

**MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION**  
**STAFF REPORT**

<b>Address:</b>	16401 Old River Rd., Poolesville	<b>Meeting Date:</b>	6/12/2019
<b>Resource:</b>	Master Plan Site #17/61 Upton Darby House	<b>Report Date:</b>	6/5/2019
<b>Applicant:</b>	M-NCPPC Montgomery Parks	<b>Public Notice:</b>	5/29/2019
<b>Review:</b>	HAWP	<b>Tax Credit:</b>	n/a
<b>Case Number:</b>	17/61-19B	<b>Staff:</b>	Dan Bruechert
<b>Proposal:</b>	Roof Replacement		

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**RECOMMENDATION**

Staff recommends the HPC approve the HAWP application.

**ARCHITECTURAL DESCRIPTION**

**SIGNIFICANCE:** Individually Listed Master Plan Site #17/61 (*Upton Darby House*)  
**STYLE:** Greek Revival  
**DATE:** c.1855 w/ later modifications

*From Places from the Past:*

The Upton Darby House is highly representative of the Seneca community which thrived in the second half of the 1800s. The center-hall, one-room deep house is traditional in form with Greek Revival style doorway, transom, and skylights and 6/6 sash windows on the second level. More representative of the Victorian era are long 2/2 sash windows on the first level, elaborate scroll brackets on the porch, and bracketed one-story bay window on the east side...

John and Upton Darby, of Franklin County, Pennsylvania built the dwelling in 1855. The father and son team owned and operated the Seneca Mills, a milling complex with origins in the late 1700s, located at the intersection of River Road and Tschiffely Mill Road. In 1900, Frederick Allnut purchased the residence, living here while he operated the adjacent general store. Outbuildings include a stone springhouse and tow-story frame stable, built in 1900.



Figure 1: The Upton Darby House is adjacent to the Seneca Store Master Plan Historic Site.

## **PROPOSAL**

The applicant proposes to replace the farmhouse roof.

## **APPLICABLE GUIDELINES**

Proposed alterations to individual Master Plan Sites are reviewed under Montgomery County Code Chapter 24A (Chapter 24A) and the Secretary of the Interior's Standards for Rehabilitation. Rehabilitation is defined as the act or process of making possible a compatible use for a property through repair, alterations, and additions while preserving those portions or features, which convey its historical, cultural, or architectural values.

### ***Montgomery County Code, Chapter 24A Historic Resources Preservation***

(b) The commission shall instruct the director to issue a permit, or issue a permit subject to such conditions as are found to be necessary to insure conformity with the purposes and requirements of this chapter, if it finds that:

- (1) The proposal will not substantially alter the exterior features of an historic site or historic resource within an historic district; or
- (2) The proposal is compatible in character and nature with the historical, archeological, architectural or cultural features of the historic site or the historic district in which an historic resource is located and would not be detrimental thereto or to the achievement of the purposes of this chapter;

### **Secretary of the Interior's Standards for Rehabilitation**

2. The historic character of a property will be retained and preserved. The removal of

distinctive materials or alteration of features, space and spatial relationships that characterize a property will be avoided.

5. Distinctive materials, features, finishes and construction techniques or examples of craftsmanship that characterize a property will be preserved.
9. New additions, exterior alterations, or related new construction will not destroy historic materials, features, and spatial relationships that characterize the property. The new work shall be differentiated from the old and will be compatible with the historic materials, features, size, scale and proportions, and massing to protect the integrity of the property and its environment.
10. New additions and adjacent or related new construction will be undertaken in such a manner that, if removed in the future, the essential form and integrity of the historic property and its environment would be unimpaired.

### **STAFF DISCUSSION**

The applicant proposes to remove the existing, failing, standing seam metal roof and replace it with a copper metal roof. Staff finds that this roof, while a higher quality than the historic torn or galvanized roof, is an appropriate material and supports approval of this HAWP.

The existing standing seam metal roof is failing and has deteriorated beyond repair. Staff finds that the removal of this roof is appropriate under Standard 2.

The proposed roof is a 1" (one-inch) double lock standing seam roof in copper. The proposed copper roof is a significantly higher quality than the standing seam metal roof. The advantages of the copper roof are many, including less cyclical maintenance, the new roof won't rust or corrode, and will more closely match the profile of the existing roof, which wouldn't be the case with a new roof system. The copper's highly reflective appearance will dull to a green patina which will create an appearance more in keeping with the dull painted surface currently on the roof. Additionally, while the HPC does not regulate color, the patinaed copper's appearance will be similar to the painted green of the extant, failing roof.

Staff finds that the proposed roof is an appropriate material, design, and finish to be compatible with the historic house while retaining the historic character (per 24A-8(b)(2) and Standard 2). Staff recommends approval of this HAWP.

### **STAFF RECOMMENDATION**

Staff recommends that the Commission **approve** the HAWP application; as being consistent with Chapter 24A-8 and the Secretary of the Interior's Standards for Rehabilitation; and with the general condition applicable to all Historic Area Work Permits that **the applicant will present 3 permit sets of drawings to HPC staff for review and stamping prior to submission for permits (if applicable)**. After issuance of the Montgomery County Department of Permitting Services (DPS) permit, the applicant will arrange for a field inspection by calling the DPS Field Services Office at 240-777-6370 prior to commencement of work and not more than two weeks following completion of work.



876560

DPS - #8

HISTORIC PRESERVATION COMMISSION  
301/563-3400

# APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Email: scott.whipple@morgmontgomery.com Contact Person: Scott Whipple  
PARKS.ORG Daytime Phone No.: 301 670 8063  
Tax Account No.: \_\_\_\_\_  
Name of Property Owner: MNCPRC Daytime Phone No.: \_\_\_\_\_  
Address: 8301 TURKEY THicket DRIVE GAITHERSBURG 20879  
Street Number City State Zip Code  
Contractor: \_\_\_\_\_ Phone No.: \_\_\_\_\_  
Contractor Registration No.: \_\_\_\_\_  
Agent for Owner: \_\_\_\_\_ Daytime Phone No.: \_\_\_\_\_

**LOCATION OF BUILDING/PROJECT**

House Number: 16401 Street: OLD RIVER RD  
Town/City: POOLESVILLE Nearest Cross Street: \_\_\_\_\_  
Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Subdivision: \_\_\_\_\_  
Liber: \_\_\_\_\_ Folio: \_\_\_\_\_ Parcel: \_\_\_\_\_

**PART ONE: TYPE OF RECONSTRUCTION AND/OR USE****1A. CHECK ALL APPLICABLE:**

- ☐ Construct ☐ Extend ☐ Alter/Renovate  
☐ Move ☐ Install ☐ Wreck/Raze  
☐ Revision ☐ Repair ☐ Relocatable

**CHECK ALL APPLICABLE:**

- ☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed  
☐ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family  
☐ Fence/Wall (complete Section 4) ☐ Other: Alterations

1B. Construction cost estimate: \$ \_\_\_\_\_

1C. If this is a revision of a previously approved active permit, see Permit # \_\_\_\_\_

**PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTERIOR ADDITIONS**

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other: \_\_\_\_\_  
2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other: \_\_\_\_\_

**PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL**

3A. Height \_\_\_\_\_ feet \_\_\_\_\_ inches

3B. Indicate whether the fence or retaining wall is to be constructed on one of the following locations:

- ☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

[Signature]  
Signature of owner or authorized agent

5.15.19  
Date

Approved: \_\_\_\_\_ For Chairperson, Historic Preservation Commission

Disapproved: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Application/Permit No.: \_\_\_\_\_ Date Filed: \_\_\_\_\_ Date Issued: \_\_\_\_\_

Edt 5/21/99

**SEE REVERSE SIDE FOR INSTRUCTIONS**



HISTORIC PRESERVATION COMMISSION  
301/563-3400

DPS - #8

## APPLICATION FOR HISTORIC AREA WORK PERMIT

Contact Email: scott.whipple@montgomeryparks.org Contact Person: Scott Whipple  
Daytime Phone No.: 301 670 8063  
Tax Account No.: \_\_\_\_\_  
Name of Property Owner: MNCPPL Daytime Phone No.: \_\_\_\_\_  
Address: 8301 TURKEY THicket DRIVE GAITHERSBURG MD 20879  
Street Number City State Zip Code  
Contractor: \_\_\_\_\_ Phone No.: \_\_\_\_\_  
Contractor Registration No.: \_\_\_\_\_  
Agent for Owner: \_\_\_\_\_ Daytime Phone No.: \_\_\_\_\_

### LOCATION OF BUILDING/PREMISES

House Number: 16401 Street: OLD RIVER RD  
Town/City: POOLESVILLE Nearest Cross Street: \_\_\_\_\_  
Lot: \_\_\_\_\_ Block: \_\_\_\_\_ Subdivision: \_\_\_\_\_  
Liber: \_\_\_\_\_ Folio: \_\_\_\_\_ Parcel: \_\_\_\_\_

### PART ONE: TYPE OF PERMIT ACTION AND USE

#### 1A. CHECK ALL APPLICABLE:

- ☐ Construct ☐ Extend ☐ Alter/Renovate  
☐ Move ☐ Install ☐ Wreck/Raze  
☐ Revision ☐ Repair ☐ Revocable

#### CHECK ALL APPLICABLE:

- ☐ A/C ☐ Slab ☐ Room Addition ☐ Porch ☐ Deck ☐ Shed  
☐ Solar ☐ Fireplace ☐ Woodburning Stove ☐ Single Family  
☐ Fence/Wall (complete Section 4) ☐ Other: \_\_\_\_\_

1B Construction cost estimator: \$ \_\_\_\_\_

1C. If this is a revision of a previously approved active permit, see Permit # \_\_\_\_\_

### PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTERIOR ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other: \_\_\_\_\_  
2B. Type of water supply: 01 ☐ WSSC 02 ☐ Well 03 ☐ Other: \_\_\_\_\_

### PART THREE: COMPLETE ONLY FOR FENCE/RETAINING WALL

3A. Height \_\_\_\_\_ feet \_\_\_\_\_ inches

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- ☐ On party line/property line ☐ Entirely on land of owner ☐ On public right of way/easement

I hereby certify that I have the authority to make the foregoing application, that the application is correct, and that the construction will comply with plans approved by all agencies listed and I hereby acknowledge and accept this to be a condition for the issuance of this permit.

[Signature]  
Signature of owner or authorized agent

5.15.19  
Date

Approved: \_\_\_\_\_ For Chairperson, Historic Preservation Commission

Disapproved: \_\_\_\_\_ Signature: \_\_\_\_\_ Date: \_\_\_\_\_

Application/Permit No.: \_\_\_\_\_ Date Filed: \_\_\_\_\_ Date Issued: \_\_\_\_\_

Edt 6/21/99

**SEE REVERSE SIDE FOR INSTRUCTIONS**

**THE FOLLOWING ITEMS MUST BE COMPLETED AND THE  
REQUIRED DOCUMENTS MUST ACCOMPANY THIS APPLICATION.**

**1. WRITTEN DESCRIPTION OF PROJECT**

- a. Description of existing structure(s) and environmental setting, including their historical features and significance:

SEE ATTACHED

- b. General description of project and its effect on the historic resource(s), the environmental setting, and, where applicable, the historic district:

SEE ATTACHED

**2. SITE PLAN**

Site and environmental setting, drawn to scale. You may use your plat. Your site plan must include:

- a. the scale, north arrow, and date;
- b. dimensions of all existing and proposed structures; and
- c. site features such as walkways, driveways, fences, ponds, streams, trash dumpsters, mechanical equipment, and landscaping.

**3. PLANS AND ELEVATIONS**

You must submit 2 copies of plans and elevations in a format no larger than 11" x 17". Plans on 8 1/2" x 11" paper are preferred.

- a. *Schematic construction plans*, with marked dimensions, indicating location, size and general type of walls, window and door openings, and other fixed features of both the existing resource(s) and the proposed work.
- b. *Elevations (facades)*, with marked dimensions, clearly indicating proposed work in relation to existing construction and, when appropriate, context. All materials and fixtures proposed for the exterior must be noted on the elevations drawings. An existing and a proposed elevation drawing of each facade affected by the proposed work is required.

**4. MATERIALS SPECIFICATIONS**

General description of materials and manufactured items proposed for incorporation in the work of the project. This information may be included on your design drawings.

**5. PHOTOGRAPHS**

- a. Clearly labeled photographic prints of each facade of existing resource, including details of the affected portions. All labels should be placed on the front of photographs.
- b. Clearly label photographic prints of the resource as viewed from the public right-of-way and of the adjoining properties. All labels should be placed on the front of photographs.

**6. TREE SURVEY**

If you are proposing construction adjacent to or within the dripline of any tree 6" or larger in diameter (at approximately 4 feet above the ground), you must file an accurate tree survey identifying the size, location, and species of each tree of at least that dimension.

**7. ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS**

For ALL projects, provide an accurate list of adjacent and confronting property owners (not tenants), including names, addresses, and zip codes. This list should include the owners of all lots or parcels which adjoin the parcel in question, as well as the owner(s) of lot(s) or parcel(s) which lie directly across the street/highway from the parcel in question.

PLEASE PRINT (IN BLUE OR BLACK INK) OR TYPE THIS INFORMATION ON THE FOLLOWING PAGE.  
PLEASE STAY WITHIN THE GUIDES OF THE TEMPLATE, AS THIS WILL BE PHOTOCOPIED DIRECTLY ONTO MAILING LABELS.

## 1. WRITTEN DESCRIPTION OF PROJECT

### a. Description of existing structure and environmental setting, including their historical features and significance:

From *Places from the Past*:

*The Upton Darby House is highly representative of the Seneca community which thrived in the second half of the 1800s. The center-hall, one-room deep house is traditional in form with Greek Revival style doorway transom and sidelights and 6/6 sash windows in the second level. More representative of the Victorian era are long 2/2 sash windows on the first level, elaborate scroll brackets on the porch, and a bracketed one story bay window on the east side... John and Upton Darby, of Franklin County, Pennsylvania built the dwelling in 1855. The father and son team owned and operated Seneca Mills, a milling complex with origins in the late 1700s, located at the intersection of River Road and Tschiffely Mill Road...*

The house, listed in the Montgomery County Master Plan for Historic Preservation as resource number 17/61, is located in a rural setting within the Seneca National Register Historic District. The house is set back some distance from Old River Road, behind Poole's (Seneca) Store (MPHP #17/62). The site is surrounded by public parkland and agricultural land.

### b. General description of project and its effect on the historic resource, the environmental setting, and, where applicable, the historic district.

This proposal is for the removal of the existing, failing standing seam metal roof and its replacement with traditional 1 inch high double lock standing seam roof panels using Revere 16 ounce copper. All joints will be soldered.

The benefits of using a copper system include removing the need to introduce a ridge cap (because the ridge joint can be soldered) as well as lifespan and maintenance gains over alternative systems. Unlike Galvalume/Galvanized metal roofing products, copper is self-healing, it does not need to be painted, and it will not rust where it comes into contact with other metals (where the roof is penetrated by vents, etc.) or lime runoff from the masonry chimneys. Despite the change in material from the existing standing seam roof, MNCPPC suggest that by using a copper standing seam roof with traditional double lock standing seams and soldered joints the project will more closely match the visual characteristics of a historical standing seam roof than a more modern roofing system.

Existing ½ round aluminum gutters to be replaced in-kind. All work to be performed by Historic Roofing Company, Inc.



## 2. SITE PLAN



## 3. PLANS AND ELEVATIONS

NA

## 4. MATERIALS SPECIFICATIONS

See attached





Historic Roofing Company, Inc.  
6344 Trailing Arbutus Court  
Lothian, Maryland 20711  
Phone: 410-741-0572  
www.historicroofingcompany.com

Vendor: 101854 ~ Roofing: 390329

Date	Estimate #
5/16/2019	936

M.H.I.C. # 41616

Bill To	Project Address
APSection@mncppc.org	MNCPPC 16401 Old River Rd Poolesville, Md. 20837

Description	Total:
Set scaffolding up to access roof as needed. Roof mechanic- 18 manhours, Laborer- 18 manhours	3,060.00
Remove all of existing metal roofs on house down to sheathing. Roof mechanic- 45.7 manhours Laborer - 45.7 manhours Inspect woodwork. Any and all woodwork to be performed on a time and material basis , added to total contract price.	7,769.00
Install shop fabricated traditional 1 inch high double lock standing seam roof panels using Revere 16 ounce copper to all steep sections,cleated 8 inches on center, fastened using stainless steel nails. Installed over 1 layer of Diamond Deck paper. Install high temperature ice and water shield at all leading edges. Roof mechanic-354 manhours, Laborer 354 manhours	60,180.00
At gable end flat roofs. Install shop fabricated flat lock seam panels using Revere 16 ounce copper, cleated 3 inches on center. Fastened using stainless steel nails. Installed over 1 layer of high temperature ice and water shield. All joints fully sweated using 50/50 solder. Roofing mechanic-31.50 manhours, Laborer-31.50-manhours Hips and ridges to be 1 inch high standing seam, to match field joints. Replace flashing at three chimneys using 16 ounce copper let into mortar joints.	5,355.00
Remove lightning protecting system, install existing back to match existing design on new roof using stainless steel clamps at standing seams. (Not sure of systems condition) Roof mechanic- Roof mechanic- 5.5 manhours Laborer-5 manhours	935.00

Page 1 of 2

Repairs and/or replacement of sheathing, insulation or structured members, if not specified above, to be an addendum to the contract. This proposal is limited to 30 days acceptance from the date hereof. Payment is to be made in accordance with Contract #370184 within thirty (30) calendar days of receipt of a proper invoice or acceptance of work, whichever is later.

**We propose hereby to furnish material and labor complete in accordance with these specifications for the sum of .... Total:**

**ACCEPTANCE OF PROPOSAL:** The prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to perform the work as specified. Payment will be made as outlined above.

Signature: \_\_\_\_\_

DATE: \_\_\_\_\_

Historic Roofing Company, Inc.

Signature: \_\_\_\_\_

Page 1  
DATE: \_\_\_\_\_

*Clifford Layman President*



Historic Roofing Company, Inc.  
6344 Trailing Arbutus Court  
Lothian, Maryland 20711  
Phone: 410-741-0572  
www.historicroofingcompany.com

Vendor: 101854 ~ Roofing: 390329

Date	Estimate #
5/16/2019	936

M.H.I.C. # 41616

**Bill To**

APSection@mncppc.org

**Project Address**

MNCPPC  
16401 Old River Rd  
Poolesville, Md. 20837

Description	Total:
Replace up to 285 feet of 6 inch 1/2 round White aluminum gutter on fascia hangers, fastened using galvanized screws 2 feet on center. Replace up to 180 feet of 4 inch round white aluminum downspouts installed using shop fabricated strap hangers 10 feet on center. Roof mechanic-33.5- manhours, Laborer- 33.5- manhours	5,695.00
Material cost- Raw copper, solder, paper, caulk, fasteners, dumpster, aluminum gutter and downspouts.	26,250.00
All debris removed into dumpster for removal from site. Magnet run over ground daily. Workmanship guaranteed against leakage for a period of 5 years. All copperwork to meet Revere Copper and common sense manual specifications.	
Bonding-	2,731.00
Page 2 of 2	

Repairs and/or replacement of sheathing, insulation or structured members, if not specified above, to be an addendum to the contract. This proposal is limited to 30 days acceptance from the date hereof. Payment is to be made in accordance with Contract #370184 within thirty (30) calendar days of receipt of a proper invoice or acceptance of work, whichever is later.

**We propose hereby to furnish material and labor complete in accordance with these specifications for the sum of ..... Total: \$111,975.00**

**ACCEPTANCE OF PROPOSAL:** The prices, specifications and conditions are satisfactory and are hereby accepted. You are authorized to perform the work as specified. Payment will be made as outlined above.

Signature: \_\_\_\_\_

DATE: \_\_\_\_\_

Historic Roofing Company, Inc.

Signature: \_\_\_\_\_

Page 2  
DATE: \_\_\_\_\_

*Clifford Layman President*

# Standing Seam Construction

3A

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Standing Seams



# Standing Seam Construction

## One of the oldest forms of copper roofing

– standing seam roofing – involves joining sheets or strips of copper with seams (joints) that are elevated above the roof surface. This form or method provides a weathertight – not watertight – copper membrane.

Standing seam roofing is as elegant, graceful and architecturally tasteful today as it was in 1737 when Christ Church in Philadelphia was first sheathed in copper. This installation served for over 200 years, when it became necessary to replace the wood decking, which meant replacement of the copper, also. The copper was reported to be in "generally good" condition.

Today, standing seams are used more often than batten seams on lower, smaller structures, but they are by no means limited to any particular size or style of building. When special considerations are given, standing seam cladding may be used on almost any size, shape or slope of roof, wall, etc.

The low, narrow shadow lines produced by one-inch (1") high seams are complementary to most architectural styles. Further, this versatile form of cladding will conform to almost any shape or configuration of roof or wall, including domes, and warped and curved surfaces.

Additional architectural effect may be achieved by running the seams at an angle, even horizontally on sufficiently steep roofs or employing a combination of standing and batten seams. Increasing or varying the height of

the finished seams is another method of providing individuality.

## Design Considerations

Standing seam roofing and wall cladding may be formed from sheets, strips and/or rolls of 12-, 16- or 20-ounce copper. Heavier (thicker) copper is difficult to form into double-lock standing seams and is therefore not suggested for standing seam roofing.

When specifying 12-ounce copper for roofing, Revere suggests the maximum width of the finished pan be eighteen inches (18"), and the maximum length of the pan be twenty-four feet (24').

Individual panels can be formed with hand tools (tongs), on sheet metal brakes (power or manually operated) or with portable pan-forming equipment. Seams can be finished (completed and closed) with a variety of hand and power tools.

Regardless of the form of copper used, the method of forming panels and/or finishing seams, certain basic principles apply to all standing seam installations:

- 1) The length of individual panels is not as important as the length of "run" from eave to ridge of the seams.

Finishing of the seams – whether it is done with hand tools or power seamers – compresses the five (5) layers - or "plies" - of copper tightly together. The resulting multiple folds of copper become stiffening ribs that expand and contract as a unit. If the installation is made from sheets with transverse (horizontal) seams between panels, there are seven (7) layers of copper on one side of the

panel and eight (8) on the other. Finishing the seam compresses these layers so tightly together that slippage is unlikely. The use of conventional transverse seams can NOT be counted on to relieve expansion movement.

- 2) Standing seam roofing and wall cladding is secured to the structure by cleats worked into the seams. It is necessary that the cleats be attached to a material that has sufficient "holding power" to prevent fastener "pull-out" during high wind events.

When the surface behind the copper is a material other than wood – e.g., gypsum or concrete – it is necessary to provide wood nailing strips for securing cleats. Preferably, these should be spaced twelve inches (12") apart and run perpendicular to the standing seams. (Variances in the width of finished seams make it difficult to assure proper alignment of seams over parallel nailers for a large area.)

- 3) Cleats that are hooked into the standing seams become rigidly locked so that slippage between them and the panels does not occur. When the length of "run" exceeds thirty feet (30') expansion movement can be provided by using a combination of expansion and fixed cleats.
- 4) For greatest durability and weathertightness, standing seams are formed one inch (1") high. However, subject to availability of forming tools or equipment, they can be made to any height from three-quarter inch (3/4") to one-and-one-half inches (1-1/2"). Seams taller than one-and-a-half inches (1-1/2") are susceptible to

flattening and are not recommended; seams less than three-quarter inch (3/4") may not be sufficiently weathertight and are not recommended except on tightly curved or small-radius domes.

- 5) It is **NOT** necessary – or desirable – to vent the underside of standing seam copper installations. A roof or wall assembly may be vented to provide a cold roof or rain-screen, but copper can be installed directly over approved underlayments without an airspace. Copper is not adversely affected by moisture or condensate that may accumulate and remain on its reverse side.

## General Requirements

### Roof slopes 3 in 12 and greater

The surface to receive the copper should be dry and smooth, free from projecting nail heads or other obstructions. The entire surface should be covered with an approved underlayment. Historically, this has been asphalt saturated roofing felt, lapped two inches (2"). Ideally the saturated felt would be secured with copper nails driven through sheet copper washers. Metal or plastic "tin tabs" that are raised above the underlayment should **NOT** be used.

More recently a wide range of "improved" underlayments have been made available. These include "peel and stick" self-sealing membranes, "breathable" products, etc. So long as the product manufacturer has no objection to the use under copper – i.e., the product can withstand expected service temperatures – and the overall performance of the assembly is not

## At-a-Glance

For roofs and walls with slopes 3" per foot or greater – providing the length of run of the seam does not exceed 45'.

### ROOF PANS:

- 12-, 16- or 20-ounce cold-rolled copper
- Sheets or coils, 18, 20 or 24 inches wide
- Plain, coated or pre-patinated copper

### STANDING SEAMS:

- 1" high when finished
- Spacing according to sheet or coil width

Sheet/coil width	Spacing
18"	14-3/4" to 15"
20"	16-3/4" to 17"
24"	20-3/4" to 21"

### CLEATS:

- Same weight copper as roof pans, 2" wide
- Spaced 12" apart
- Secured to wood deck/sheathing with two copper, copper alloy or stainless steel nails or screws

### EDGE STRIPS:

- 20-ounce cold-rolled copper
- 8' or 10' lengths
- Ends lapped at least 1"
- Secured with copper, copper alloy or stainless steel nails or screws, spaced 4" apart

### VALLEY SHEETS:

- 20-ounce cold-rolled copper
- 8' or 10' lengths
- Ends lapped at least 6" in direction of flow

## For estimating materials to cover one square (100 square feet) of roof:

Copper*	Square feet of copper		
	18" width	20" width	24" width
Sheets (96" or 120")	127.5	125	121
Coils	120	118	114.5
Cleats (sheets or coils)	3.5	3	2.5
Approximate total	123.5 to 131	121 to 128	117 to 123.5

Note: Nails (1"): 3/4 pound

\* Approximate amount – actual amount will vary based on seam dimensions

compromised, Revere believes these new products may be acceptable. If saturated felts or products that soften and become tacky at elevated temperatures are used, a layer of smooth building paper should be laid

over the underlayment immediately preceding the application of the copper. This is standard procedure to prevent binding of the copper to the underlayment.



# Standing Seam Construction

## **Roof slopes less than 3 in 12**

Standing seam roofing is weathertight not watertight. As a result, it may not be suitable for primary weather-proofing on roofs with slopes less than three in twelve (3:12). When standing seam roofing is used on such slopes it may be necessary to employ approved waterproof membranes as the underlayment.

For roof slopes less than three inches (3") per foot, consult Revere's Architectural Services Department.

## **Roll Method**

Historically standing seam roofing was formed, on site, with roofing tongs from "rolls" of copper. These rolls were made by joining four-foot (4') long sheets of copper together with one-half-inch (1/2") double-lock seams. This double-lock seam was not cut or notched at corners where it turns up to form the vertical leg of the standing seam. Due to the extensive amount of labor involved in this method, it is seldom used except for "historically correct" restorations or very small projects.

## **Pan Method**

Since the mid-1950's most standing seam panels have been formed "in the shop" on sheet metal brakes – manually and power operated – or at the job-site using portable pan-forming equipment. Regardless of how or where the panels are formed, they should be fabricated to allow a minimum one-sixteenth inch (1/16") space between the base of adjacent pans.

To form standard one-inch (1") high standing seams, one side edge of the sheet is bent up one-and-one-half inches (1-1/2") and the other side edge one-and-three-quarter inches (1-3/4"). (When power pan-forming equipment is used these dimensions may vary slightly.) Additional bends are

made to both upturned edges to create "male" and "female" panel legs. (As shown at right)

The "male" leg is cleated to the roof deck or wall sheathing. The "female" leg of the adjacent pan is placed over/against the male leg with proper clearance at the base. (Refer to Basic Standard Practices for Cleating.)

The pans are joined at their ends with transverse seams. These transverse seams should be staggered to avoid excessive layers of metal at the standing seam.

## **Transverse Seams - Steep Slope**

For roof slopes six inches (6") or more per foot, the lower end of the upper pan is folded under three-quarter inch (3/4") and hooked into a two-inch (2") fold in the upper end of the underlying pan. The three-quarter-inch (3/4") fold at the cross seam is slit at its corner one inch (1") from where it turns up against the standing seam. The two-inch (2") fold is slit at the corner to allow for proper locking of the two pans. (As shown at right)

Constructing transverse seams with unequal locks minimizes the potential for water being drawn through the seam by capillary action.

Revere does NOT recommend the use of three-quarter-inch (3/4") loose locks for transverse seams on roofs.

As an alternate, to facilitate final forming, the top of the lower panel is slit a length of two inches (2") and a width of one-half inch (1/2") from the bottom edge of the standing seam. This slit edge is laid flat against the adjacent pan and the remaining portion is folded back on itself two inches (2"). Then, the upper pan is locked into this fold.

## **Transverse Seams - Low Slope**

For roof slopes three (3") to six inches (6") per foot, the lower end of each pan is folded under three-quarter inch (3/4"); the upper end is folded over one-half inch (1/2"). The three-quarter-

inch (3/4") fold hooks into a copper locking strip, one-and-one-half inches (1-1/2") wide. The locking strip is continuously soldered four inches (4") from the upper end of the underlying pan. The four-inch (4") "head-lap" and the folded end on the lower pan minimize the potential for "blow-back" of water during heavy rainfalls. (As shown)

As an alternate, to prevent material build-up, the top of the lower panel is slit a length of one-half inch (1/2") and also a width of one-half inch (1/2") from the bottom edge of the standing seam. This slit edge is laid flat against the adjacent pan and the remaining portion is folded back on itself to form a one-half-inch (1/2") hook dam. The one-and-one-half-inch (1-1/2") copper locking strip is also trimmed one-half inch (1/2") each side before it is continuously soldered four inches (4") from the upper end of the underlying pan. Then, the three-quarter-inch (3/4") fold of the upper pan hooks into the copper locking strip.

## **Eaves**

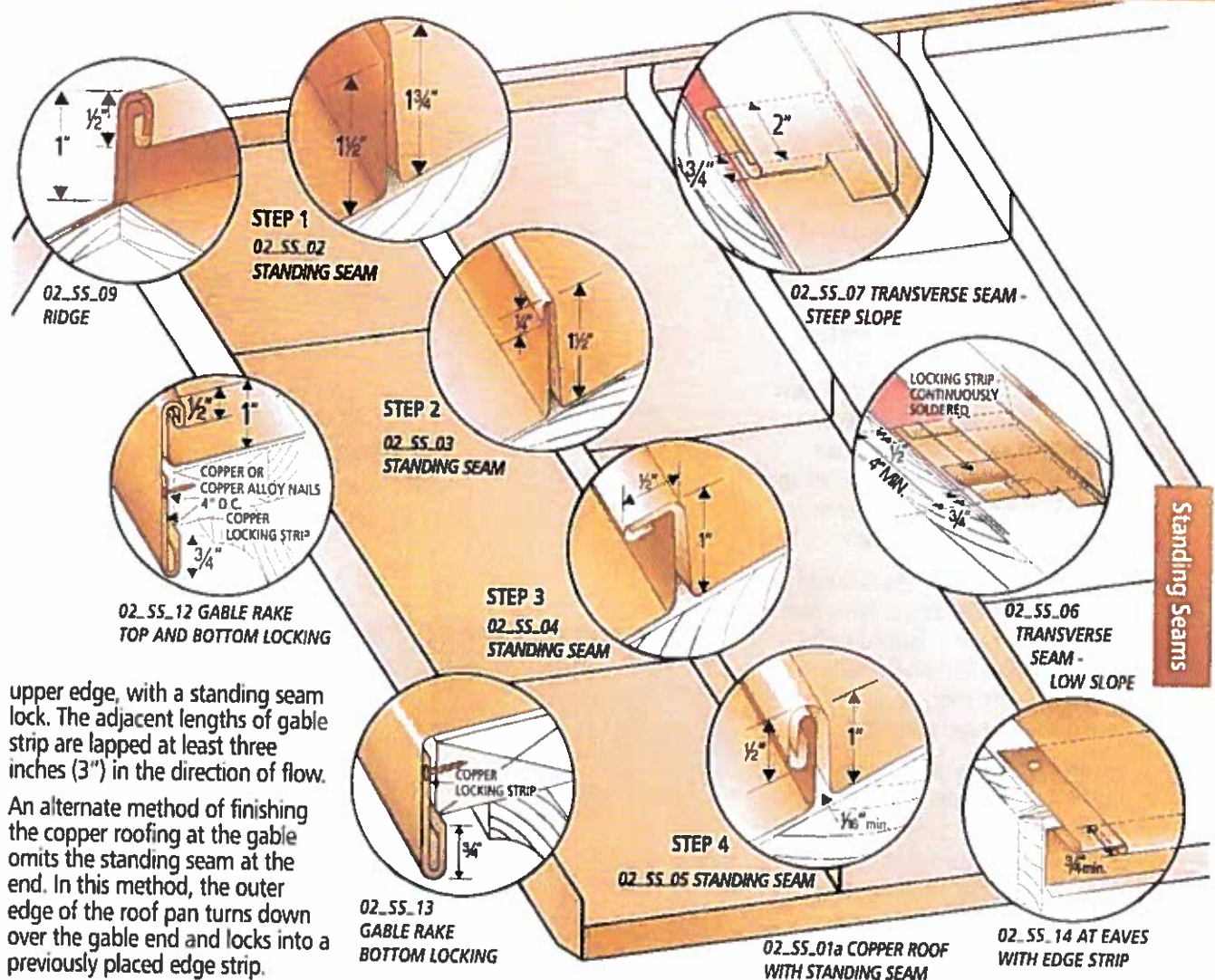
At eaves, each pan should be cut and formed so its lower edge hooks three-quarter inch (3/4") over a previously placed edge strip. The edge strip may be formed as shown, or may take another required form.

The ends of the standing seams at the eaves may be cut and folded back or turned down – and locked to the edge strip. Connecting eaves to gutters is shown under Gutters (Section 4C).

## **Gable Rakes**

At gables, the standing seam is formed by turning up the edge of the last pan one-and-one-half inches (1-1/2") flush with the edge of the roof. The separate rake strip locks three-quarter inch (3/4") at its lower edge, over a previously placed edge strip. This rake strip is secured to the roof pan, at its





upper edge, with a standing seam lock. The adjacent lengths of gable strip are lapped at least three inches (3") in the direction of flow.

An alternate method of finishing the copper roofing at the gable omits the standing seam at the end. In this method, the outer edge of the roof pan turns down over the gable end and locks into a previously placed edge strip.

## Hips and Ridges

Hips and ridges may be finished with standing seams, batten seams, ridge rolls, ventilated assemblies, etc.

When standing seams are used to finish the hips or ridges, the seams on opposite sides of the hip or ridge should be offset – i.e., they cannot meet at the hip to form an inverted "V". This is because the multiple layers of copper in the standing seams on the roof make it difficult to form a seam on the hip or ridge.

To form a standing seam at hips and ridges it is necessary that the

seams in the roof be laid flat six inches (6") from the upper edge of the pans where it meets the ridge or hip. Pans on opposite sides of the ridge or hip are turned up one-and-a-half inches (1-1/2") and one-and-three-quarter inches (1-3/4") – to form a standing seam in the usual manner.

Due to the multiple layers of metal at a hip or ridge it is difficult to form double-locks at these locations. As a result, some contractors may wish to substitute single-lock seams in place of double-lock seams. While single-lock seams are less weather

resistant than double-lock seams, this is seldom a problem at hips and ridges. Revere does not suggest the use of single-lock standing seams in the field of a roof or wall.

"Z" clips that are continuously soldered to the pans may be used to construct ventilated hips and ridges so long as secondary provision against wind-blown water is provided. Revere does not suggest finishing hips and ridges with "Z" clips that are nailed, screwed, or riveted to the roof pans. See also Section 3G – Supplementary Details – for more ridge cap finishes.



# Standing Seam Construction

## Valleys

Only the upper edge of each valley sheet is nailed or otherwise secured to the roof deck. The lower edge of the upper valley sheet is lapped over the underlying sheet not less than six inches (6"). This lap should not be soldered.

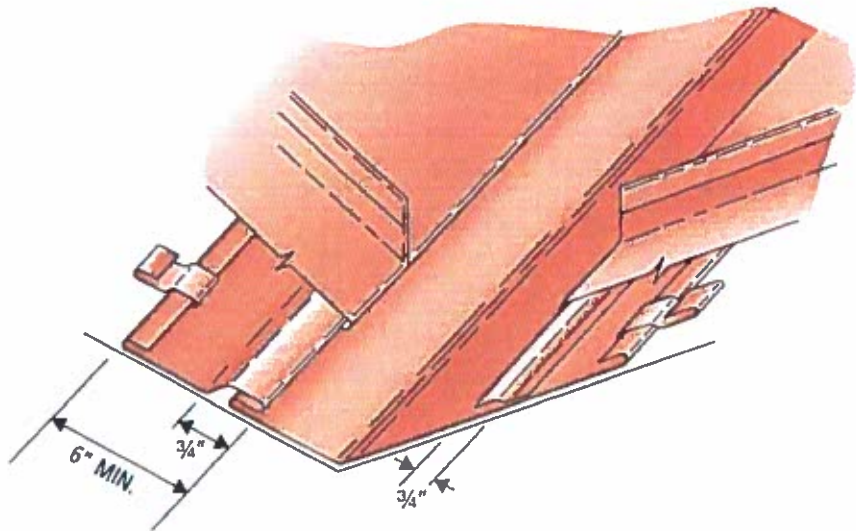
The sides of each valley sheet are folded one-half inch (1/2") for cleating. Two-inch (2") wide copper cleats, spaced not more than eighteen inches (18") apart, are hooked into these folded edges and secured with two (2) copper or copper alloy nails or screws.

Six inches (6") from the side edge, a double fold, creating a three-quarter-inch (3/4") lock, is formed in the valley sheet. This allows the lower edge of each roof pan to be hooked into the fold and dressed down.

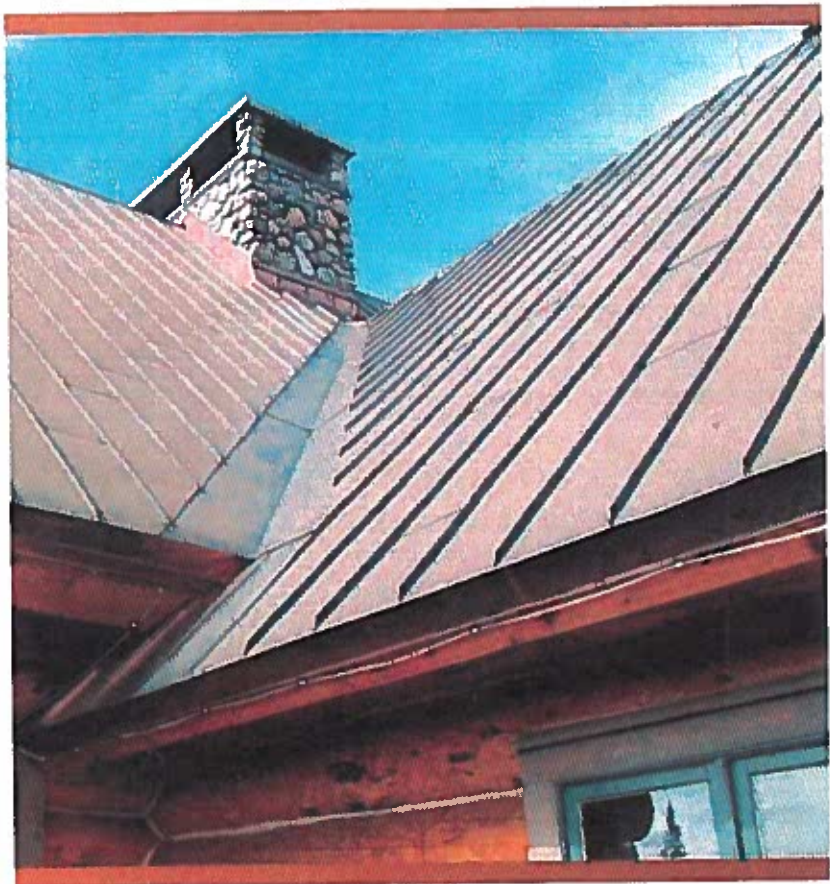
Alternately, at a distance of six inches (6") from each side edge of the valley, a continuous locking strip creating a three-quarter-inch (3/4") lock may be soldered to the valley sheet.

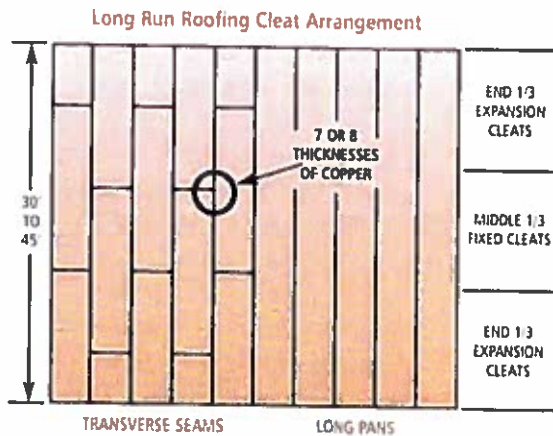
Either method of side edge construction prevents water from forcing its way past the opposite side of the valley flashing. Where the ends of the standing seam hook into the fold formed in the valley sheet or into the separately applied locking strip, these ends are turned down in the direction of flow, or they may be cut and folded back. (See 02\_SS\_17)

Where roofs are of different slopes or of unequal surface areas and deliver unequal quantities of water into the valley, a one-inch (1") high inverted "V" may be incorporated in the center of the valley. (See Valley Flashing Section for details.)

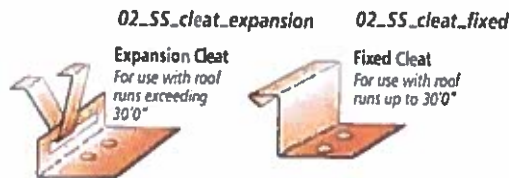


02\_SS\_17 VALLEY EDGE





THERE IS NO ASSURANCE OF SLIPPAGE BETWEEN ROOF PANELS  
SEAMS MAY EXPAND AND CONTRACT FROM THE EAVE  
TO THE RIDGE AS A UNIT



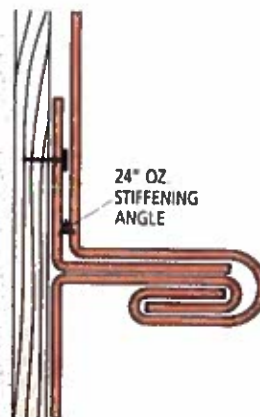
## Cleat Placement

Copper or stainless steel cleats should be installed in the standing seams spaced twelve inches (12") apart. If stainless steel cleats are used in lieu of copper they should be of passivated, Type 302/304 (non-magnetic) stainless.

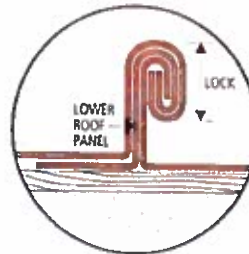
Where the length or run of the standing seams is thirty feet (30') or less, one-piece, fixed cleats may be used. Where the length of run of the standing seams exceeds thirty feet (30') and up to forty-five feet (45'), a combination of fixed and expansion cleats should be used. Fixed cleats should be installed at the middle one-third of the roof run. The balance of the cleats, above and below the fixed cleats, should be expansion cleats. Installing cleats in this manner "pins" the center of the roof and directs expansion movement toward both ends.

The use of expansion cleats where the length or run of the standing seams is thirty feet (30') or less is not detrimental, but may be more expensive than the use of fixed cleats.

Where the length or run of the standing seams exceeds forty-five feet (45'), consult Revere's Architectural Services Department.



02\_SS\_16 STANDING SEAM  
ON VERTICAL WALL



## 02\_SS\_18 8 "THICKNESSES" OF COPPER IN SEAM

NOTE: 8 "THICKNESSES" OF COPPER IN SEAM  
At a transverse seam location (three pans meet), there will be 7-8 thicknesses of copper. (On the long pan side, this would be where a cleat is.) When the final hemming is done, the metal can be "pressed" together so tightly that the movement may be restricted. Therefore, using a combination of fixed and expansion cleats will allow the roof to move. Dividing the roof into thirds, the fixed cleats should be installed in the middle third, with expansion cleats on either end. This will secure the center of the roof and direct the expansion movement toward both ends.

## Wall conditions

### Seam Orientation

When used to clad vertical or nearly vertical walls, standing seams may be installed vertically, horizontally, or at an angle. If they are installed horizontally or at an angle they may act as gutters. If it is likely that water will flow over the seams the pans should be installed with the lock on the down slope side.

Standing seams installed horizontally or at an angle may also act as shelves and collect air borne dirt, pollen, etc. Such accumulated dirt may later wash down onto the copper and stain it. Sloping the seam downward to provide positive drainage may minimize this problem.

Horizontal standing seams can be bent by snow and ice, vandalism or similar physical forces. Such damage may be minimized by providing a 24-ounce stiffening angle in the seam, as shown.

### Transverse Seams

Although constructing transverse seams as described for steep pitch roofs provides the most weathertight condition, three-quarter-inch (3/4") locks may be used when standing seams are installed on vertical walls. If it is likely the seam will act as a gutter or shelf, the transverse seams (vertical seams when standing seams are horizontal) should be filled with sealant.

### Wall Openings, Corners, etc.

Finishing standing seam wall cladding at wall openings, inside and outside corners, at grade or bottom of the cladding are discussed in (Section 3I Wall Cladding).



# Standing Seam Construction

## Specifications for roofs with standing seams

### Workmanship Surfaces

Surfaces to be covered with copper shall be smooth and free from defects of every description. Surfaces shall be cleaned of dirt, rubbish and other foreign materials before copper work is started. Projecting nails shall be driven flush.

### Roofing Underlayment

Surfaces to receive copper shall be covered with roofing felt and/or other approved underlayment in accordance with manufacturer's instructions. When saturated felt is used, each ply shall lap at least two inches (2") in direction of flow and shall be nailed with copper or copper alloy nails driven through sheet copper washers at least one inch (1") square. Fasteners and washers shall finish flush with the underlayment. Nails in roofing felt shall be spaced not more than six inches (6") apart on all lapped seams.

### Pan Method – General

Roofing pans shall be formed of Revere (12-ounce)(16-ounce)(20-ounce) copper. Pans shall be made from (sheets eight (8') or ten (10') feet long) or (coils), and not more than twenty-four inches (24") wide. (Pans made of Revere 12-ounce copper shall be made from sheets or coils not more than eighteen

inches (18") wide). No straight run of standing seam copper shall exceed forty-five feet (45').

Alternate pans formed from sheets shall begin at eaves with half (1/2) length sheets, thereby staggering the transverse seams. Cleats shall be spaced twelve inches (12") apart in each standing seam. Each cleat shall be secured with two (2) copper, copper alloy or stainless steel nails or screws. Pans shall be formed to allow one-sixteenth inch (1/16") minimum space at the base of each standing seam.

For standing seam roofs up to thirty feet (30'), one-piece, fixed cleats shall be installed twelve inches (12") apart.

Straight runs of standing seams in excess of thirty feet (30'), up to forty-five feet (45') shall be installed with both fixed and expansion cleats. Fixed cleats shall be placed at the middle third of the run and copper expansion cleats shall be placed in the remaining lower and upper portions of the run.

Roofing pans shall be loose-locked to valley flashing and edge strip at eave.

### Standing Seam

Standing seams shall finish one inch (1") high, except on curved surfaces. One side edge shall be bent up one-and-one-half inches

(1-1/2") and the other one-and-three-quarter inches (1-3/4"). First fold shall be single fold, one-quarter inch (1/4") wide; second fold shall be one-half inch (1/2") wide. Locked portion of standing seam shall be five (5) plies in thickness. Lower ends of standing seams at eaves shall be folded over at 45° angle. Where standing seams terminate at ridge and hip, they shall be laid flat approximately six inches (6") from the ridge or hip and folded into the ridge or hip standing seam at that point.

### Transverse Seams

1. For roof slopes six inches (6") or more per foot:

Lower end of each pan shall be folded under three-quarter inch (3/4"). Fold shall be slit one inch (1") away from corner to form tab where the pan turns up to make the standing seam. Upper end of each pan shall be folded over two inches (2"). The three-quarter-inch (3/4") fold on lower end of upper pan is hooked into a two-inch (2") fold on upper end of underlying pan.

2. For roof slopes three (3) to six inches (6") per foot:

Lower end of each pan shall be folded under three-quarter inch (3/4"). Fold shall be slit one inch (1") away from corner to form tab from where the pan turns up to make the standing seam. Upper

end of each pan shall be folded over one-half inch (1/2"). A locking strip, one-and-one-half inches (1-1/2") wide and full width of pan, shall be continuously soldered to pan four inches (4") below top folded edge. The three-quarter-inch (3/4") fold on lower end of the upper pan shall hook into locking strip of underlying pan.

## Hips and Ridges

Ridges and hips shall be provided with standing seams constructed as specified for standing seams of main roof.

## Valleys

Valley sheets shall be Revere 20-ounce cold rolled copper, not exceeding ten feet (10') in length. Each sheet shall lap lower sheet at least six inches (6") in direction of water flow.

Valley sheets shall extend under roofing sheets on both sides at least six inches (6"). The outer edge of the valley sheet should be folded one-half inch (1/2") for cleating. The copper cleats shall be installed in these folds no more than eighteen inches (18") apart.

At valley line adjacent to the lower edge of the roofing sheets, a three-quarter-inch (3/4") double fold shall be made to engage a three-quarter-inch (3/4") single lock at lower ends of roofing sheets.

Alternately, a continuous strip of Revere 20-ounce cold rolled copper shall be soldered to the valley sheet to form a lock for the lower ends of the roofing sheets.

## Eaves

At eaves where no gutters occur, each pan shall be hooked three-quarter inch (3/4") over previously placed Revere 20 ounce cold rolled copper edge strip. Edge strips shall be formed from sheets eight (8') or ten feet (10') long. Ends of each length shall be lapped one inch (1"). Edge strip shall extend up on roof under copper roofing at least four inches (4"), and be secured with copper, copper alloy or stainless steel nails or screws along the upper edge spaced four inches (4")

apart. Face nailing of edge strips shall not be permitted. Where box gutters occur at eaves, ends of roofing pans shall be loose-locked into gutter as specified under built-in box gutters. Roof pans shall be loose locked to valley flashing and edge strip at eaves.

## Gable Rakes

Pans against gable rakes shall turn up vertically one-and-one-half inches (1-1/2") and lock into a separate Revere 16-ounce cold rolled copper fascia strip, forming a standing seam one inch (1") high. Continuous edge strip of Revere 20-ounce cold rolled copper shall be attached to the edge of roof boarding with copper, copper alloy or stainless steel nails or screws spaced four inches (4") apart. Lower edge of fascia strip shall be hooked a minimum of three-quarter inch (3/4") over edge strip to form drip.

3.A.9







## 5. PHOTOGRAPHS



Front (south) Elevation



East Elevation



Rear (north) Elevation and kitchen ell

## 6. TREE SURVEY

NA

## 7. ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS

Maryland Department of Natural Resources  
11950 Clopper Road  
Gaithersburg, MD 20878

Ms. Carolyn Irwin  
14015 Montevideo Road  
Poolesville, MD 20837