

## Lesson A3–11

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# Siding Agricultural Structures

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**Unit A.** Mechanical Systems and Technology

**Problem Area 3.** Construction Systems

**Lesson 11.** Siding Agricultural Structures

### **New Mexico Content Standard:**

**Pathway Strand:** Power, Structural and Technical Systems

**Standard: VIII:** Plan, implement, manage, and/or provide support services to facility design and construction; equipment design, manufacture, repair, and service; and agricultural technology.

**Benchmark: VIII-B:** Follow architectural and mechanical plans to construct building and facilities.

**Performance Standard:** 1. Identify and select appropriate building materials. 3. Construct with wood and metal.

**Student Learning Objectives.** Instruction in this lesson should result in students achieving the following objectives:

1. Describe the installation of wood-based siding materials.
2. Describe the installation of metal, vinyl, and asphalt siding materials.

**List of Resources.** The following resources may be useful in teaching this lesson:

**Recommended Resources.** One of the following resources should be selected to accompany the lesson:

Espenschild, R. F. *Applying Asphalt Roofing and Siding Products*. University of Illinois: Information Technology & Communication Systems (U3035).

Espenschild, R. F. *Metal Roofing and Siding For Farm Buildings*. University of Illinois: Information Technology & Communication Systems (U3045).

Giles, G. Wallace. *Farm Utility Buildings: Designs-Materials-Plans*. Athens, Georgia: American Association for Agricultural Engineering and Vocational Agriculture.

Hometime Video. *Siding*. Sponsored by Chevrolet Trucks.

## List of Equipment, Tools, Supplies, and Facilities

Writing surface  
Overhead projector  
Transparencies from attached masters  
Samples of siding materials

**Terms.** The following terms are presented in this lesson (shown in bold italics):

Aluminum siding  
Asphalt siding  
Batten  
Beveled wood siding  
Board-and batten siding  
J-channel  
Mineral fiber siding  
Siding break  
Starter strip  
Under-sill trim  
Vinyl siding

**Interest Approach.** Use an interest approach that will prepare the students for the lesson. Teachers often develop approaches for their unique class and student situations. A possible approach is included here.

*Ask students to name of the types of building siding they have seen. Make some initial comparisons. Indicate that the class will learn to apply siding and learn the advantages and disadvantages of each type.*

# Summary of Content and Teaching Strategies

**Objective 1:** Describe the installation of wood-based siding materials.

**Anticipated Problem:** What are the wood-based siding materials and how are they installed?

- I. Wood products that can be used as siding for agricultural buildings include plywood, wafer board, tempered Masonite hardboard, beveled wood siding, tongue-and-groove car siding, ship-lap siding, and board-and-batten siding. Life expectancy, fire resistance, resistance to attack by vermin, the amount of maintenance required, paintability, the type of fasteners needed, and appearance are all factors to consider in the selection of siding.
  - A. Manufactured siding materials such as exterior plywood, wafer board, and tempered hardboard come in  $4 \times 8$  sheets. They are installed horizontally or vertically. Keeping the sheets well painted is essential to a long life.
  - B. **Beveled wood siding** has a wide edge used toward the base and a narrow edge used at the top. It is more attractive than sheet materials, but more expensive and more labor is required for installation. Siding pieces come in several widths and are generally overlapped one inch. Be sure to use galvanized nails so that the nails will not rust and stain the siding.
  - C. **Ship-lap siding** has a notch at both edges allowing one piece of siding to lap over the edge of the previous piece. It is normally  $\frac{3}{4}$  inch thick and may be used as both sheathing and siding. Tongue-and-groove car siding has a tongue on one edge and a groove in the other. When the boards are fitted together the results are attractive with increased weather protection. The disadvantages are the cost and time required for installation. If finish nails are properly driven at an angle on the tongue side of the board the results will be no nails showing. Tongue-and-groove material can be used as siding or flooring.
  - D. **Board-and-batten siding** is commonly available in fur or pine  $4 \times 8$  or  $4 \times 9$  sheets with a groove ranging from  $\frac{1}{2}$  inch to 2 inches cut in the sheet at uniform intervals (i.e. 4, 8, or 12 inches). It provides an attractive appearance and can be installed much faster than the tongue-and-groove siding. Another form of board-and-batten siding involves nailing  $1 \times 12$  boards and then covering the joints with a narrow  $1\frac{1}{2}$  to 2 inch wood strip called a **batten**.
  - E. The tempered masonite hardboard siding can also be purchased as lap siding. It is available with a smooth or textured surface. Metal corners are available to match the siding.
  - F. Using wooden shingle siding can give a building a natural rustic look. Use a layer of roofing felt behind the shingles and fasten them in place with galvanized nails.

*Assign students to read the suggested chapters in the recommended texts. The readings will provide them with basic information on the content. Use TM: A3–11A and A3–11B or a tour of buildings in the community to see different types of wood-based siding materials. Look for opportunities to install siding. Consider building a  $8 \times 10$  red barn utility building as a way of providing project planning experience that relates to this lesson and others within this problem area.*

**Objective 2:** Describe the installation of metal, vinyl, and asphalt siding materials.

**Anticipated Problem:** What types of metal, vinyl, and asphalt siding are available and how are they installed?

- II. Metal siding can be galvanized steel, painted baked-on enamel steel, or pre-painted aluminum.
  - A. Metal corrugated siding is cut with a metal cutting blade in a portable power circular saw. A wood cutting blade turned backwards can be used to cut metal siding. This type of siding can be installed horizontally but usually is applied as vertical siding. Sheets are lapped as recommended by the manufacturer. Ring or screw-shank roofing nails or drill screws are used to fasten the sheets in place.
  - B. **Aluminum siding** comes with an insulation backer, a nailing flange at the top, and hooking flange at the bottom. A **starter strip** is a narrow strip with a groove at the base for hooking in the first course of siding. After hooking in the first piece of siding, nail through the slots in the top of the piece. It is best to use aluminum nails beginning at the center and working toward the ends installing a nail every 16 inches. Be sure not to drive the nails in too tight. Professionals talk about “hanging” siding rather than “nailing it on”. Siding nailed too tight will become wavy with temperature changes. Continue up the wall by hooking the bottom edge into the groove at the top of the previous row of siding pieces. As with other construction installations always stagger the end joints to provide a quality attractive finished job. At the top of the wall and under windows use an **under sill trim strip** to hide the nails and the cut edge of the last piece of siding. Outside and inside corner posts are needed at corners. **J-channel** is a J-shaped channel used at the side of windows and doors to hide the ends of the siding. Aluminum can be purchased in rolls and bent with a **siding break** to wrap posts, window frames, etc.
  - C. **Vinyl siding** is like aluminum siding in the sense that it has a nailing flange at the top and a hooking flange at the bottom. Vinyl can be purchased in a variety of textures and colors as a single panel 4 to 8 inches wide, as double 4 (two 4 inch panels in one piece), or as double 5 (two 5 inch panels in one piece). Vinyl is installed in the same way as aluminum. It is more dent proof than aluminum and holds its color without chalking. These characteristics as well as a 50 year warranty are resulting in vinyl gaining in popularity in the housing market. Vinyl is also easier to work with than aluminum. Vinyl can be cut with tin snips, a sabre saw, or portable circular saw with a plywood blade. Since aluminum is stronger than vinyl, most houses sided with vinyl still have aluminum on the overhang (fascia and soffit).
  - D. **Asphalt siding** can come in individual asphalt shingles or in rolls that look like brick when nailed in place. Older buildings may have asphalt siding but new buildings rarely are sided with asphalt materials.
  - E. **Mineral fiber siding** is fireproof and termite proof, does not warp, and is very durable. Because it is brittle, pre-drilled holes are used for nailing this siding in place. The grooved surface makes this material look like siding shingles.

Have students read the suggested chapters in the recommended resource texts. Compare corrugated roofing sheets to the narrow pieces of aluminum and vinyl siding. Emphasize the advantages and disadvantages of each material. Identify situations where each type of siding would be recommended. Use TM: A3-11C, A3-11D, A3-11E, and A3-11F to compare materials and installation.

**Review/Summary.** Compare wood-based siding materials, metal siding, vinyl siding, and asphalt siding. Use a field trip to look at the different types of siding used in your community. Determine which types of siding are most popular and try to identify the reasons why. Show the Hometime video, *Siding*.

**Application.** Seek an opportunity to apply wood board-and-batten siding or other siding. Consider siding an 8 × 10 red barn utility building or a garage.

**Evaluation.** Take the written test and evaluate the skill demonstrated by installing board-and-batten siding to the red barn utility building.

## Answers to Sample Test:

### Part One: Matching

1 = h, 2 = f, 3 = e, 4 = c, 5 = d, 6 = g, 7 = a, 8 = i, 9 = b

### Part Two: Completion

1. Concrete block
2. galvanized
3. aluminum
4. roofing
5. center

### Part Three: Short Answer

1. Use a special metal cutting blade or put a wood cutting blade on backwards.
2. Aluminum is stronger and stiffer. Vinyl is more dent proof, holds its color without chalking, and is easier to work with.

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# Test

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## Lesson A3–11: Siding Agricultural Structures

### Part One: Matching

*Instructions.* Match the term with the correct response. Write the letter of the term by the definition.

- |                        |                            |                        |
|------------------------|----------------------------|------------------------|
| a. aluminum siding     | d. board-and-batten siding | g. siding bender-break |
| b. asphalt siding      | e. finish strip            | h. starter strip       |
| c. beveled wood siding | f. j-channel               | i. vinyl siding        |

- \_\_\_\_\_ 1. A narrow strip with a groove on one side nailed at the base of the wall when installing aluminum or vinyl siding.
- \_\_\_\_\_ 2. A siding trim piece used next to a window to hide the ends of siding.
- \_\_\_\_\_ 3. A siding trim piece used to hide the cut edge of the last piece of siding.
- \_\_\_\_\_ 4. Siding with a wide edge at the base that narrows near the top.
- \_\_\_\_\_ 5. Siding made in a  $4 \times 8$  or  $4 \times 9$  sheet with grooves at standard intervals of 4, 8, or 12 inches.
- \_\_\_\_\_ 6. Used to bend or cut cold rolled aluminum.
- \_\_\_\_\_ 7. Siding that is sturdy but expensive and easily dented.
- \_\_\_\_\_ 8. Siding that is flexible and holds its color well without chalking.
- \_\_\_\_\_ 9. Siding that comes in individual shingles or in rolls that look like brick.

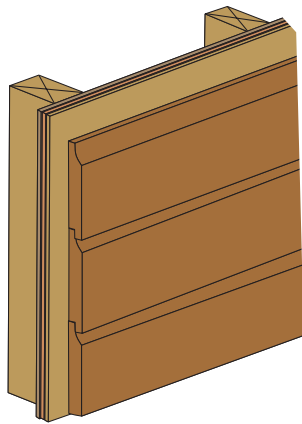
### Part Two: Completion

*Instructions.* Provide the word or words to complete the following statements.

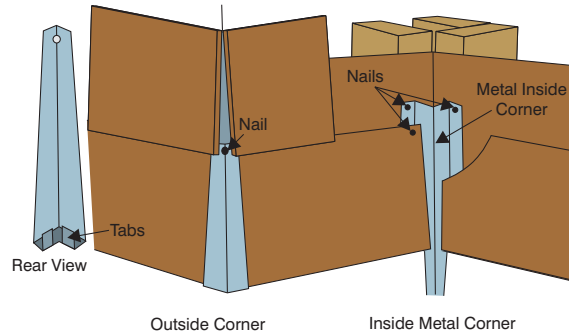
1. \_\_\_\_\_ walls offer long lasting, sturdy, fire resistant walls.
2. Use \_\_\_\_\_ nails when installing beveled wood siding so that the nails will not rust and stain the wood.
3. Use \_\_\_\_\_ nails with aluminum siding.
4. Use \_\_\_\_\_ nails with vinyl siding.
5. Nail aluminum or vinyl siding starting at the \_\_\_\_\_ of the piece of siding.



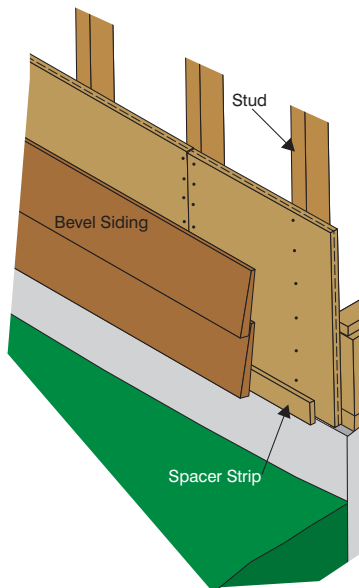
# ATTACHING BEVELED WOOD SIDING



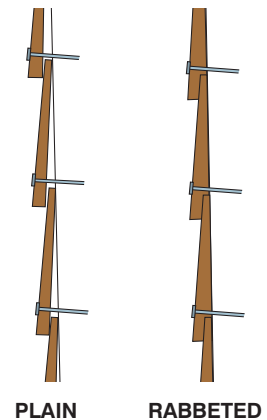
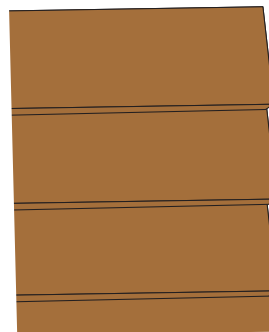
TYPICAL DROP SIDING APPLICATION



METAL CORNERS FOR HORIZONTAL SIDING



BEVEL SIDING REQUIRES A SPACER STRIP UNDER THE FIRST COURSE.



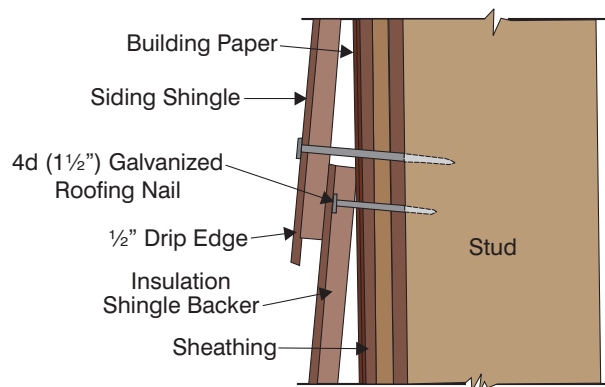
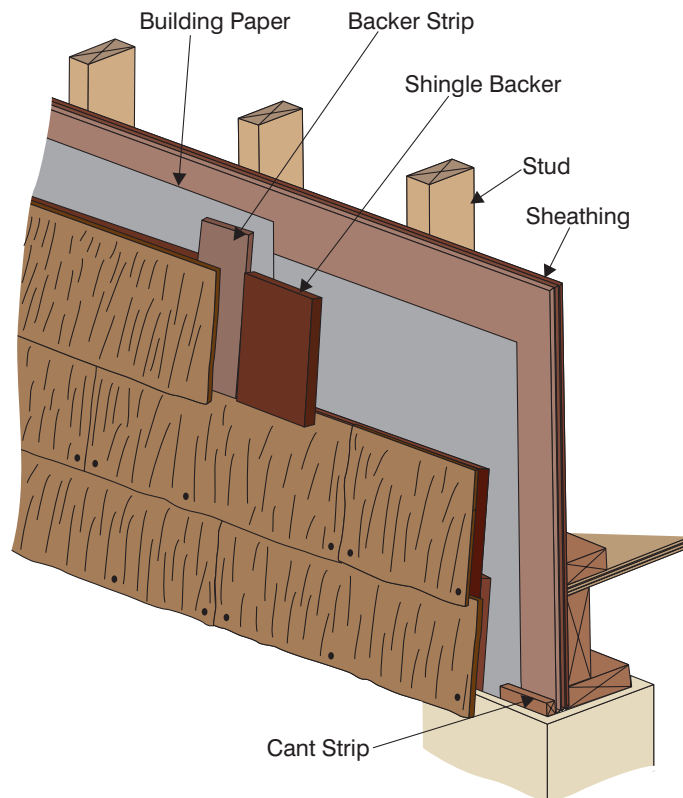
PLAIN

RABBETED

(Courtesy, Interstate Publishers, Inc.)



# SIDING WITH WOOD SHINGLES

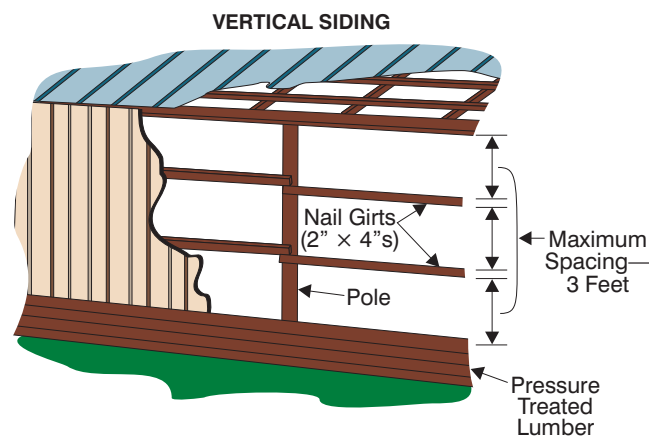
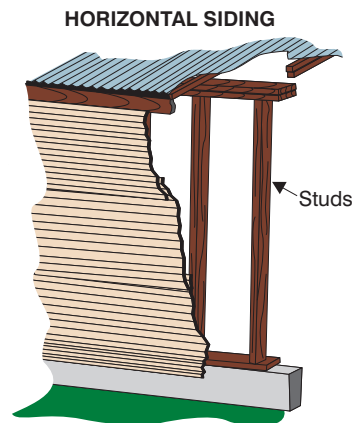


**DETAIL**

*(Courtesy, Interstate Publishers, Inc.)*

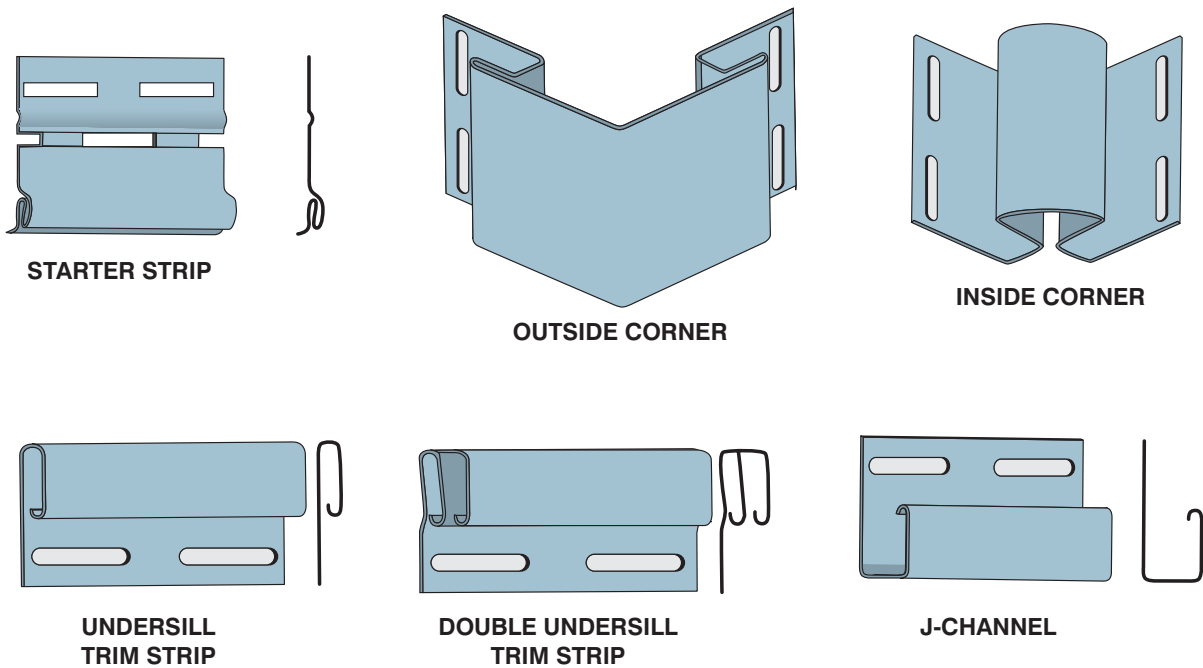
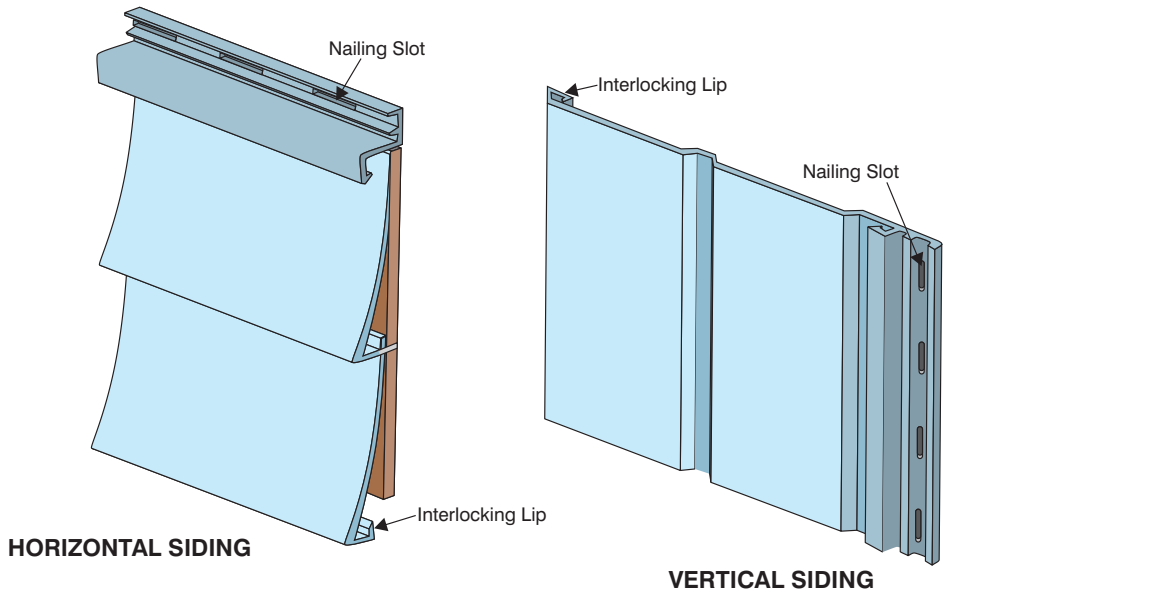
# CORRUGATED METAL SIDING

- ◆ Galvanized steel
- ◆ Painted baked-on enamel steel
- ◆ Pre-painted aluminum



(Courtesy, Interstate Publishers, Inc.)

# ATTACHING VINYL SIDING

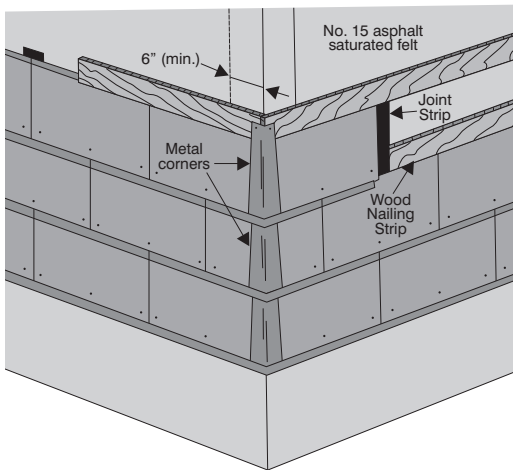


(Courtesy, Interstate Publishers, Inc.)

# VINYL SIDING SAMPLE PATTERNS

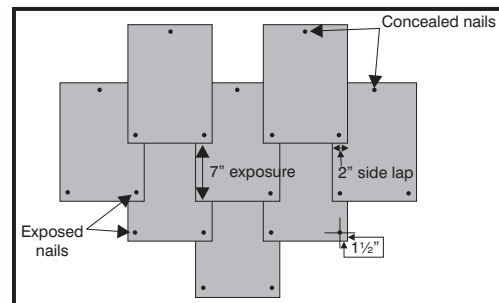
- ◆ **Single panels (4 to 8 inches wide)**
- ◆ **Double four (two 4 inch panels in one piece)**
- ◆ **Double five (two 5 inch panels in one piece)**
- ◆ **Variety of shapes**
- ◆ **Variety of colors**

# USING MINERAL FIBER AND ASPHALT SHINGLE SIDING

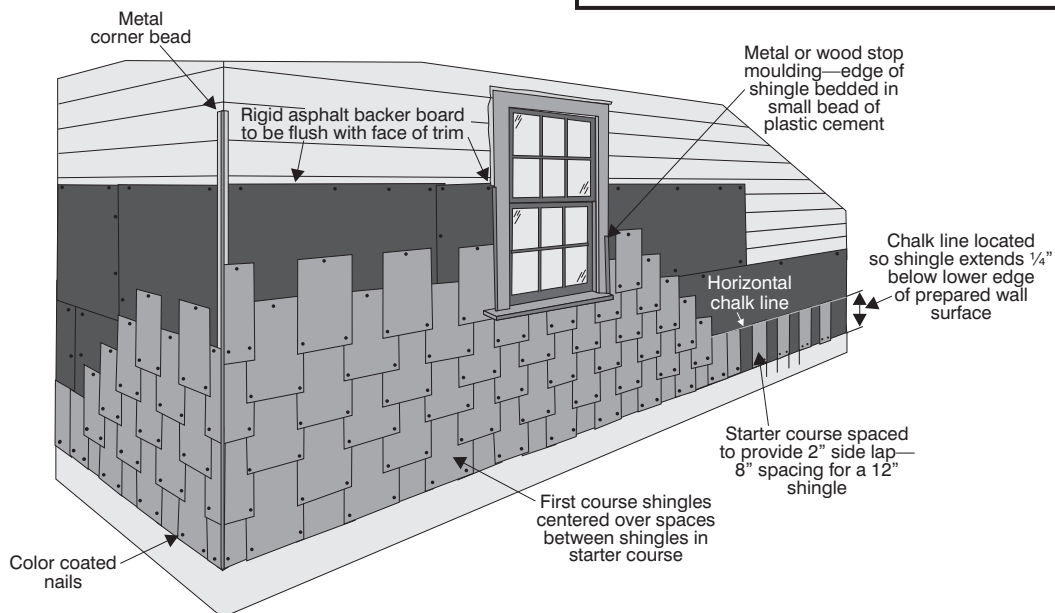


## MINERAL FIBER SHINGLES

Mineral fiber shingle application.  
Use a double layer of felt around corner.



## ASPHALT SHINGLES



Typical application when re-siding with asphalt shingles.

(Courtesy, Interstate Publishers, Inc.)