

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

SECTION INCLUDES

Wood Shingles and Shakes
Wood Bevel Siding
Plastic Siding
Fiber Cement Siding

RELATED SECTIONS

02 83 01 Lead Paint Remediation
06 65 00 Plastic & Composite Trim
07 45 00 Gutters and Downspouts
07 62 00 Sheet Metal Trim & Flashing
08 10 00 Doors and Frames
08 50 00 Windows
09 90 00 Painting

REFERENCES

ASTM D6864 Spec for Color and Appearance Retention of Solid Colored Plastic Siding Products
ASTM D3679-Vinyl Siding certification
ASTM D7251 Spec. for Color Retention
ASTM7254-Spec. for Polypropylene Siding
Western Red Cedar Association www.wrcla.org
Cedar Shingle and Shake Bureau www.cedarbureau.org

GENERAL DESIGN CONSIDERATIONS

There are many types of siding used in public-housing which have proven to be good choices when the variables are considered. The Designer should evaluate the following before choosing a siding type:

- Durability;
- Ease of repair and maintenance;
- Neighborhood character and regional vernacular;
- Cost-effectiveness;
- Appearance; and
- Sustainability.

SIDING OPTIONS

Family Developments: often require more impact resistant siding due to the wear and tear which the siding undergoes, fiber cement siding is generally the most **durable**. Vinyl siding or un-stained wood are **cost-effective** in other instances where durability is not as much of a concern.

Elderly Developments: vinyl or un-stained cedar shingles are **low-maintenance, cost-effective** options preferred where durability is not a major concern.

Special Needs Housing: wood, cement board or vinyl siding can be used depending on durability required and neighborhood character.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

SIDING OPTIONS



Unstained cedar shingles: a **cost-effective** choice with a rustic **appearance** that blends with Cape Cod and North Shore vernacular.

Wood shingle and bevel siding: **easy to repair**. Selective replacement for this type of siding can be done in many instances to extend the useful life of the majority of the siding and be a **cost-effective alternative** to a complete siding replacement.

White Cedar Shingles are available which are regionally harvested in New England and Eastern Canada and are a **sustainable** siding material. When specifying wood siding, research availability and costs and specify FSC certified wood products when they are available and cost-effective.

Painted wood shingle siding or wood shingle siding with a solid color stain: not recommended as these finishes are **not cost-effective**.

Painted wood panel siding, such as T-111: This siding is not recommended, unless it is to be used to match existing siding materials and in cases where the Housing Authority has demonstrated an ability to maintain the T-111 wood siding.

Vinyl siding: a **cost-effective** choice in most instances.

Vinyl siding with an imitation shingle appearance or pre-stained shingle siding: good choices when **appearance** and **low maintenance** are primary concerns.

Vinyl siding is also **easy to repair**, however colors, especially bright and dark colors are often UV unstable and may fade significantly over time. Matching siding colors in repaired areas where dark or bright colors are installed is often difficult.

Consider specifying vinyl siding in whites, greys, and colors which are readily available from several manufacturers. Lighter colors also experience less thermal movement.

INVESTIGATION AND RESEARCH

- Verify how level the existing building sills are to receive the new siding material.
- Verify the type of sheathing that is on the building. Some buildings may have gypsum board sheathing and rigid insulation which makes the attachment of new siding more difficult. For buildings with no sheathing, horizontal 1x2 wood strapping matching at intervals matching shingle exposure may be used to provide required fastener holding power for wood or fiber cement siding.
- Verify the condition of the existing exterior sheathing and determine if selective or complete replacement is required.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING



- If the building has fiberboard sheathing, it should be replaced with new plywood or OSB sheathing.
- Check to see if there are more than one layer of siding. Verify if existing exposed or covered wood siding contains lead based paint which may require special precautions in removal and disposal. The housing authority may have a certification of lead containment.
- Verify whether the existing siding is asbestos-containing. If the majority of siding is structurally sound, consider cleaning and selective replacement with new fiber cement shingles or similar panel siding which is non-asbestos type, in lieu of complete removal.
- As part of their building code analysis, the Designer should document that the new siding and exterior wall construction will meet the R value required by the International Energy Code and the Massachusetts Building Code. Exterior rigid insulation should be installed with new vinyl siding. Take test cuts if necessary.
- If termite protection is needed, use copper flashing over sill plates.
- Install flashing and water proofing around windows and doors and use metal flashing for trim pieces. Cap flashing is recommended for any horizontal trim.
- Check the condition of the existing electrical service banks.
- Verify the location of the existing cable TV and telephone service and talk to these companies early to remove and reinstall these connections during the installation of the new siding materials. Sometimes these utilities will use a new siding installation as an opportunity to upgrade the service to the buildings.
- Verify the location of existing building numbers and mailboxes which will need to be removed and reinstalled or replaced after the new siding is installed.
- Check for mold and mildew on the exterior siding of the building; check the condition of gutters, downspouts, splash guards; and check the closeness of vegetation to building.

Rain-screen type installation of wood and cement siding is recommended by certain manufacturers to prevent moisture from penetrating into the exterior sheathing and wall cavity due to air pressure and capillary action. Nylon matrix rolls such as Home Slicker & Cedar Breather by Benjamin Obdyke,

MATERIALS

WOOD SHINGLES & SHAKE SIDING

Red cedar is preferred to white cedar because it is more resistant to curling, ages better, and it is more thermally stable.

Use only number 1 blue label white cedar shingles as designated by the Cedar Shake and Shingle Bureau or use "VG Heart and A-Clear grades" per the Western Red Cedar Association standards.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

Use clear heart grade and A-clear cedar trim board, where required.

White cedar (pre-finished) is acceptable. (Extra Clear Grade A) Shingles should be sealed on all sides, including field cut ends. Specify manufacturers when using factory-prefinished shingles.

Specify kiln-dried products.

WOOD SHINGLES & BEVEL SIDING

Panelized shingles are not recommended because of premature failure,. If existing g panelized shingles are being repaired, check proper fastening to studs, as these are typically used in lieu of exterior wood sheathing and are not uniformly fastened to studs.

A sealant coat followed by two coats of semi-transparent stain is the preferred finish where a finish is specified. Do not specify paint or solid color stains.

Pine or other softwoods are generally not acceptable. Even when factory finished, pine siding tends to warp and deteriorate quickly when the finish is damaged or water infiltrates envelope.

Prefinished wood siding with 15 year finish warranties are available in both red and white cedar shingle and bevel siding. Specify three equals if using these products.

Select kiln-dried No. 1 grade, wood shingles and A grade, bevel siding.

DESIGN

The maximum exposure is 4 inches to the weather. A minimum 1 inch overlap on plain bevel siding is recommended.

Do not nail wood siding over rigid foam board; to install wood clapboards with foam board, install furring strips or drainage plane mats to provide a drainage plane behind the siding.

Detail to maintain at least 2" clearance between siding and roof surfaces and 6" minimum at grade and concrete stair landings to prevent water damage to siding.

Review grading and detail to minimize future repaving or mulching from contacting siding. Provide durable waterproof coatings or cladding to exposed concrete slabs on grade to avoid wicking moisture from concrete slab edges into wood sills, siding and interior finishes.

EXECUTION

To minimize dimensional change after shrinkage, install siding properly acclimated. The material should be stored on site.

Back-prime all sides, edges, and ends. Specify field touch up of all cut edges.

Use ring shank double- hot-dipped galvanized or stainless steel, 6d siding nails. Always use Type 316 stainless steel fasteners in coastal ocean environments to avoid fastener bleed.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

MAINTENANCE

Renewing cedar shingle or clapboard siding which is moldy or discolored can be done with a stiff, (non-metal) bristle brush and water. For more drastic cases, a mild detergent and water scrubbing, followed by a clean water rinse is usually adequate.

Existing wood clapboards that are to remain can also be power washed prior to re-staining to remove dirt, mold and loose paint/stain. Specify the water pressure or prior to cleaning, require contractor to pressure wash a small area to determine appropriate pressure so as not to damage existing wood siding.

DESIGN

The maximum exposure for white cedar shingles is 5 inches to the weather and is 6 inches for red cedar shingles.

Use corner boards for a more durable installation.

Nail shingles directly to plywood or to wood furring strips if rigid insulation is installed over sheathing. Do not nail shingles directly onto rigid insulation.

EXECUTION

Space sawn red cedar shingles 1/8" - 1/4" inch apart.

Staining within 90 days of installation will prolong the life of the shingles. Discuss the maintenance plan with the Housing Authority to ensure their success in maintaining the siding in order to maximize the useful life and cost-effectiveness. Stains applied to shingles which are weathered will not last as long as stain applied during initial installation, therefore the decision to stain should be made as part of design.

VINYL SIDING

Choose premium quality solid vinyl, minimum .042" thickness, with flat low-gloss finish. Non-embossed patterns are easier to keep clean.

In selective applications when the appearance of wood shingles is desired, polypropylene siding such as Cedar Impressions by CertainTeed and Roughsawn Cedar by Nailite may be used.

Smooth finish, prefabricated, vinyl covered aluminum or enameled aluminum are both acceptable for rakes, fasciae, and window trim.

Composite PVC trim corner boards are a low-maintenance option.

Prefinished, aluminum coil stock corner boards are not an acceptable alternative to solid, PVC corner boards. Install solid PVC trim with hand nailed, flush stainless steel color-matched nails.

Wood trim is not recommended as trim material with vinyl siding as it requires periodic painting or staining.

Do not install vinyl siding and insulation on gypsum wallboard sheathing.

Use bead-board pattern vinyl for porch ceilings- 6" wide panels are less likely to sag.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

Use vinyl J-channel “block-outs” for penetrations such as light fixtures, hose bibs, dryer vents, etc.

DESIGN

3½-4 inch exposure (triple three) is preferred for both structural stability and an appearance that closely resembles wood clapboards.

Avoid vinyl siding with molded imprints, such as wood grain in light colors. Imprints trap dirt and provide an environment for mildew.

Use vinyl accessories to provide structural stability, to help the installation stand up to wear, and to provide visual interest.

Minimize horizontal pattern changes, since the J-bead connections between them are particularly subject to wind stress.

Details must be carefully designed and shown in contract documents; provide details that minimize the use of caulking,

Do not leave details up to the installer in the field, results will be disappointing.

Corner beads, rakes, fasciae, vented soffits, as well as door and window trim clad in aluminum and/or vinyl help to reduce maintenance costs. Consider using composite PVC trim and corner boards. Acceptable manufacturers of PVC composite trim are Koma, Nels Tek, Kleer and Azek.

Open-Celled foamed PVC trim, such as Fypon, is not recommended.

Avoid aluminum brake metal as cladding on pre-existing wood trim.

When combining vinyl siding with vinyl window installations consider using vinyl trim kits that are available from the window manufacturer.

Where possible provide solid PVC or painted MDO plywood mounting panels to organize exterior components such as cable, telephone and electrical panels in a unified design. Design flashing and air sealing details to prevent air and water infiltration at all penetrations and around panel. Do not leave these details for the contractor to design.

EXECUTION

Follow the installation requirements set forth by the siding manufacturer and the Vinyl Siding Institute, including:

Separate vertical joints in siding by at least two siding courses;

Avoid vertical joints above and below windows;

Never use length of siding under 2 feet, except where necessary such as at tightly spaced windows or under shutters at the location of the shutter fastener;

Never fasten things to the vinyl, always fasten to something solid behind the siding. This typically includes items such as hose bibs, wall mounted dryer vents, safety sirens and strobes and exterior conduit;

Allow for expansion and contraction; and

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

FIBER CEMENT BEVEL AND PANEL SIDING



Install PVC trim with hand-nailed, flush stainless steel, white head nails.

MATERIALS

There are several manufacturers of fiber cement shingles and clapboard. Third party pre-finishing with solid stain is available along with a 15 year warranty from the paint applicator.

This product is best suited for areas requiring impact resistance and durability. The bevel product may not be a cost-effective choice where these are not the primary concerns; consider alternatives such as the panelized fiber cement products or alternative bevel siding materials.

Fiber cement is a durable alternative to vinyl siding that typically has more recycled content and less of a life cycle impact in terms of the use of energy and toxic materials in manufacturing.

Design for a drainage plane behind this siding type regardless of whether rigid insulation is installed behind it

Pre-finished fiber-cement trim products are available, but DHCD recommends PVC trim when fiber cement bevel siding is used, due to the brittle nature of fiber cement trim and the damage which results in material transport and handling during construction.

DESIGN

Specify a 4 3/4" maximum exposure for bevel siding where maximum durability is important. 6 1/4" exposure is available but the cost savings are minimal. Also consider the scale of the building when choosing the exposure and texture of the siding.

There are several manufacturers of fiber cement siding, including: James Hardie, CertainTeed and Nichiha. Synthetic stone siding is also available in a variety of textures and modular formats.

Panelized products are cost-effective options for siding and are typically available in 1/4" and 3/8" thicknesses and 4x8 and 4x10 panel sizes. The cost of these products can be significantly less than fiber cement bevel siding and comparable in cost to medium-grade vinyl siding. Consider architectural style and appearance, as large panels may lend a stark appearance to traditional style architecture. They are typically used in modern-style buildings.

If panelized products are used, design details and modular patterns to minimize the use of sealant joints and job-site waste.

DO NOT leave installation details up to the installer in the field, results will be disappointing.

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

Use only 3/4" and 5/4" fiber cement corner board and avoid 7/16" corner board due to warping.

EXECUTION

Follow installation requirements set forth by the manufacturer.

Prefinished fiber cement siding must be stored properly to prevent boards from getting wet and freezing to each other which can remove the finish.

Specifying an additional finish coat in the field will produce more favorable results but may be cost prohibitive.

MOLDED WOOD/RESIN BOARD & HARDBOARD SIDING

DHCD has had a number of disappointing experiences with hardboard and molded wood/resin siding. Therefore, we do not recommend its use.

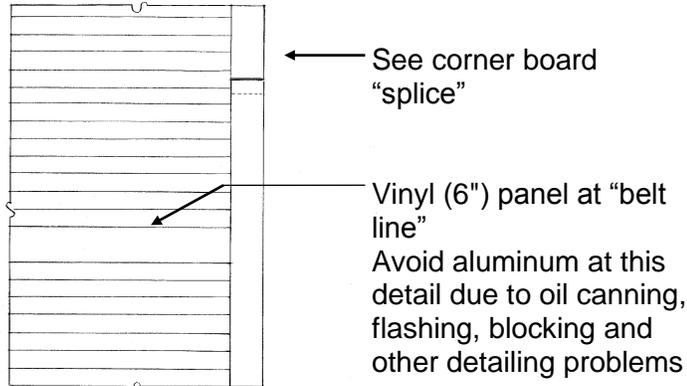
However, if it must be used to match existing siding, give extra special consideration to:

- Expansion and contraction,
- Corners, window and door details,
- Color selection, some colors fade more dramatically and matching color years later becomes extremely difficult.

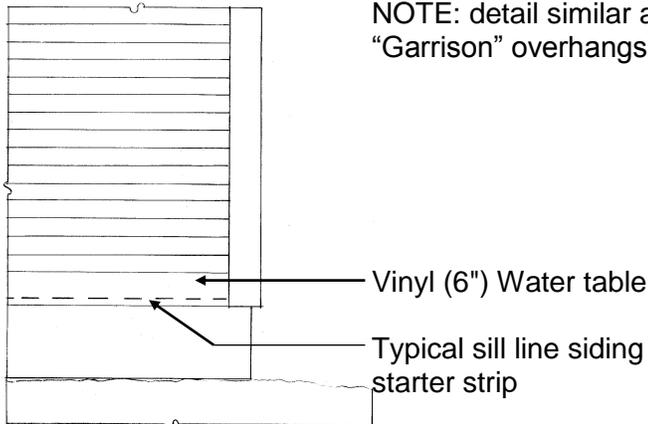
DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING



NOTE: detail similar at
"Garrison" overhangs



**CORNER TRIM
DETAIL ELEVATION**

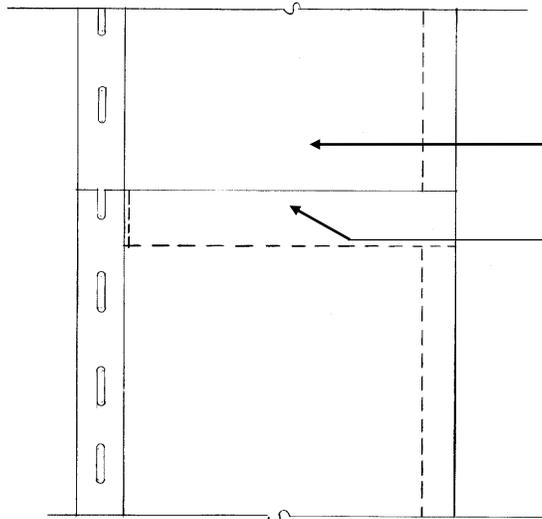
07 40 001 • VINYL SIDING

CORNER TRIM DETAIL

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

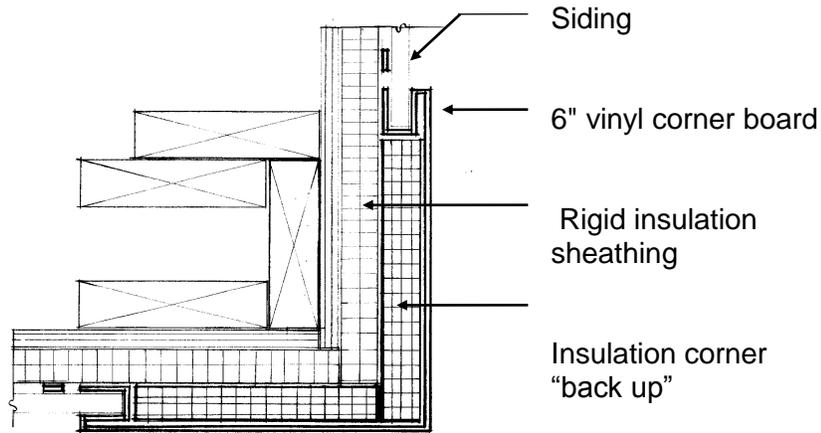
07 40 00 • SIDING



6" vinyl corner board

If corner board > 20 feet;
Place joint as high as possible
lap lower piece over upper to minimize shadow line at joint

CORNER BOARD ELEVATION



Siding

6" vinyl corner board

Rigid insulation sheathing

Insulation corner "back up"

CORNER BOARD SECTION

07 40 002 • VINYL SIDING

CORNER BOARD DETAILS

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

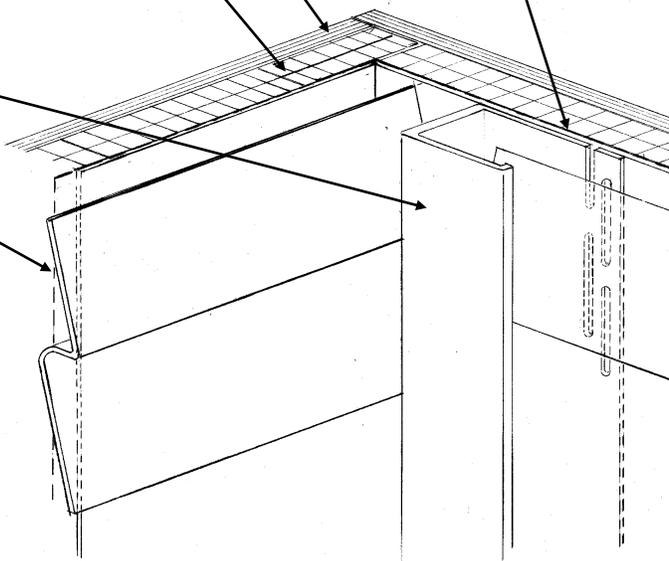
3"x3" aluminum "L" corner-
same color as siding

1/2" plywood

Rigid insulation

"J" channel
same color as
siding

Vinyl siding



Inside Corner Assembly with "J" Channel

NOTE:

1. Allowances given for future expansion of siding
2. "J" channel is placed lightly against the vinyl siding face and nailed
3. Solid backer studs may be required

07 40 003 • VINYL SIDING

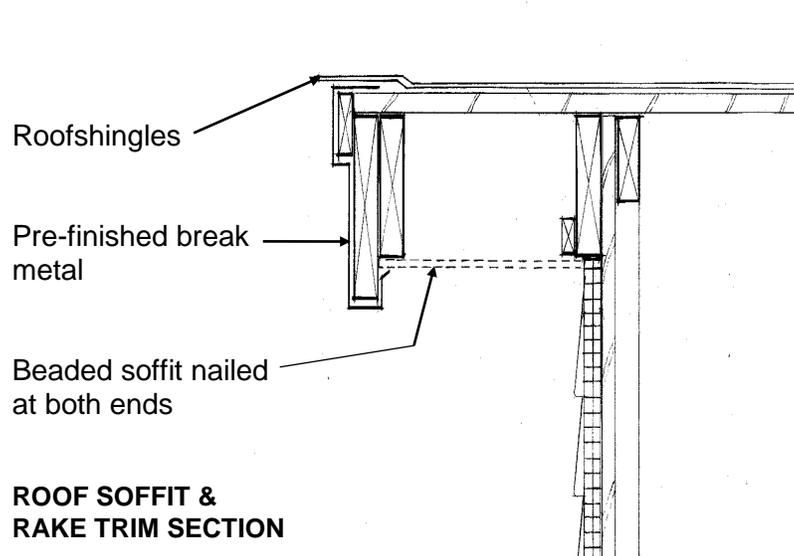
INSIDE CORNER DETAIL

DESIGN AND CONSTRUCTION GUIDELINES AND STANDARDS

DIVISION 7 • THERMAL & MOISTURE PROTECTION

07 40 00 • SIDING

ROOF SOFFIT & RAKE TRIM SECTION



07 40 004 • VINYL SIDING

ROOF SOFFIT & RAKE TRIM DETAIL