

GENERAL ROOFING REQUIREMENTS

DOCUMENT NUMBER: 07500

APPLICATION: ELEMENTARY, MIDDLE AND HIGH SCHOOL

DATE OF ISSUE:

- 01-13-16 - Revised requirements for prefinished edge metals and roof drains. Revised audit requirements and added weather station requirement.
- 02-04-13 - Identified specific conditions where the use of 24 gauge stainless steel flashing is allowable without Owner's prior approval.
- 01-17-13 - Miscellaneous revisions
- 11-02-12 - Replaced APP roofing system description w/ System 4 spec; Revised references to HCPS Standard Roof Specifications; Revised gravel stop installation requirements
- 11-10-11 - Restored APP roofing system description; Revised references to HCPS Standard Roof Specifications
- 06-03-11 - Replaced roofing system descriptions with reference to new specification
- 07-21-09 - Revised acceptable thickness and application for aluminum
- 01-26-09 - Eliminated references to specific manufacturers and systems
- 09-18-08 - Added Bldg. Number(s) to Roof Warranty; clarified "prefinished" metal
- 03-31-08 - Replaced General Note 1; Added Post-Installation Audit; Misc. Revisions
- 05-05-04 - Clarified general note 1
- 10-24-03 - clarified base sheet
- 06-26-03 - revised notes, added coping and roof drain details
- 03-13-03 - format changes, deleted NRCA detail
- 03-04-03 - miscellaneous revisions

NOTES:

General

1. Provide a membrane roofing system in accordance with one of the following specifications:
 - i. 07 52 16.1A – HCPS Roofing System 1A, (Mopped Cap + Mopped Interply & Felt-Ply Sheet)
 - ii. 07 52 16.1B – HCPS Roofing System 1B, (Torched Cap + Mopped Interply & Felt-Ply Sheet)
 - iii. 07 52 16.2 – HCPS Roofing System 2, (Torched Cap + Torched Interply)
 - iv. 07 52 16.3 – HCPS Roofing System 3, (Torched Cap + Mechanically Attached Interply)
 - v. 07 52 16.4 – HCPS Roofing System 4, (Fully Adhered w/ Cold-Applied Adhesive)
 - vi. 07 52 16.5 – HCPS Roofing System 5, (Single-Ply Thermoplastic Roofing Membrane)
2. Comply with NRCA and SMACNA recommendations and details for all roofing work, except as modified by the attached details.
3. All roofing materials shall be kept dry. **Roofing materials stored on site prior to installation shall be covered with a breathable tarp-type cover.** Manufacturer's protective wrap will be allowed to remain, in addition to the breathable tarp. **The use of visqueen to cover roofing materials stored on site is strictly prohibited.** Follow recommendations of *PIMA Technical Bulletin #109* for care and handling of polyisocyanurate roof insulation.
4. Dried-in roofs should be capped within 30 days, but shall not exceed manufacturer's acceptable limit.
5. New roofs are to have a ¼" (min.) slope.
6. Provide walk pads around all mechanical equipment and roof hatches.
7. Comply with applicable code requirements for EHPA roofs.

Fasteners

1. Fasteners shall comply with ASTM F 1667 and shall be corrosion resistant and compatible with type of metal being fastened.
 2. Pop rivets, when used, shall be 1/8" dia. stainless steel.
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Flashing, Vent Stacks and Expansion Joints

1. Unless directed otherwise, metal flashing shall be .050" mill finish aluminum, with the following exceptions: a) counterflashing that will be attached to steel curb covers or masonry walls may be 24 gauge stainless steel, and b) penetration flashings where field welding or soldering is preferred for certain penetrations may also be 24 gauge stainless steel. In all other cases, other metals, including 22 gauge prefinished* galvanized, 26 gauge stainless steel or, in highly corrosive environments, 16 oz. copper, may be specified only if pre-approved in writing by the Owner.
2. All metal flashings are to be primed on both sides before application of the stripping.
3. Exposed PVC, rubber, or similar synthetic materials shall not be used for expansion joints or control joints, etc. Such accessories shall have rigid metal covers.
4. Flashings are required to extend a minimum of 8" above the finished roof for roof mounted equipment, expansion joints, etc.
5. Vent stacks and other roof penetrations are to be flashed a minimum of 8" high (measured from the finished roof), with an approved liquid membrane flashing system.
6. In reroofing applications, where existing 2" or larger diameter vent stacks will be shorter than the minimum allowable height above the finished roof surface, provide pre-fabricated heavy-wall PVC plumbing vent pipe extensions, equal to Tubos®, as manufactured by Tubos, Inc. (<http://www.tubos.biz>) Where such vent stacks are less than 2" in diameter, stainless steel inserts shall be used to extend the height.
7. Provide solid P.T. wood blocking to match the thickness of the insulation for nailing gravel stops. Use galvanized or stainless steel fasteners.

* Prefinished = factory-applied coatings containing minimum-70%-by-weight "Kynar 500" PVDF resin, or laminated membrane compatible with specified single-ply roofing membrane, color to be selected by Owner from manufacturer's full range.

Coping Covers, Drip Edges, Gravel Stops, Scuppers, Gutters and Downspouts

1. Coping covers, drip edges, gravel stops, gutters and downspouts shall be fabricated from .050" mill finish aluminum, unless directed otherwise. Other metals, including 22 gauge prefinished* galvanized, 26 gauge stainless steel or, in highly corrosive environments, 16 oz. copper, may be specified only if pre-approved in writing by the Owner.
2. Coping covers shall have continuous cleats on both sides of all parapet walls and free-standing walls, with drive cleats at the joints. Provide a 6" long back-up plate. Coping covers are to be continuously crimped to the cleat, both sides. Crimping must be sufficient to permanently engage the cleat without restraining linear movement.
3. Corner sections of coping covers are to be pre-fabricated and Heli-arc welded. Corner sections shall be minimum 2' long, inside dimension of each leg.
4. Gravel stops shall have 6" long back-up plates. Lap ends a minimum of 6" and seal with mastic (no cover plates). Provide raised edge along rakes.
5. Provide leaf baskets in all conductor heads and leaf screens in all gutters. Fasten with 3/4" stainless steel hex screws with neoprene washers.
6. Gutters shall be supported by hanger brackets formed from 1 1/4" x 1/4" aluminum and spaced 30" apart.

- Downspouts shall be supported by U-shaped wall brackets formed from 1¼" x ¼" aluminum and mounted to wall directly behind downspout. Secure downspout to wall bracket using ¾" long screws with washers.

* Prefinished = factory-applied coatings containing minimum-70%-by-weight "Kynar 500" PVDF resin, **or laminated membrane compatible with specified single-ply roofing membrane, color to be selected by Owner from manufacturer's full range.**

Coping Covers, Drip Edges, Gravel Stops, Scuppers, Gutters and Downspouts (cont'd.)

- Through-wall scuppers, overflow scuppers, and scuppers at raised roof edges shall be flashed with an approved liquid membrane flashing system, as described in the next section.
- Raw or cut edges of openings at downspout outlets shall be wrapped with vinyl/rubber safety trim, similar to that used on the edges of car doors, so as to avoid cuts and abrasions on the hands of persons maintaining the downspouts.

Sealants & Liquid Membrane Flashing

- Sealant at metal-to-roofing-membrane:** A one-component, gun grade, elastomeric sealant, meeting the following requirements of ASTM C920: Type S, Grade NS, Uses T₁, NT, M, A, G and O, equal to M-1 Structural/Adhesive Sealant, as manufactured by CHEM LINK Inc.
- Sealant at metal-to-metal or wall:** A premium, very low-modulus, high-movement, nonsag, fast-curing, ready-to-use, silyl-terminated polyether sealant, meeting the following requirements of ASTM C920: Type S, Grade NS, Class 100/50, Uses NT, M, G, A and O, equal to Sonolastic 150 with VLM Technology, as manufactured by BASF Building Systems.
- Liquid Membrane Flashing:** A high-performance, flexible, seamless, self-terminating membrane system consisting of a polyester reinforcing scrim and a two-component adhesive. Acceptable products include, but are not limited to:
 - Alsan RS System, as manufactured by Soprema, Inc.
 - PermaFlash System, as manufactured by Johns Manville, Inc.
 - UltraFlash System, as manufactured by Firestone Building Products Company

Insulation

- When closed cell-type roof insulation is used, a separator board (either ¾" thick perlite board, ½" thick fiberboard or ¼ inch (min.) reinforced treated gypsum board) is required to isolate the asphalt roofing materials from the insulation.
- Insulation board shall not exceed 48" in length or width. Side and end joints in multiple layers of insulation shall be staggered. Mechanical attachment of multiple layers shall be achieved by using fasteners of sufficient length to extend through all layers of insulation. All mechanically attached insulation shall be covered with a separator board before the roof membrane is installed. Separator boards shall be set in hot asphalt or plastic foam adhesive, as recommended by the roofing manufacturer.

Roof Drains

- Asphalt shall not be applied inside roof drains.
- Roof drains are to be equal to JOSAM 21500 series (this drain does not have the adjustable collar extension which has proven to cause leaks). The roof insulation must be tapered to the drain. Vandal-proof cast iron domes are required on all roof drains. Roof drains are to be 4" minimum. Reinforce metal roof decks around all roof drain openings using steel angles fastened to structural members.

3. Clamping rings shall be fastened with marine-grade stainless steel bolts, lock washers, and flat washers sized to fit clamping ring. Apply anti-seize coating to bolt threads prior to installation. Use TFE pipe thread sealant with Teflon, or equal.
 4. Provide overflow scuppers or drains as required to limit ponding between 2" and 3".
 5. Roof drains are to be located a minimum of 3' from the inside edge of the parapet wall or gravel stop.
 6. In reroofing applications where existing roof drains are other than cast iron or connected to rain leaders by means of flexible compression couplings ("*Multi-Tite Pipe Gasket*"), all such roof drains within the project limits shall be replaced. New drains shall be (re)connected to rain leaders using stainless steel, heavy-duty No-Hub couplings with neoprene gaskets and surface bearing stainless steel sealing clamps, equal to *Husky Series 4000*, as manufactured by *Anaco No-Hub Couplings*.
 7. In reroofing applications, except as noted above, replacement of all roof drains within the project limits requires prior written approval by the Owner. Owner's approval is contingent upon receipt of a written justification from the design professional.
 8. In reroofing applications where existing roof drains are to remain, **replace any damaged or missing parts**. Drain bowls, clamp rings and domes shall be cleaned, primed, and painted with a high-performance coating suitable for use on exterior ferrous metal surfaces, such as an aliphatic polyurethane enamel. Color shall match Sherwin Williams SW6965 – Hyper Blue.
 9. **For additional requirements, refer to the individual standard for the proposed roof system.**
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Installation

1. All fishmouths and tears shall be repaired prior to installation of subsequent plies.
2. Avoid the use of pitch pockets by using liquid membrane flashing wherever practical. Where pitch pockets cannot be avoided, they must be filled with pourable asphalt or elastic sealer, then install 28 gauge stainless steel umbrellas over the pitch pan extending up onto the conduit, pipe, etc., flared at the top and filled with sealant, then held in place with a stainless steel draw band. For conduits 3/4" or smaller or around irregular shapes, 4# lead may be used instead of 28 gauge stainless steel.

Post-Installation Audit – Unless specified elsewhere, **the Design Professional** is to provide the following:

1. Upon completion, the installing contractor shall procure a third-party audit certifying that no moisture is present within the roof system. The audit report shall include infrared scans and thermographic images (or nuclear scans and photographic images) of all areas of the roof surface, together with close-ups of roof penetrations and anomalies. The scans shall be performed by a certified operator.
 2. If the audit indicates moisture is suspected, the installing contractor shall, at his expense, confirm or dismiss the finding by sampling the area, making whatever corrections are required, and having the area re-scanned until moisture is no longer detected.
 3. A copy of the final certified audit report, including any intermediate scans, shall be submitted with the closeout documents.
 4. **The audit will include photographic documentation of each new roof. At a minimum for each building, provide a photo taken from a corner of the roof capturing the largest roof area. Provide a second photo from the opposite diagonal corner, again capturing the largest roof area. Provide individual photos of unique details, transitions, curbs, flashing details and penetrations.**
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Weather Conditions

1. **As part of design services, the Design Professional shall provide to the Owner the estimated construction duration in calendar days for the work, as well as the average number of days during the proposed construction period where, historically, daily precipitation exceeds .10 inch. The contract duration will be established as the sum of the above.**

The precipitation days are to be based on the NOAA Summary of Monthly Normals (1981-2010) for Tampa, Florida. Precipitation table is inserted below for convenience.

U.S. Department of Commerce
National Oceanic & Atmospheric Administration
National Environmental Satellite, Data, and Information Service

**Summary of
Monthly Normals
1981-2010**
Generated on 08/04/2015

National Centers for Environmental Information
151 Patton Avenue
Asheville, North Carolina 28801

Elev: 19 ft. Lat: 27.962° N Lon: 82.540° W

Station: TAMPA INTERNATIONAL AIRPORT, FL US GHCND:USW00012842

Precipitation (in.)									
	Totals	Mean Number of Days				Precipitation Probabilities Probability that precipitation will be equal to or less than the indicated amount			
	Means	Daily Precipitation				Monthly Precipitation vs. Probability Levels			
Month	Mean	>= 0.01	>= 0.10	>= 0.50	>= 1.00	.25	.50	.75	
1	2.23	6.8	4.0	1.8	0.5	1.26	2.22	3.30	
2	2.81	6.6	3.8	1.7	0.8	1.18	2.05	3.67	
3	3.03	6.6	4.1	1.9	1.0	0.98	1.91	4.27	
4	2.03	4.9	3.1	1.2	0.6	0.95	1.68	2.64	
5	2.10	5.5	3.4	1.4	0.6	0.74	1.68	2.50	
6	6.68	12.7	9.2	4.2	2.2	4.64	6.62	8.93	
7	7.07	15.9	10.6	4.8	2.1	3.67	6.95	9.93	
8	7.77	16.0	11.0	5.3	2.5	5.46	7.81	8.82	
9	6.30	12.2	7.7	3.8	2.0	3.87	5.66	8.42	
10	2.26	6.5	3.9	1.4	0.7	0.87	2.14	3.30	
11	1.55	5.1	2.7	0.9	0.4	0.66	1.11	2.06	
12	2.47	5.8	3.5	1.5	0.8	0.99	1.30	2.11	
Summary	46.30	104.6	67.0	29.9	14.2	25.27	41.13	59.95	

@ Denotes mean number of days greater than 0 but less than 0.05.
-7777: a non-zero value that would round to zero
Empty or blank cells indicate data is missing or insufficient occurrences to compute value.

- To verify the weather at the construction site, the contractor is required to provide a weather station located at the field office (preferred) or on the roof of the building and to download and submit the data each month. Refer to the individual roof system standards for specific requirements.

ATTACHMENTS:

- Coping Cap Detail, dated 03-31-08
- Roof Drain Detail, dated 03-31-08
- Roof Drain Flashing Detail, dated 01-17-13