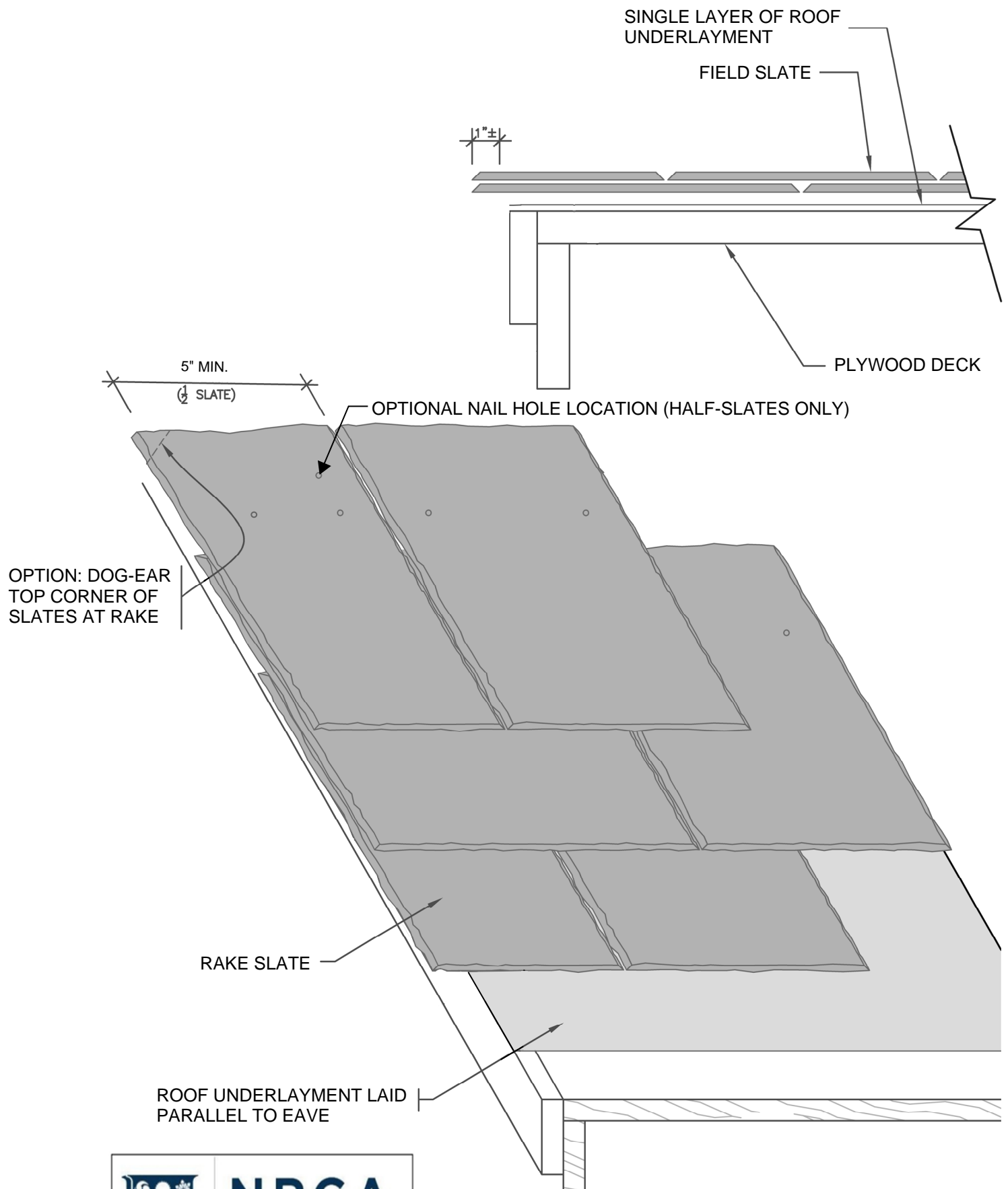


DIAGRAM 2: RAKE

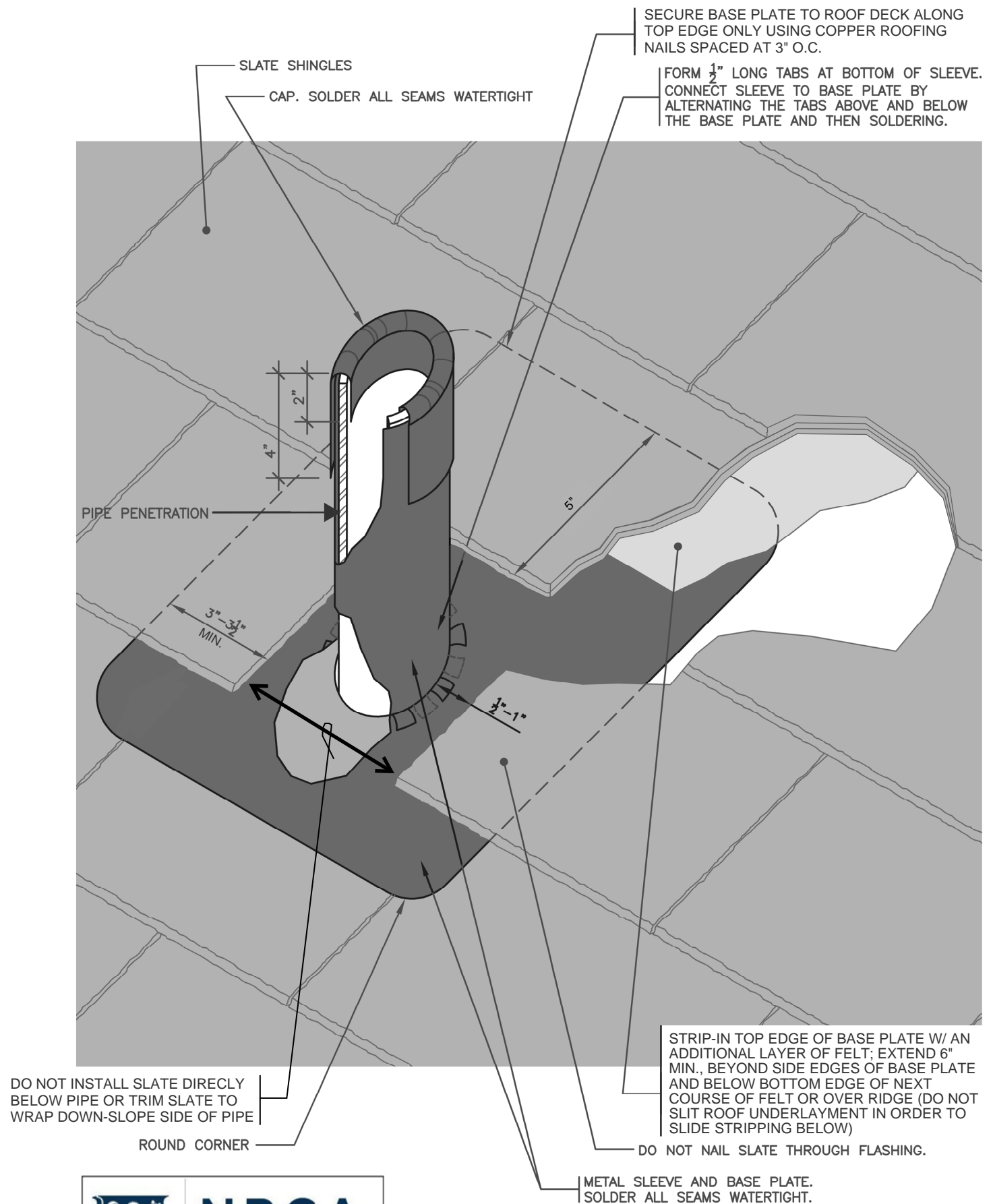


DIAGRAM 3: PIPE PENETRATION FLASHING

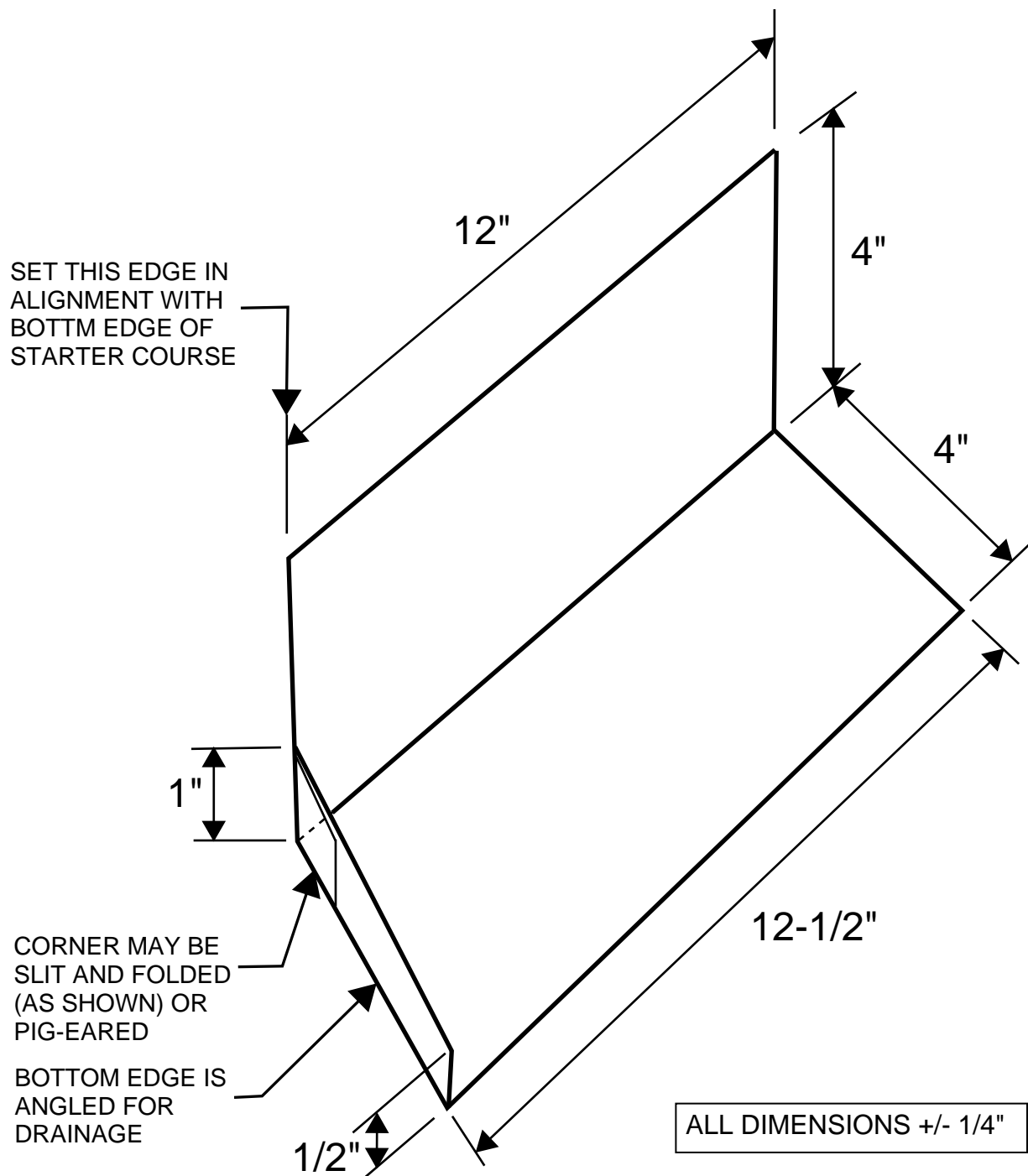
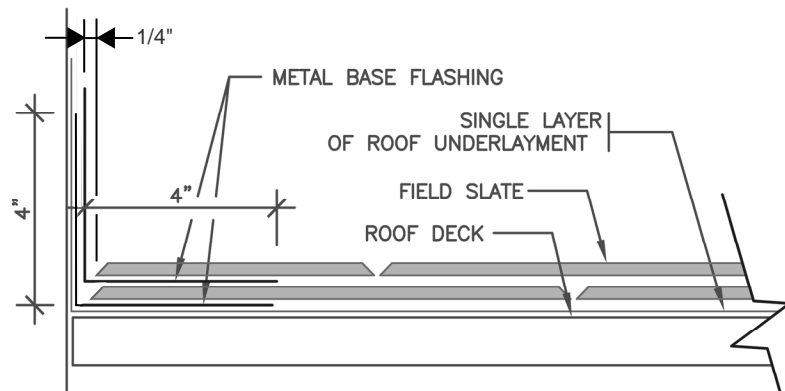


DIAGRAM 4: KICKOUT FLASHING





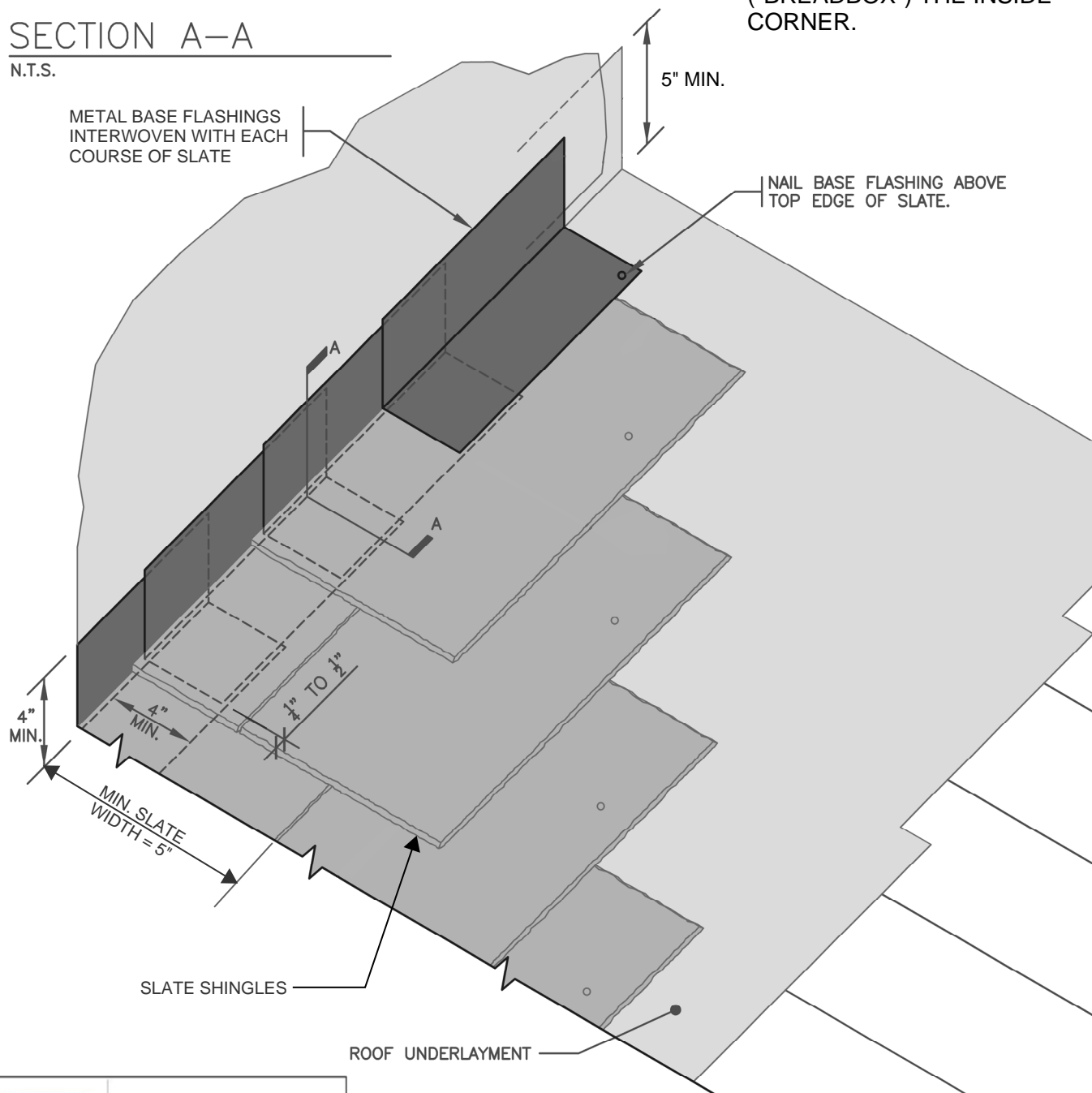
SECTION A-A

N.T.S.

METAL BASE FLASHINGS INTERWOVEN WITH EACH COURSE OF SLATE

NOTES:

1. SEE DIAGRAM 4 FOR KICKOUT FLASHING WHERE SIDEWALL MEETS THE ROOF EAVE
2. TURN TOP BASE FLASHING UP THE HEADWALL 4"; SLIT AND FOLD, OR PIG-EAR ("BREADBOX") THE INSIDE CORNER.



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DIAGRAM 5: SIDEWALL FLASHING

VALLEY SEQUENCE

OPTION 1

1. FELT AT VALLEY CENTERLINE
2. FELT REMAINING ROOF DECK, LAPPING 12" MIN. ATOP VALLEY FELT
3. ROSIN PAPER AT VALLEY CENTERLINE
4. VALLEY METAL

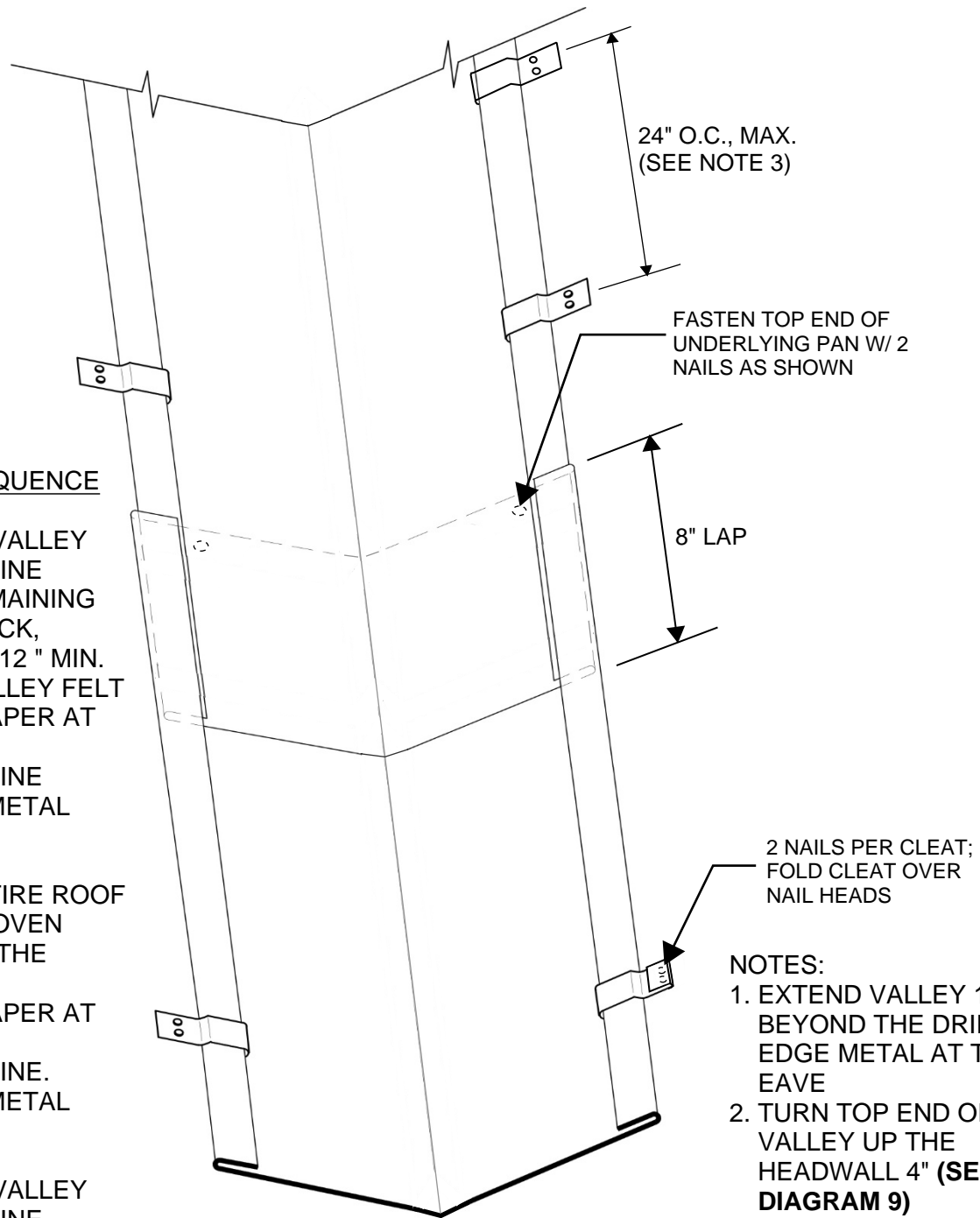
OPTION 2

1. FELT ENTIRE ROOF DECK, WOVEN ACROSS THE VALLEY
2. ROSIN PAPER AT VALLEY CENTERLINE.
3. VALLEY METAL

OPTION 3

1. FELT AT VALLEY CENTERLINE
2. ROSIN PAPER AT VALLEY
3. VALLEY METAL
4. FELT REMAINING ROOF DECK, LAPPING ATOP VALLEY 5 INCHES

DIAGRAM 6: TWO-PIECE METAL VALLEY



NOTES:

1. EXTEND VALLEY 1-1/4" BEYOND THE DRIP EDGE METAL AT THE EAVE
2. TURN TOP END OF VALLEY UP THE HEADWALL 4" (**SEE DIAGRAM 9**)
3. SECURE THE METAL VALLEY TO THE ROOF DECK WITH METAL CLEATS PLACED 6" FROM THE UPPER AND LOWER ENDS OF THE VALLEY AND NO MORE THAN 24" O.C. IN-BETWEEN THE UPPER AND LOWER CLEATS.

SECURE TOP EDGE OF
HEADWALL FLASHING W/
CLEATS SPACED AT 12" O.C. +/-

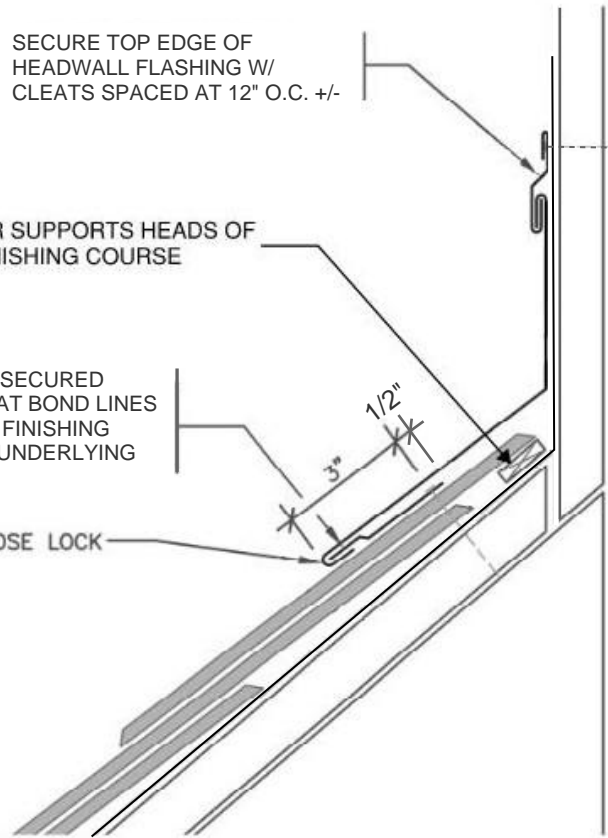
WOOD NAILER SUPPORTS HEADS OF
SLATES IN FINISHING COURSE

CONTINUOUS CLEAT SECURED
WITH NAILS PLACED AT BOND LINES
BETWEEN SLATES IN FINISHING
COURSE. PRE-DRILL UNDERLYING
SLATES.

3/4" LOOSE LOCK

NOTE:

1. AT SIDEWALL, BUTT
HEADWALL FLASHING INTO
SIDEWALL

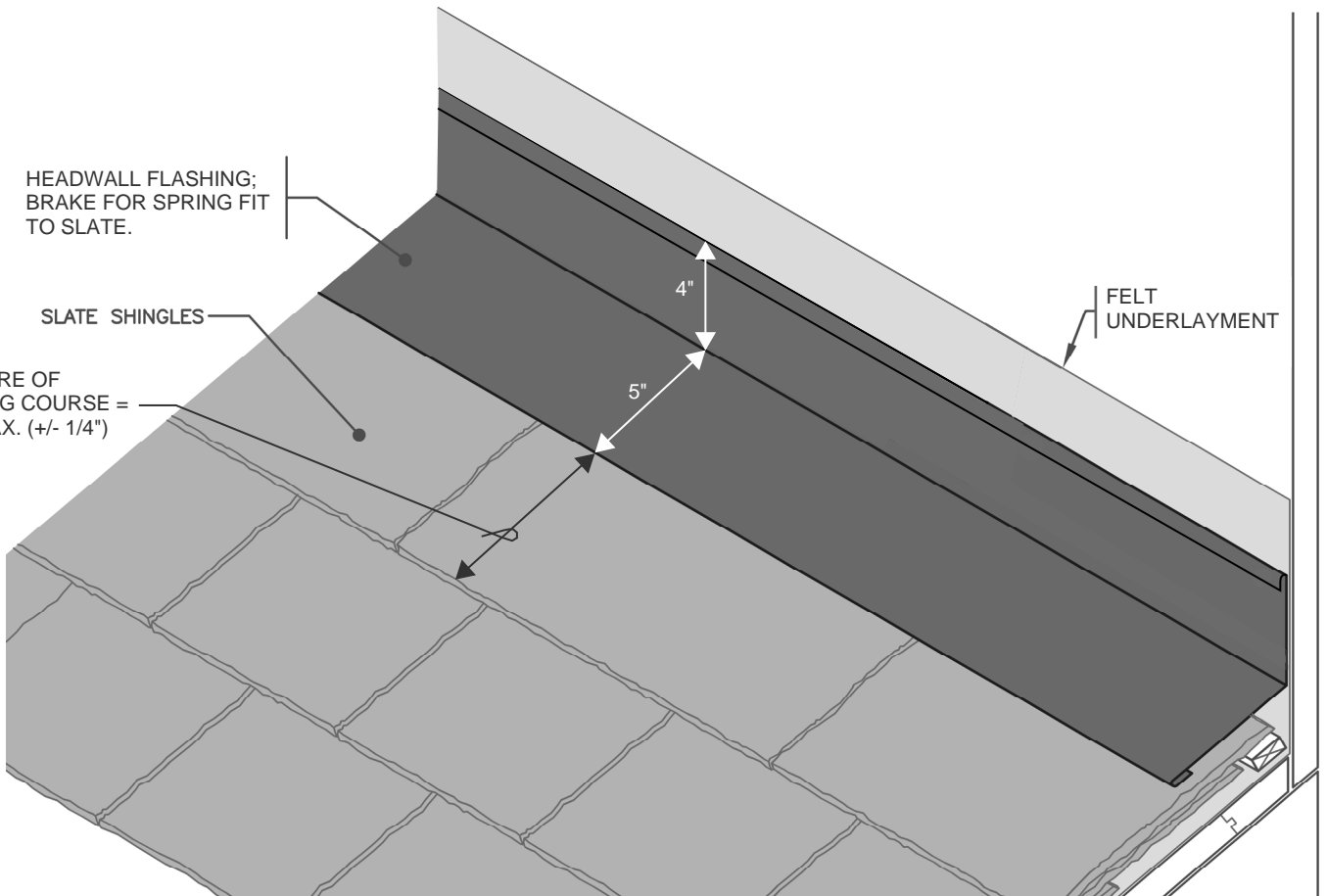


HEADWALL FLASHING;
BRAKE FOR SPRING FIT
TO SLATE.

SLATE SHINGLES

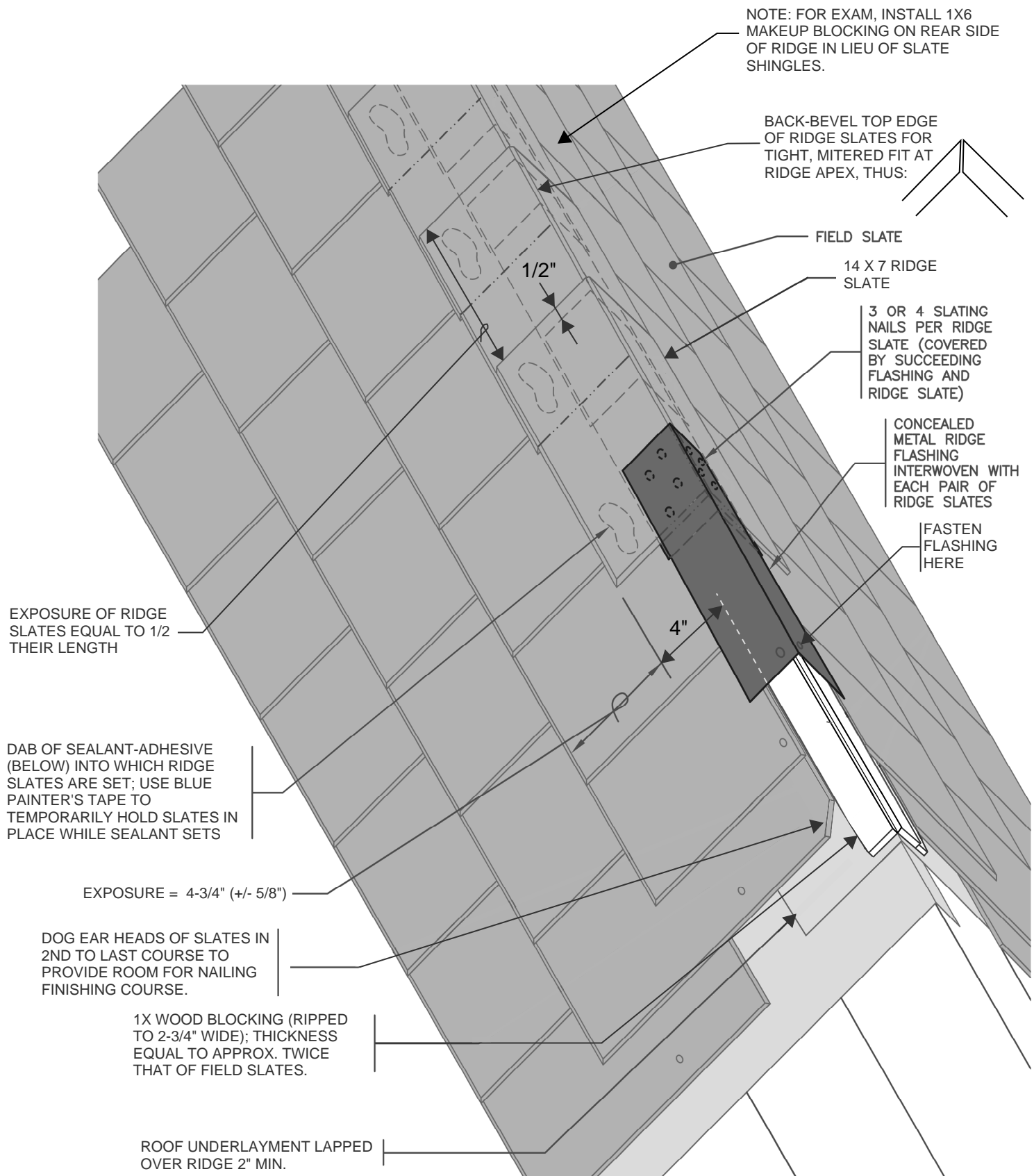
EXPOSURE OF
FINISHING COURSE =
6-1/4" MAX. (+/- 1/4")

FELT
UNDERLAYMENT



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DIAGRAM 7: HEADWALL FLASHING

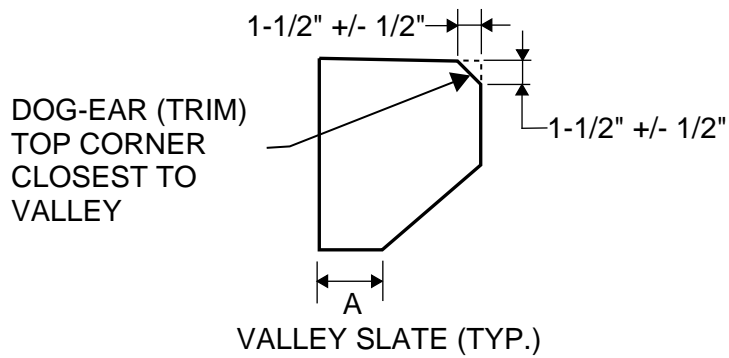


NOTE:

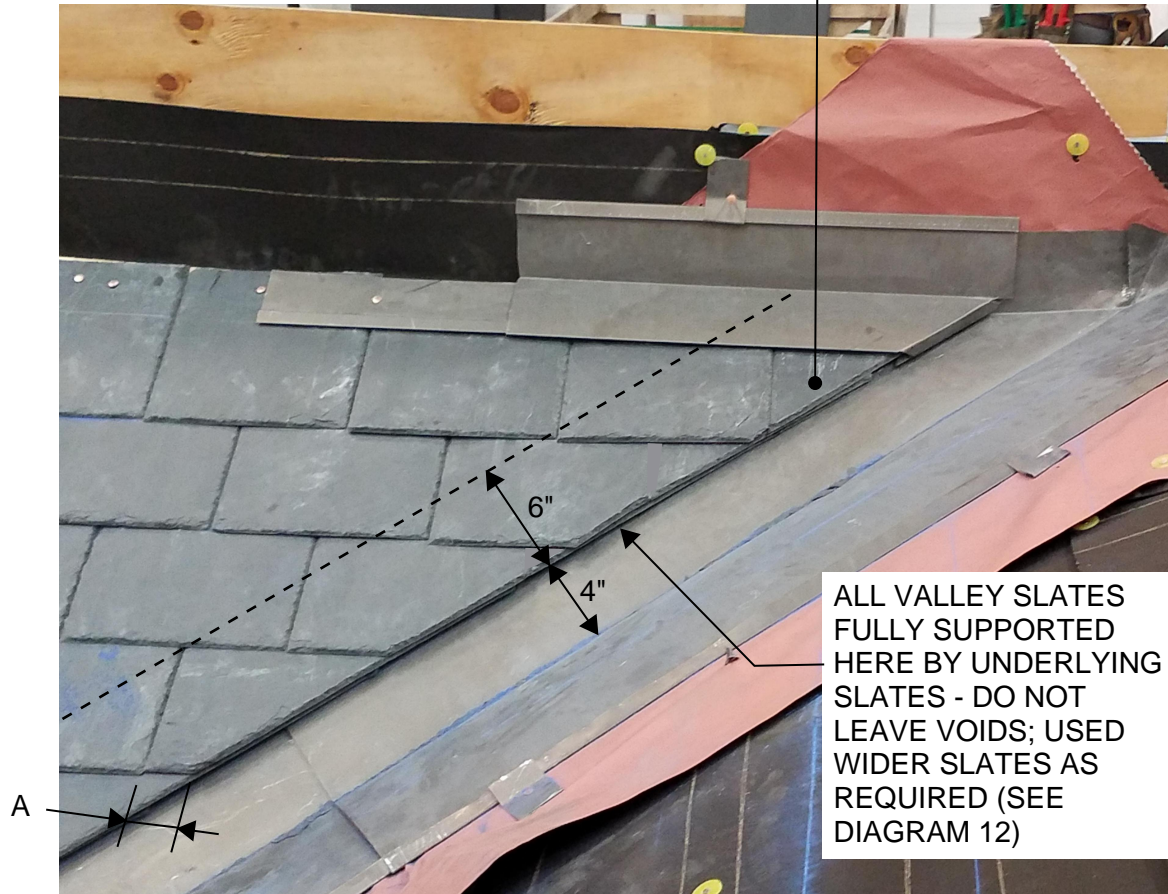
1. PRE-DRILL RIDGE SLATES SO AS NOT TO WEAKEN THE SLATES WITH EXCESSIVE BLOW-OUT AT THE NAIL HOLES



DIAGRAM 8: SADDLE RIDGE



IF INSTALLED, TOP-MOST VALLEY SLATE MAY BE NAILED (NOT THROUGH THE FLASHING), HUNG FROM WIRES, AND/OR TURNED SIDWAYS TO ALLOW 2 NAILS ON THE LEFT SIDE OF THE SLATE.



ALL VALLEY SLATES FULLY SUPPORTED HERE BY UNDERLYING SLATES - DO NOT LEAVE VOIDS; USED WIDER SLATES AS REQUIRED (SEE DIAGRAM 12)

LEGEND

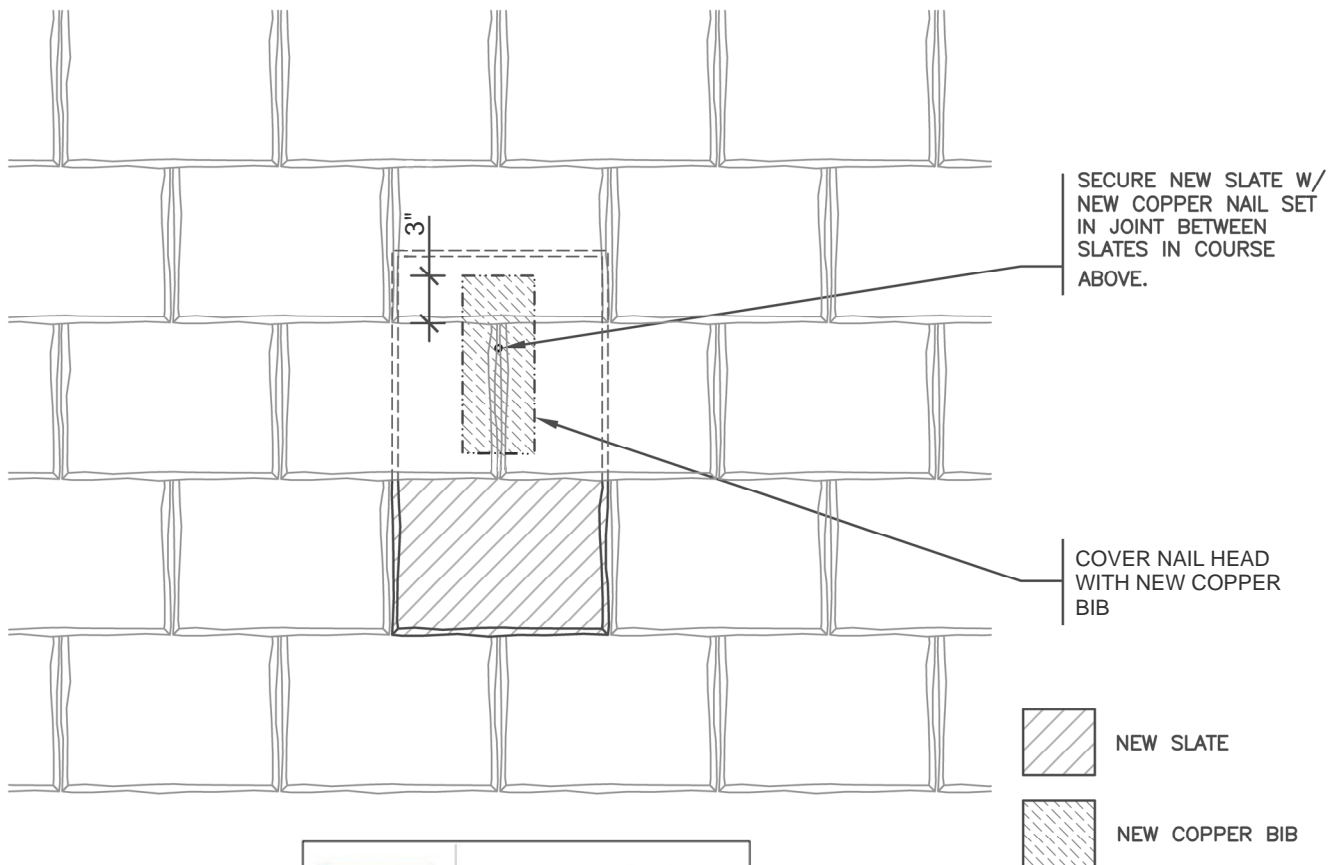
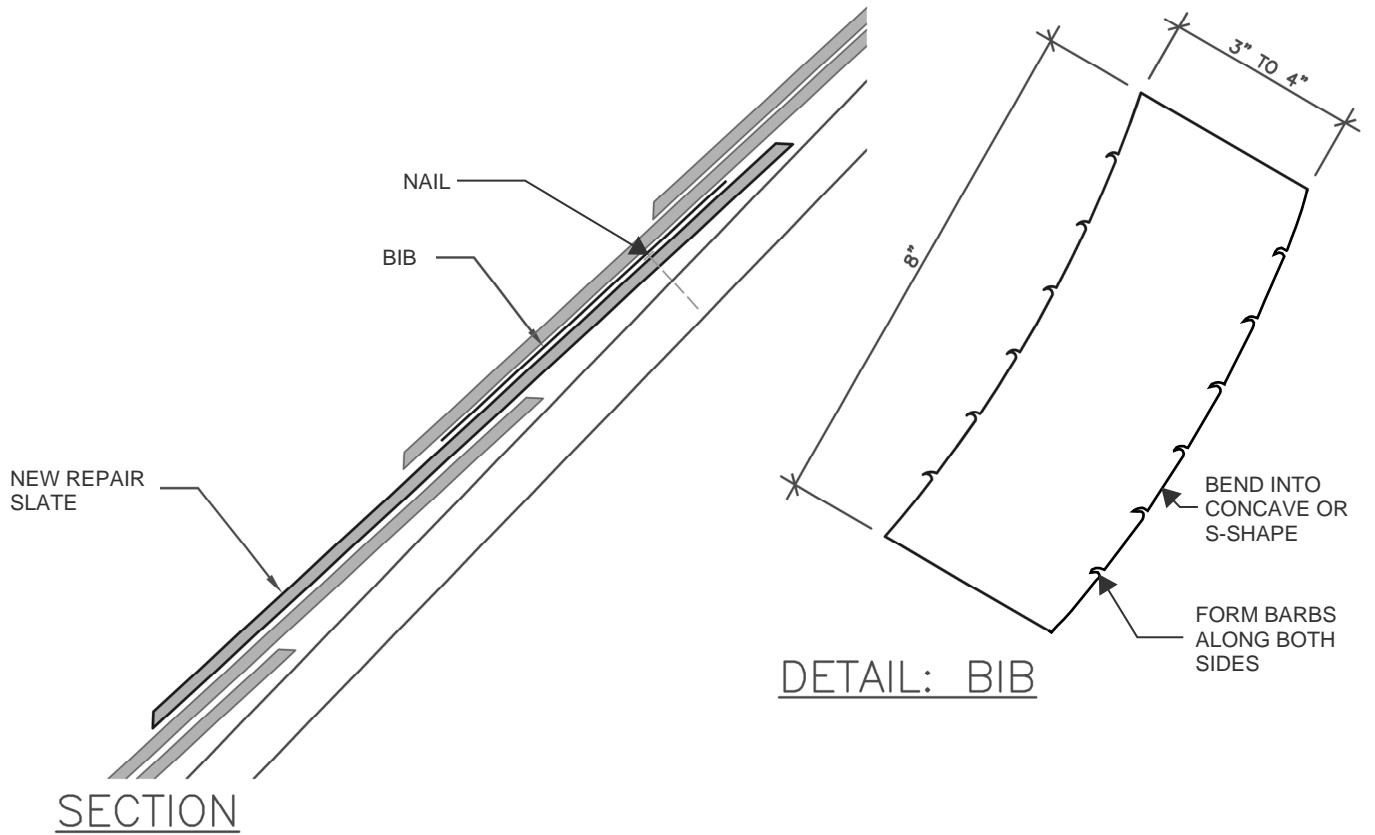
- A = 0" PERMITTED ON LEFT SIDE (UNIFORM WIDTH SLATES)
- A = 2" MIN., COURSES 1-3, RIGHT SIDE (RANDOM WIDTH SLATES)
- A = 3" MIN. 4th COURSE AND ABOVE, RIGHT SIDE (RANDOM WIDTH SLATES)

NOTES:

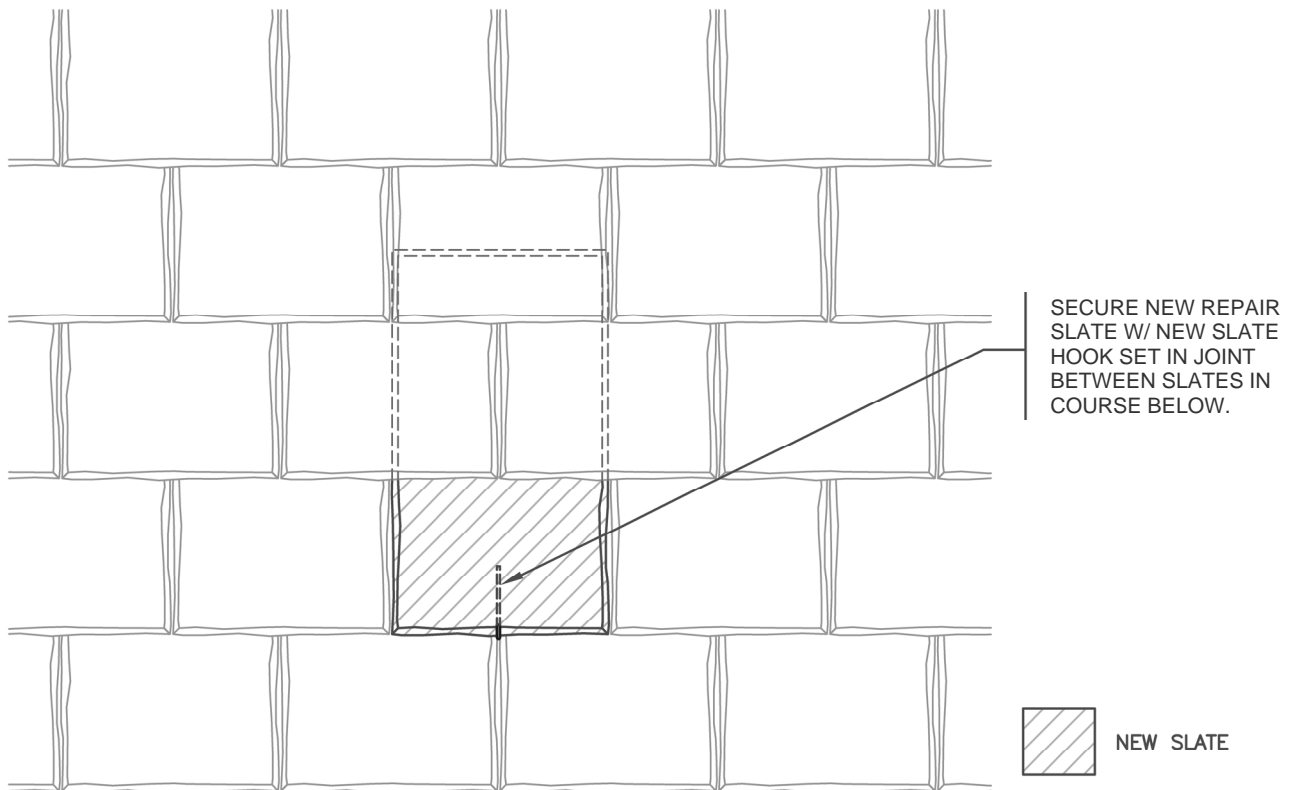
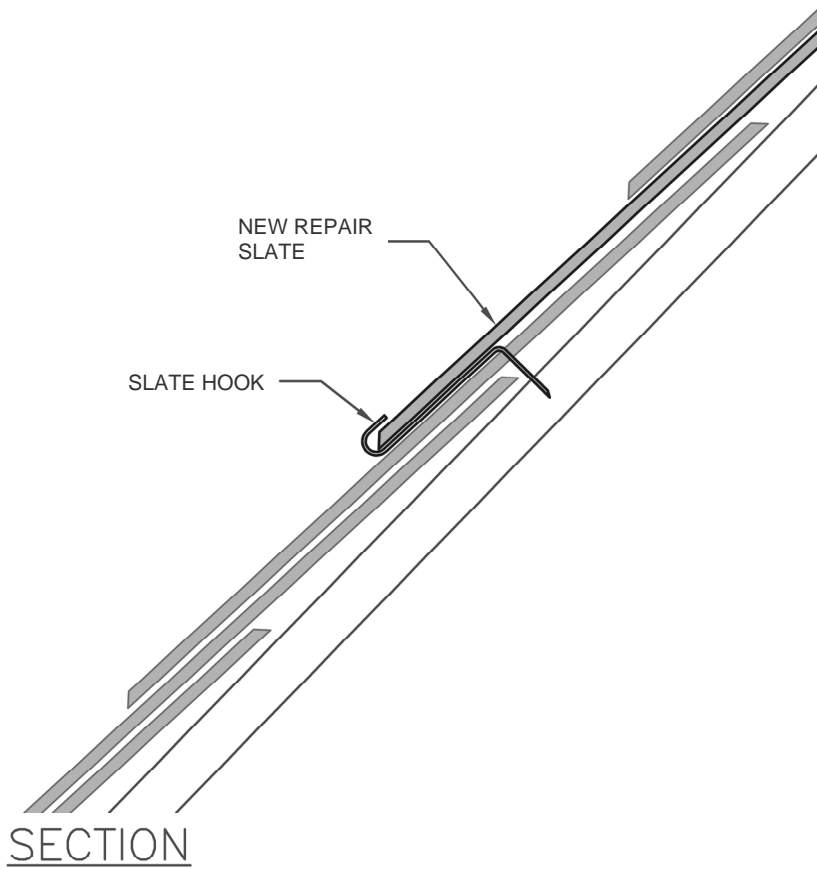
1. ALL VALLEY SLATES TO BE SECURED AT 2 POINTS USING NAILS OR COPPER WIRES SO THAT THEY DO NOT ROTATE.
2. DO NOT NAIL SLATES THROUGH VALLEY FLASHING

DIAGRAM 9: VALLEY SLATES

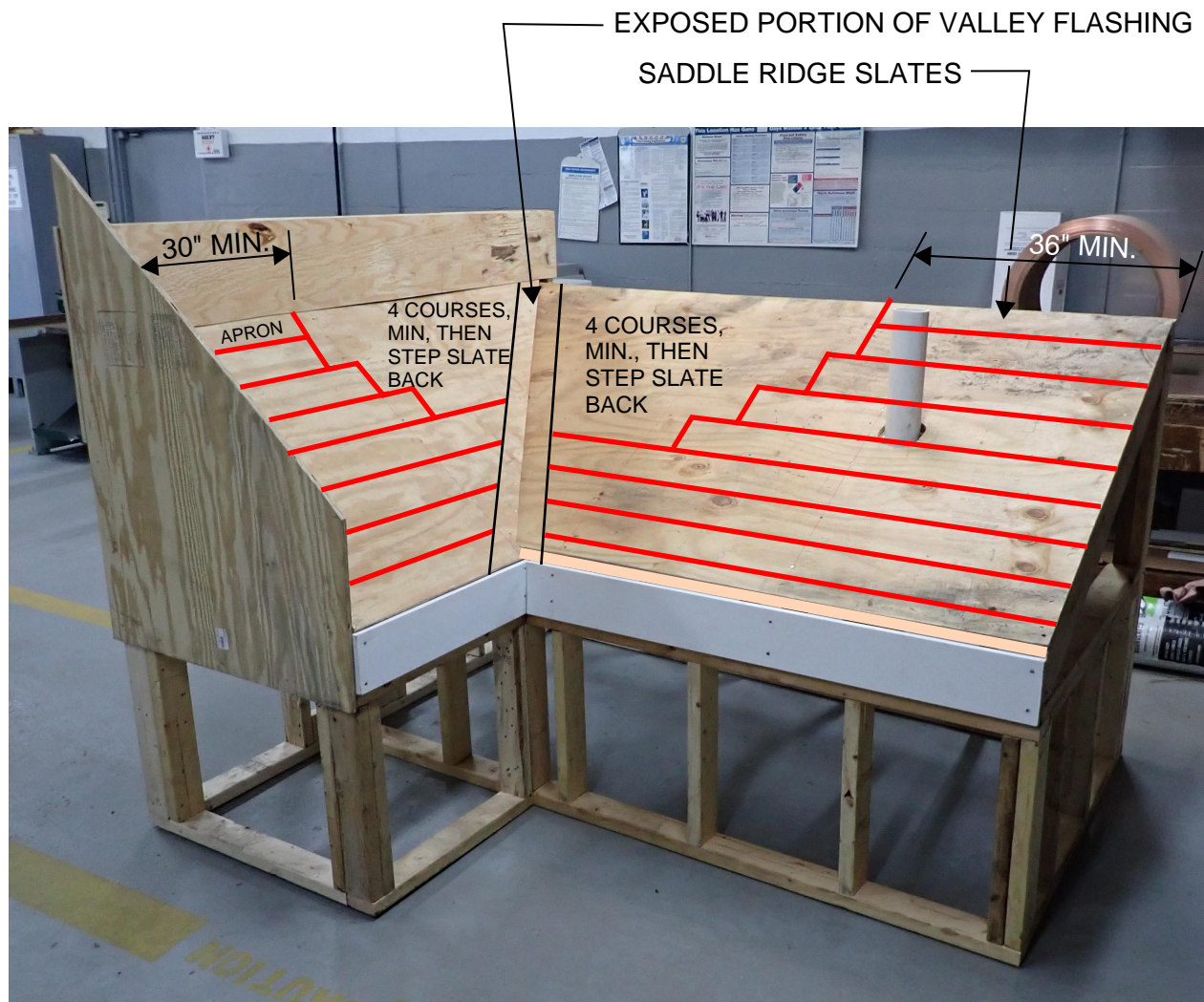




**DIAGRAM 10A: SLATE REPAIR -
NAIL AND BIB METHOD**

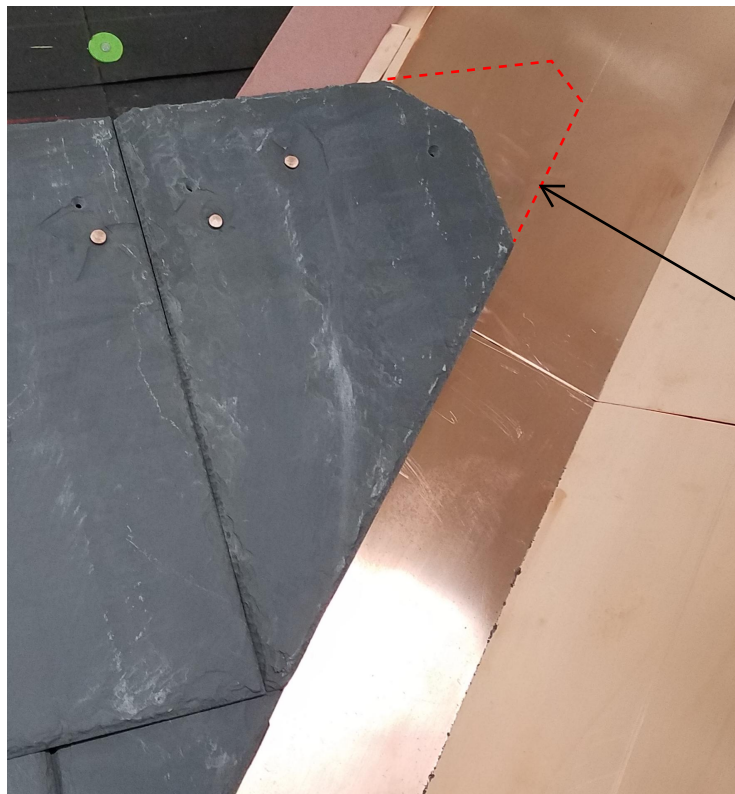


**DIAGRAM 10B: SLATE REPAIR -
SLATE HOOK METHOD**



**DIAGRAM 11: MINIMUM REQUIRED
EXTENT OF FIELD SLATES FOR EXAM**



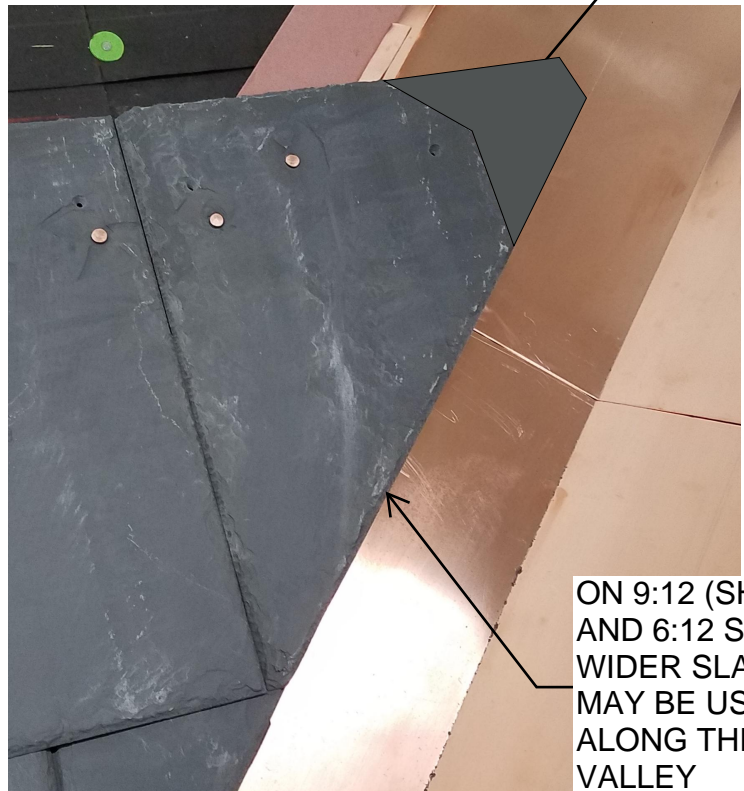


INCORRECT

OVERLYING VALLEY
SLATE WILL BE LEFT
UNSUPPORTED IN
THIS AREA

OVERLYING VALLEY
SLATE WILL BE
FULLY SUPPORTED
IN THIS AREA

CORRECT



ON 9:12 (SHOWN)
AND 6:12 SLOPES,
WIDER SLATES
MAY BE USED
ALONG THE
VALLEY

DIAGRAM 12: FULLY SUPPORTING VALLEY SLATES





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