MONTGOMERY COUNTY HISTORIC PRESERVATION COMMISSION
STAFF REPORT

Address:	13910 Lewisdale Rd., Clarksburg	**Meeting Date:**	6/12/2019
Resource:	Master Plan Site #10/52 Charles Browning Farm	**Report Date:**	6/5/2019
Applicant:	M-NCPPC **Montgomery Parks**	**Public Notice:**	5/29/2019
Review:	HAWP	**Tax Credit:**	n/a
Case Number:	10/52-19A	**Staff:**	Dan Bruechert
Proposal:	Roof Replacement		

RECOMMENDATION

Staff recommends the HPC approve the HAWP application.

ARCHITECTURAL DESCRIPTION

SIGNIFICANCE: Individually Listed Master Plan Site #10/52 (*Charles Browning Farm)*
STYLE: Folk Victorian
DATE: c.1850 w/ later additions

From Places from the Past:
The Charles Browning farmstead sites in a low valley overlooked by Sugarloaf Mountain, adjacent to the Little Bennett Golf Course. Charles Browning built the house, probably soon after he and his father Perry Browning bought the land in 1849. The original section was likely a three-bay, center entrance structure, now the west wing (right). The west external chimney with stone base has a fireplace only on the first level and a freestanding brick stack on the second level. In the later 1800s, the Browning family expanded the house to its present for with rea ell, east wing, and full-width porch. Considering the simple, folk form of the house, interior details are surprisingly sophisticated with elegant mantels and scrolled stair ends. The latter bear similarity with the Ziegler House. A 1 ½-story kitchen building has board and batten siding and an externa chimney. A bank barn has round-arched louvered windows. Other early outbuildings include a smokehouse, spring house, and double corncrib. In 1919, Ernest Mullican bought the farm, adding a concrete block dairy barn and milk house.

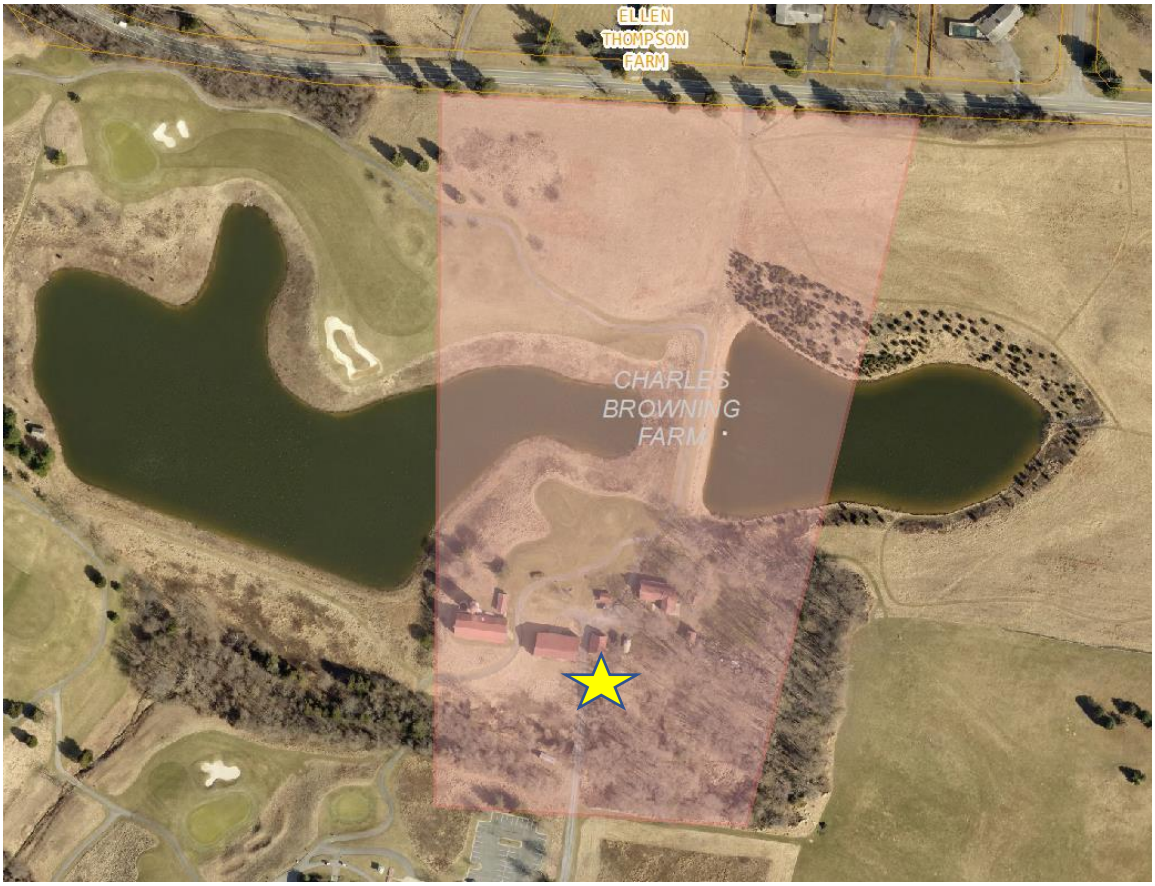

Figure 1: The Charles Browning farm is now located in the middle of the Little Bennett Golf Course.

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 tin 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 will not rust or corrode, and will more closely match the profile of the existing roof. None of these advantages would 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.

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.

876562

[redacted]

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

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: MNCPPC Daytime Phone No.: _____

Address: 8301 THICKET DRIVE GAITHERSBURG 20879
Street Number City Street Zip Code

Contractor: _____ Phone No.: _____

Contractor Registration No.: _____

Agent for Owner: _____ Daytime Phone No.: _____

LOCATION OF BUILDING/PREMISE

House Number: 13910 LEWISDALE Street: _____

Town/City: CLARKSBURG 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: 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 EXTENSIONS/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 of owner or authorized agent

5.22.19
Date

Approved: _____ For Chairperson, Historic Preservation Commission

Disapproved: _____ Signature: _____ Date: _____

Application/Permit No.: _____ Date Filed: _____ Date Issued: _____

Edit 6/21/99

SEE REVERSE SIDE FOR INSTRUCTIONS

[redacted]

DPS - #8

HISTORIC PRESERVATION COMMISSION
301/563-3400

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.: _____

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Street Number City Street Zip Code

Contractor: _____ Phone No.: _____

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LOCATION OF BUILDING/PREMISE

House Number: 13910 Street: LEWISDALE

Town/City: GAITHERSBURG 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 estimate: $ _____

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

PART TWO: COMPLETE FOR NEW CONSTRUCTION AND EXTEND/ADDITIONS

2A. Type of sewage disposal: 01 ☐ WSSC 02 ☐ Septic 03 ☐ Other: _____

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Signature of owner or authorized agent

5.22.19
Date

Approved: _____ For Chairperson, Historic Preservation Commission

Disapproved: _____ Signature: _____ Date: _____

Application/Permit No.: _____ Date Filed: _____ Date Issued: _____

Edit 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*:

> *... Charles Browning built the house, probably soon after he and his father bought the land in 1849. The original section was likely a three-bay, center entrance structure, now the west wing. The west external chimney with stone base has a fireplace only on the first level and a freestanding brick stack on the second level. In the later 1800s, the Browning family expanded the house to its present form with rear ell, east wing, and full-width porch...*

The house, listed in the Montgomery County Master Plan for Historic Preservation as resource number 10/52, now sits in the middle of the Little Bennett Golf Course. Although it was historically accessed from, and its address is, Lewisdale Road, now access to the property is via a long drive that leads from the golf course parking lot to the rear of the house. The property is very removed from Lewisdale Road, and its view from the parking lot buffered by topography, farm buildings, and forestation.

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

5. PHOTOGRAPHS

Front (north) Elevation, facing Lewisdale Road, and East Elevation

Rear (south) Elevation

Rear (south) Elevation and West Elevation (with chimney)

6. TREE SURVEY

NA

7. ADDRESSES OF ADJACENT AND CONFRONTING PROPERTY OWNERS

14005 Lewisdale Road
Clarksburg, MD 20871

14001 Lewisdale Road
Clarksburg, MD 20871

13913 Lewisdale Road
Clarksburg, MD 20871

13909 Lewisdale Road
Clarksburg, MD 20871

13905 Lewisdale Road
Clarksburg, MD 20871

13917 Lewisdale Road
Clarksburg, MD 20871

26005 Prescott Road
Clarksburg, MD 20871

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	937

M.H.I.C. # 41616

Bill To	Project Address
APSection@mncppc.org	MNCPPC- 13910 Lewisdale Rd. Clarksburg, MD 20871

Description	Total:
Set scaffolding up to access roof as needed. Roof mechanic- 21.5 manhours, Laborer- 21.5 manhours.	3,655.00
Remove all existing metal roofing on house down to sheathing. Roof mechanic- 40 manhours, Laborer- 40 manhours Inspect woodwork. Any and all woodwork to be performed on a time and material basis, added to total contract price.	6,800.00
Install shop fabricated traditional 1 inch high double lock standing seam roof panels on entire roof areas using Revere 16 ounce copper, 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 and valleys. Roof mechanic- 343 manhours, Laborer- 343 manhours Hips and ridges to be 1 inch high to match field seams.	58,310.00
Shop fabricate built-in gutter liner for front porch using Revere 16 ounce copper. Roof mechanic- 15- manhours, Laborer 15- manhours	2,550.00
Replace flashing at three chimneys using Revere 16 ounce copper let into masonry joints and caulked using clear Geo-Cel caulk.	
Remove existing lightning protection system, install back to match existing design on new roof using stainless steel clamps. (not sure of existing condition) Roof mechanic- 5.5 manhours, laborer- 5.5 manhours Remove all snow guards, not installing back due to poor design.	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: _____ 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	937

M.H.I.C. # 41616

Bill To	Project Address
APSection@mncppc.org	MNCPPC- 13910 Lewisdale Rd. Clarksburg, MD 20871

Description	Total:
Replace up to 210 feet of 6 inch half round white aluminum gutter using fascia mounted hangers 2 feet on center. Roof mechanic- 16.5 manhours, Laborer- 16.5 hours	2,805.00
Replace up to 190 feet of 4 inch round white aluminum downspouts using strap hangers 10 feet on center. Roof mechanic-8.9 manhours , Laborer- 8.9 manhours.	1,513.00
All debris removed into dumpster for removal from site. Magnet run over ground daily. Material Cost: Raw copper sheets, paper, ice and water shield, fasteners, gutter and downspouts, caulk and dumpster. Workmanship guaranteed against leakage for a period of 5 years. All copperwork to meet or exceed Revere copper and common sense manual specifications.	27,140.00
Bonding cost-	2,595.00
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: $106,303.00

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: _____ DATE: _____ Clifford Layman President

Standing Seam Construction

3A

Contents:

3.A.1

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 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.

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

Standing Seams

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

	Square feet of copper		
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

3.A.3

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.

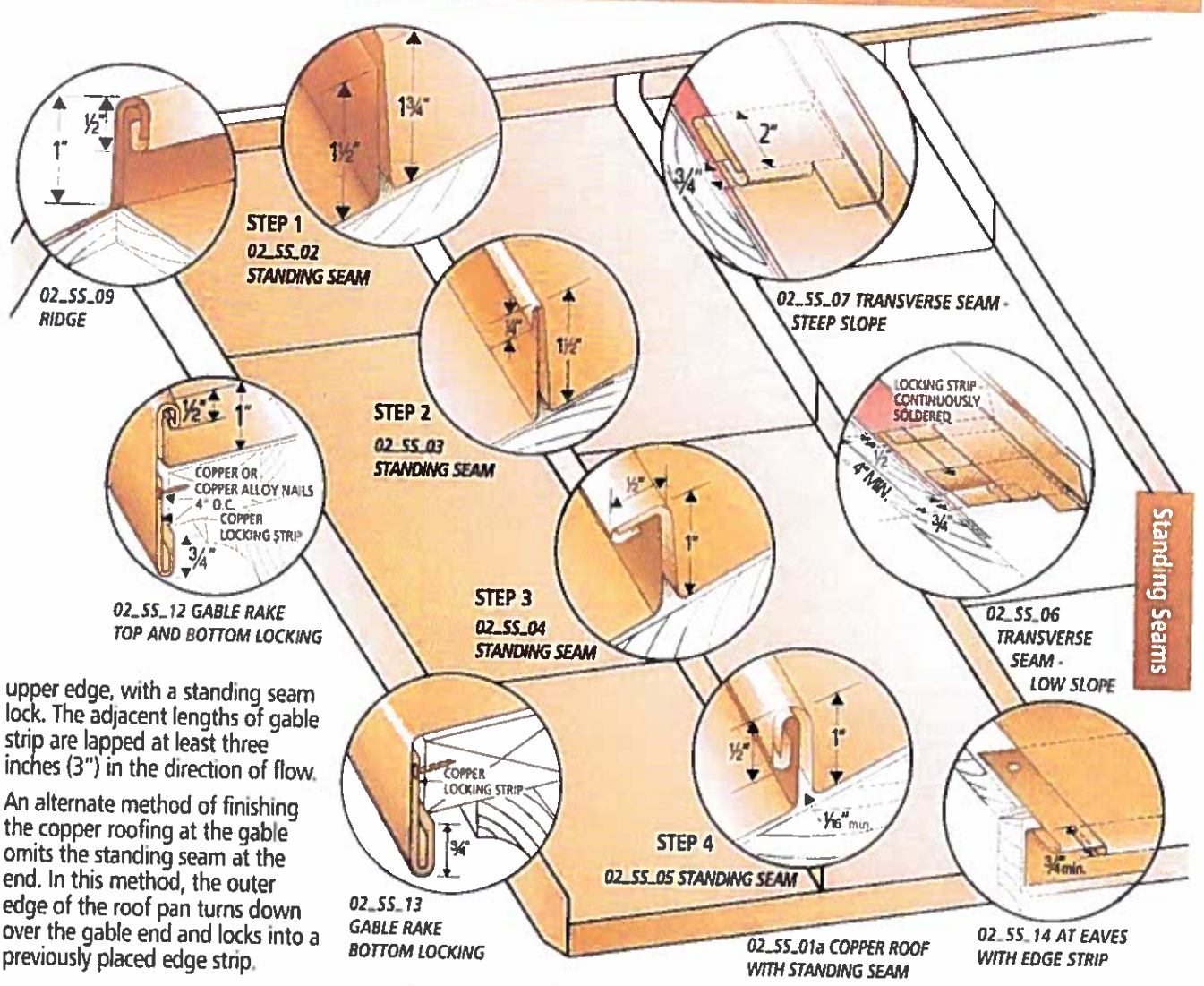
Eaves

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.

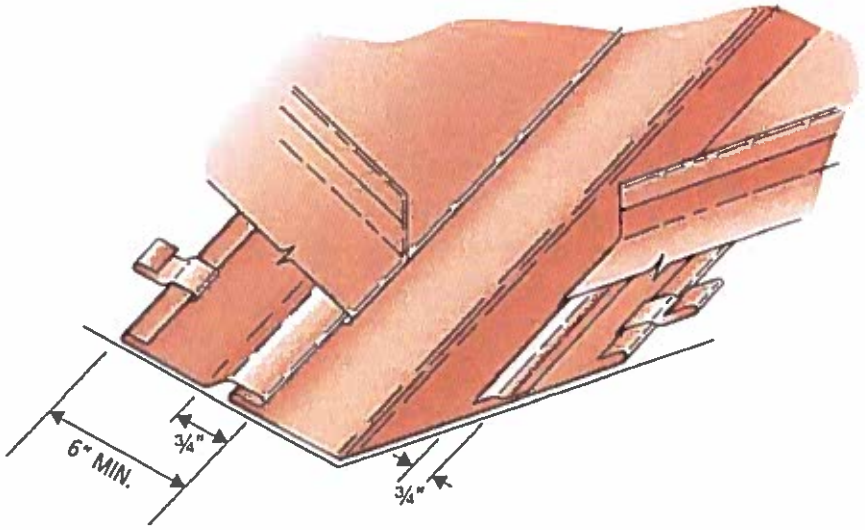
The sides of each valley sheet are folded one-half inch (1/2") for cleating. Two-inch (2") wide copper cleats, spaced not more than eighteen inches (18") apart, are hooked into these folded edges and secured with two (2) copper or copper alloy nails or screws.

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.

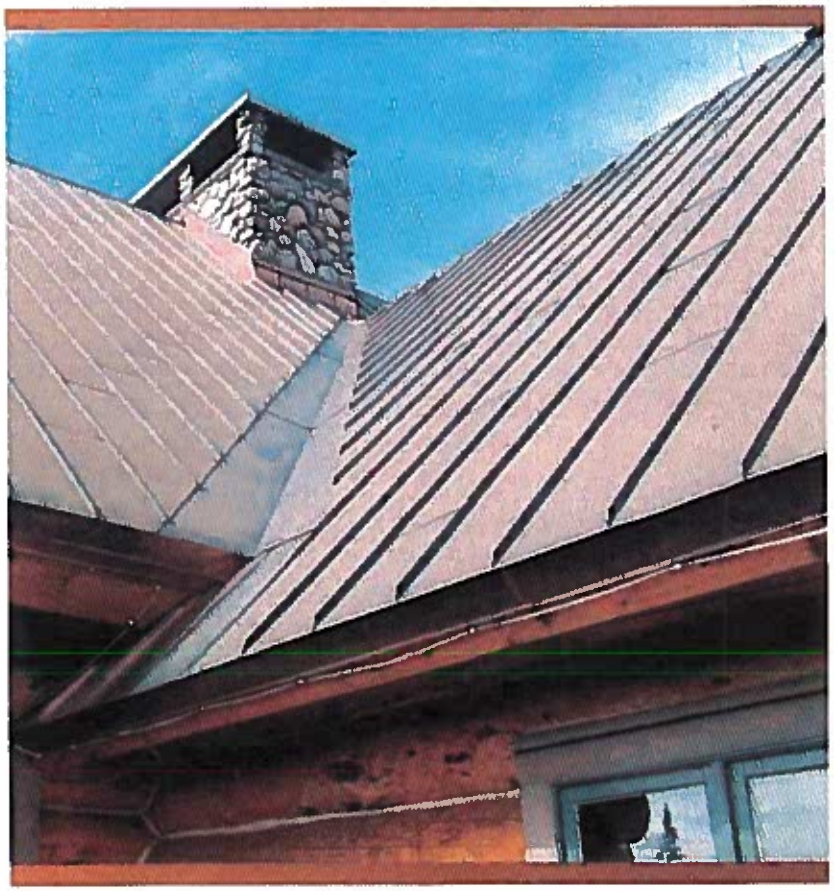
Alternately, at a distance of six inches (6") from each side edge of the valley, a continuous locking strip creating a three-quarter-inch (3/4") lock may be soldered to the valley sheet.

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)

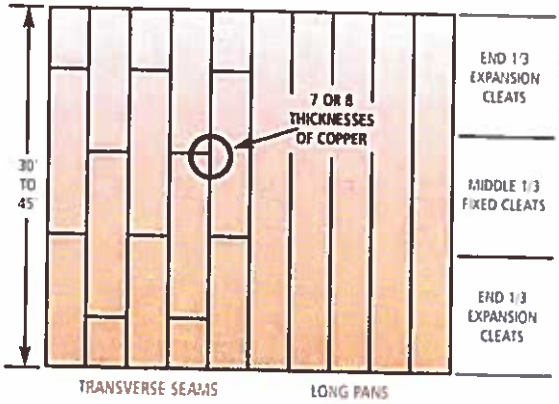
Where roofs are of different slopes or of unequal surface areas and deliver unequal quantities of water into the valley, a one-inch (1") high inverted "V" may be incorporated in the center of the valley. (See Valley Flashing Section for details.)



02_SS_17 VALLEY EDGE



Long Run Roofing Cleat Arrangement



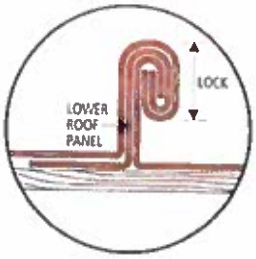
THERE IS NO ASSURANCE OF SLIPPAGE BETWEEN ROOF PANELS SEAMS MAY EXPAND AND CONTRACT FROM THE EAVE TO THE RIDGE AS A UNIT

02_SS_cleat_expansion

Expansion Cleat
For use with roof runs exceeding 30'0"

02_SS_cleat_fixed

Fixed Cleat
For use with roof runs up to 30'0"



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.

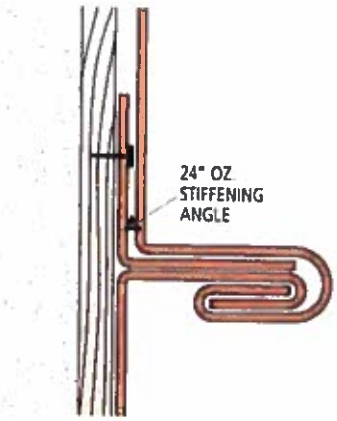
Cleat Placement

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

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