



Oregon Roof Consulting and Inspection

No-Nonsense Roofing Advice for Property Owners: Affordable ~ Thorough ~ Versatile ~ Capable

Serving the Portland Metro area and all of Oregon: (503) 654-4612

Oregon CCB: 199121 ~ WA Lic: OREGORC871MR

PO Box 220190, Milwaukie, OR 97222

Resume' ~ Track Record ~ Experience ~ Qualifications ~ History

Please note : I have 42 years of legitimate verifiable experience as a laborer / grunt / gopher for my brother's roofing business in the 60's, the better part of 3 decades as a roofing contractor, 6 years as an estimator / project manager for 2 large roofing companies and am now nearing the end of my 9th year as the owner / operator of Oregon Roof Consulting and Inspection. I have personally installed over 1,000 roofs and have done at least 14,000 roofing estimates back in the roofing days. Oregon Roof Consulting has participated in 5 courtroom hearings and 16 arbitration hearings in Oregon and Washington and 19 on site CCB mediation meetings in Oregon - all as an expert witness, so, we are familiar with the roofing trade.

I have done work for but not limited to : Homeowners; Businesses and corporations of all sizes; Insurance companies; Banks; Churches; Relocation companies; Roofing contractors; Investment groups; HOA's; Apartment complexes of all sizes; The State of Oregon; Multiple school districts including West Linn; David Douglass; and every elementary, middle, and high school in both Hood River and Wasco (The Dalles) counties; United States Coast Guard in Astoria; etc. I have done jobs all over Oregon and Washington; All over the San Francisco Bay Area including San Francisco, Oakland, Napa, Richmond, Alameda, Fremont, Pleasanton, Berkeley, Fresno, Sacramento and Reno Nevada. We have also helped with two shingle roofing projects on the remote South Pacific island of Rarotonga (Cook Islands). This is all on my website. See www.oregonroofconsulting.com

Thank you,

Owner of Oregon Roof Consulting & Inspection

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- Affordable ~ Thorough ~ Versatile ~ Capable
- Roofing in Oregon Since 1973
- Project Management & Monitoring
- Inspections ~ Certifications ~ Owner Advocacy

www.oregonroofconsulting.com

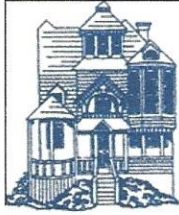
Phone: (503) 654-4612 Cell: (503) 952-6479

Email: joe@oregonroofconsulting.com

PO 220190 Milwaukie, OR 97222

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Joe Sardotz, Owner Operator



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Roof Inspection for : [REDACTED]

Job Address [REDACTED] Springfield, Oregon 97478

I inspected this roof on March 7th, 2022. The roof is a new Owens Corning asphalt laminated shingle in the forest green color. Flat roofs are a GAF TPO membrane in the dark gray color. One layer over plywood. Separate photo emails will be sent. Each will be numbered to correspond with the numbered items on the summary. The following items should be noted :

1. As always I asked to see the proposal / contract. Unfortunately there is no contract. Oregon law requires a detailed signed contract before any work begins. A contract is beneficial for both parties, without one can lead to issues.
2. Shingle nailing has a few issues. Most nails are in the 'nailing strip' which is a positive. A) A small section in back has no starter course and the first 2 rows are nailed at the very top of the shingles. B) Some roof facets are almost vertical. Anything over 21/12 must have 6 nails per shingle – these do, however they are random and not in the 'pattern' that Owens Corning wants. Also each shingle should have 4 quarter size spots of a compatible mastic. This wasn't done. C) I lifted random shingles - carefully – to check nailing. At one area I found shingles with 2 and 3 nails. I have no idea if I just by chance found the only shingles on the entire roof with 2 and 3 nails. It may be wise to lift more shingles to get an idea if this is localized or widespread. **See attached Owens Corning nailing sheets.
3. There is a sheet metal 'box' with a RVO-38 vent on top. There is also a triangle shaped skylite. At the sides of both of these the flashing is continuous. The basic rule for step flashing at a wall, chimney, skylite, box, is that each shingle row gets its' own 90 degree step flashing with a minimum of 3" of these flashings on the roof. This is the industry standard.
4. Code requires flashing at any pitch change. R903.2.1. This unique roof has dozens of pitch changes. I contacted Owens Corning – twice – about this. See attached correspondence from them. I also contacted Eric McMullen who is a Senior Building Code Specialist for the Oregon Building Codes Division. Occasionally I contact Eric if I need absolution. See attached emails from Eric.
5. Pipe flashings are the entry level 'no caulk' type. The rubber collars on these typically fail long before the shingles do. **These rubber collars will last if not

exposed to sunlight. At some point it will be necessary to get new collars at a roofing distributor and just slide collars down pipes onto existing collars. These collars cost between 3-5\$. It will be at least 12-15 years before this collar replacement will be necessary. Long lasting pipe flashings are obtainable either made of lead or a silicone unit called 'The Ultimate'. There is a 1 1/2" plumbing vent pipe coming through the upper cap metal in back. This has been caulked. There are 2 small openings in this caulk. Any pipe really should have a flashing (boot). Here a good fix would be to get a 1 1/2" flat lead pipe jack with cap and put over this pipe. Wrap the lead over the 2 edges of the cap metal. Tap with hammer and flat piece of wood to achieve a nice fit. This would never leak and would be appealing to the eye.

6. There is a detail at the top of the window dormers that is inconsistent. Some are covered with flashing others are exposed. See photos.
7. The TPO on the lower back roof appears to be installed directly over raw / bare waferboard (OSB). I talked to 2 different GAF technical support folks and they said you can install directly over sheathing if the TPO is the 'Fleece Back' type. Fleece back has a rough texture on the underside. Your TPO is smooth on the underside. I was told by GAF that TPO with a smooth underside must have some sort of "separation" layer between the deck and the TPO. There are several acceptable types of separation materials. Verify if your TPO is Fleece Back or not. Issues like this are why a detailed signed contract is a legal requirement.
8. Perimeter TPO flashings must be 'sandwiched' between plies of roofing. Here, the drip flashing was installed then the field TPO is laid directly on the metal. I was told that regardless if the flashing is TPO coated, regular baked on enamel or galvanized flashing that has been primed it must be sandwiched between plies. I contacted GAF twice in 2 days. I spoke with 2 different technical support folks. I asked them both the same exact questions. They both gave the same exact answers. Before I knew the manufacturer of the TPO used on this property I called Johns Manville, Firestone, and Carlisle. All are major manufacturers of TPO roofing. I asked all the same exact questions I asked GAF who is the manufacturer of the roofing used at this property. All answers were the same. Of course it likely will not be difficult to find someone who will contradict others. A now retired Certainteed regional rep once told me that sometimes codes and manufacturers instructions are "clear as mud". Occasionally there are opinion differences between various entities. When there are opinion differences you always go by the most restrictive version. Local and state building officials and construction defect lawyers have told me this.

Conclusion : Detailed signed contracts are a legal requirement. We have the 'Oregon Residential Specialty Code'. Manufacturers spend a lot of time producing online instructions and videos. Certain things must be done a certain way.

**** The Oregon Residential Specialty Code R102.7.1 : 'Additions, alterations or repairs (excluding ordinary repairs) to any structure shall conform to the requirements for a new structure without requiring an existing structure to comply with all of the requirements of this code, unless otherwise stated. Additions, alterations or repairs **shall not cause an existing structure to become unsafe or adversely affect the performance of the building.....'** R905.1 : 'Roof coverings shall be applied in accordance with the applicable provisions of this section and manufacturers installation instructions'. R903.1 : ' Roof Assemblies shall be designed and installed in accordance with this code and the approved manufacturers instructions such that **the roof assembly shall serve to protect the building or structure** '. R105.2 : 'Exemption from permit requirements of this code shall not be deemed to grant authorization for any work to be done in a manner in violation of the provisions of this code or any other laws or ordinances of this jurisdiction'. ****

Thank you,



Owner of Oregon Roof Consulting & Inspection

****This document carries no warranty or guarantee. It is an opinion based on industry standards, manufacturers specifications, local codes and my 44 years of experience****

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Joe Sardotz, Owner Operator

4 Shingle Fastening Pattern:

Place fasteners 6 1/8 inch up from bottom edge of each shingle and 1 inch from each end.

Standard Fastening Pattern

Use four fasteners. See Fig. 4.

Six Nail Fastening Pattern

For 6 nail fastening pattern. See Fig. 4A.

Mansard or Steep Slope Fastening Pattern

Place fasteners 6 1/8 inches from bottom edge to secure both layers of the shingle. Fasteners need to be located 6 1/8 inch above the butt edge of the shingle, regardless of whether they are in the granules or the SureNail® Technology fastening area. See Fig. 4B.



REQUIRED: For slopes exceeding 60 degrees or 21 inches per foot, use six fasteners and four spots of asphalt roof cement per shingle. Apply immediately; one 1 inch diameter spot of asphalt roof cement under each shingle tab. Center asphalt roof cement 2 inches up from bottom edge of shingle tab. See Fig. 4B.

Asphalt Roof Cement where required must meet ASTM D4586 Type I or II (Asbestos Free). **Note: Please be aware that excessive amounts of asphalt roof cement could blister the shingle.**

Six nail fastening pattern is required for maximum wind warranty. In addition, Owens Corning® Starter Shingles are required along the eaves and rake. See Starter Shingle instructions for details.

Fig. 4 Standard Fastening Pattern
Esquema de instalación estándar

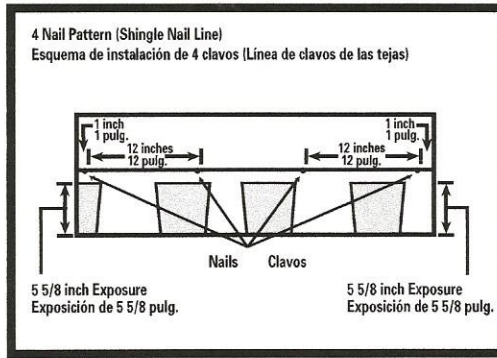


Fig. 4A Six Nail Fastening Pattern
Esquema de instalación con seis clavos

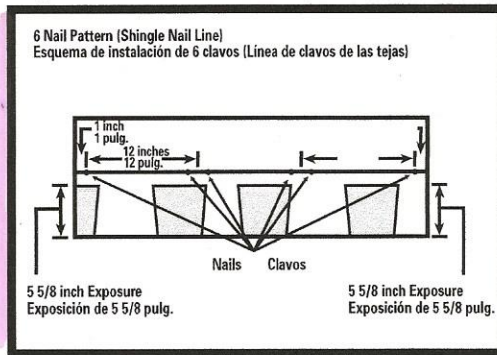
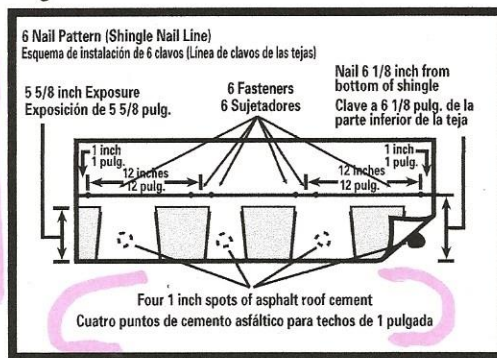


Fig. 4B Mansard or Steep Slope Fastening Pattern
Esquema de instalación en pendientes pronunciadas o mansardas



4 Patrón de fijación de tejas:

Coloque sujetadores a 6 1/8 pulgadas del borde inferior de cada teja y a 1 pulgada de cada extremo.

Patrón de fijación estándar

Utilice cuatro sujetadores. Ver la Fig. 4.

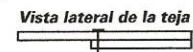
Patrón de fijación con seis clavos

Para un patrón de fijación con seis clavos. Ver fig. 4A.

Patrón de fijación para buhardilla o pendiente pronunciada

Coloque las piezas de fijación a 6 1/8 pulgadas (15,55 cm) del borde inferior para fijar las dos capas de la teja.

Es imprescindible que las piezas de fijación se encuentren 6 1/8 pulgadas (15,55 cm) por encima del borde inferior de la teja, aunque queden sobre los gránulos o en el área de fijación de la tecnología SureNail®. Ver fig. 4B.



REQUISITOS: En el caso de las pendientes que superen los 60 grados o 21 pulgadas por pie, utilice seis sujetadores y cuatro puntos de cemento asfáltico para techos por teja. Aplique inmediatamente un punto de cemento asfáltico para techos de 1 pulgada de diámetro debajo de cada lengüeta de las tejas. Coloque el cemento asfáltico para techos a 2 pulgadas del borde inferior de la lengüeta de la teja. Ver la Fig. 4B.

En los casos en que se requiera, el cemento para techos debe cumplir con la norma ASTM D4586 Tipo I o II (libre de asbesto).

El esquema de fijación de seis clavos es obligatorio para la máxima arantía contra vientos. Además, es necesario instalar las tejas para la hilera inicial de Owens Corning® a lo largo de los aleros y las cornisas. Para obtener más información, consulte las instrucciones de instalación de las tejas para la hilera inicial.

5 Shingle Application:

These shingles are applied with a 6 1/2 inch offset, with 5 5/8 inch exposure, over prepared roof deck, starting at the bottom of the roof and working across and up. This will blend shingles from one bundle into the next and minimize any normal shade variation. Application with offsets of 4 inches or 8 inches are also acceptable.

Caution must be exercised to assure that end joints are no closer than 2 inches from fastener in the shingle below and that side laps are no less than 4 inches in succeeding courses. Refer to course application steps for specific instructions.

(continued on next page)

5 Instalación de tejas:

Estas tejas se instalan con un desplazamiento de 6 1/2 pulgadas y un área expuesta de 5 5/8 pulgadas, sobre estructuras base de techos preparados, comenzando en la parte inferior del techo y realizando la aplicación de forma transversal y hacia arriba. De esta manera, las tejas de un paquete se mezclarán con las del siguiente y se reducirán al mínimo las variaciones normales de tonalidad. Las aplicaciones con desplazamientos de 4 u 8 pulgadas también son aceptables.

Es necesario tener cuidado para garantizar que las uniones de los extremos no queden a menos de 2 pulgadas del sujetador de la siguiente teja y que las superposiciones laterales no sean de menos de 4 pulgadas en las hileras siguientes. Consulte las instrucciones específicas para la aplicación de hileras.

(continúa en la página siguiente)



ITEM 4 ON SUMMARY (1)

Joe Sardotz <joesardotz@gmail.com>

RE: Get Pink Roofing Escalation

5 messages

GETTECH (Owens Corning) <GETTECH@owenscorning.com>
 To: "joesardotz@gmail.com" <joesardotz@gmail.com>
 Cc: "GETTECH (Owens Corning)" <GETTECH@owenscorning.com>

Wed, Mar 9, 2022 at 12:46 PM

Good afternoon,

Code typically requires flashing to be installed at all pitch changes on a roof plane.

If flashing is not used then shingles require face nailing. The Framing many times is rough and will cause buckling or pounding in shingles.

The angle change are subject to leaking and other roof issues.

Owens Corning would recommend the following.

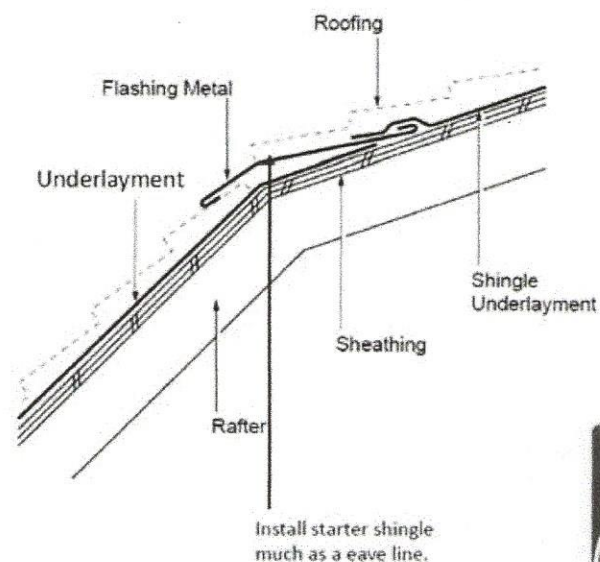
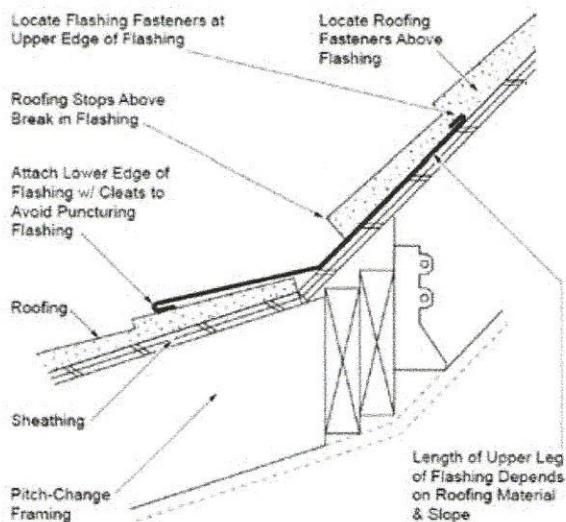
A corrosive resistant sheet metal bent to match roof planes.

SA underlayment ASTM 1970 18" to 36" wide. This ice and water barrier should be shingle lapped on top of the head-lap of shingles below.

Convex angle changes should always be flashed with a 24 gage sheet metal L flashing bent to match roof planes.

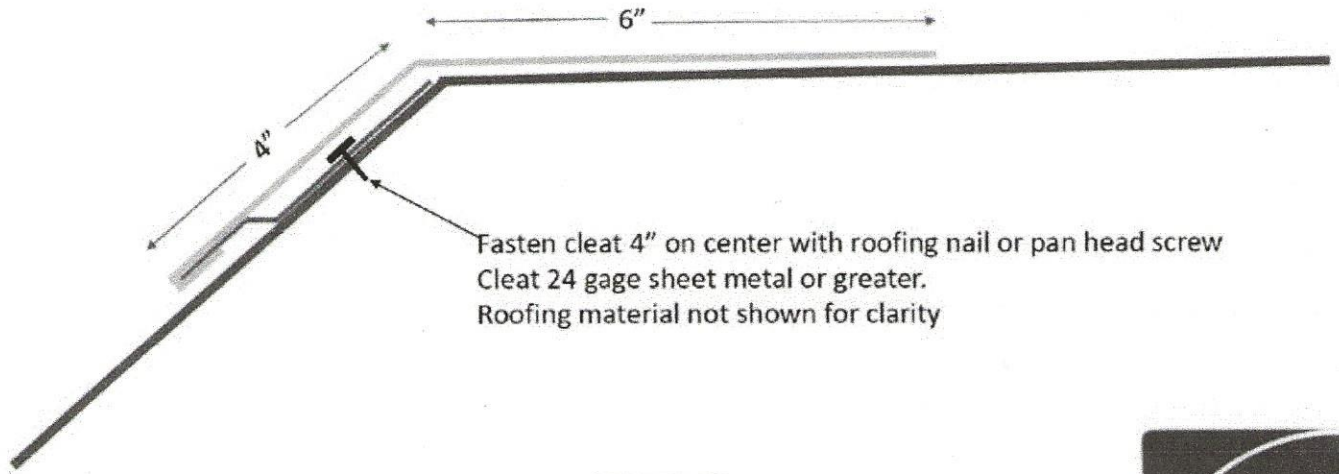
OC Standard Product Warranty covers against manufacturing defects, not workmanship.

Metal Flashing. Attach lower edge of flashing with cleat. A cleat should be 24 gage or thicker to prevent wind up lift. Other option is use screws with washer and rubber gasket no less 12" on center



Cleat Detail

ITEM 4 ON SUMMARY (2)



Not to scale



Thank you for contacting Owens Corning,

Benjamin Abalos Jr.

Product Technical Specialist

GetPink | GETTECH Team

P: 1-800-Get-Pink (438-7465)

GETTECH@owenscorning.com



Roofing

One Owens Corning Parkway
Toledo, OH | 43659-0001 | United States

www.owenscorning.com



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Gmail

ITEM 4 ON SUMMARY (5)

Joe Sardotz <joesardotz@gmail.com>

Fwd: RE: Flashing at pitch changes

2 messages

JOE SARDOTZ <joesardotz@comcast.net>
To: "joesardotz@gmail.com" <joesardotz@gmail.com>

Thu, Mar 10, 2022 at 12:22 PM

----- Original Message -----

From: "GETTECH (Owens Corning)" <GETTECH@owenscorning.com>
To: "joesardotz@comcast.net" <joesardotz@comcast.net>, "GETTECH (Owens Corning)" <GETTECH@owenscorning.com>
Date: 03/10/2022 6:17 AM
Subject: RE: Flashing at pitch changes

Good morning Joe,

Thank you for sending the photos and additional context.

Very unique roof for sure.

It's difficult for us to accurately judge pitch changes and properly inspect your roof via photos, making it complicated to accurately provide guidance as to where we may use/not use flashing at pitch changes.

For hips, I would follow the installation directions for our shingles. I've included a link to the ProEdge® Hip & Ridge Shingles Install instructions below, *just for reference*:

<https://www.owenscorning.com/dms/10017200>

With regard for pitch changes on a vertical axis, we recommend metal flashing.

If flashing is not used then shingles require face nailing. The Framing many times is rough and will cause buckling or pounding in shingles.

The angle change are subject to leaking and other roof issues.

Please remember the Standard Product Limited Warranty covers against manufacturing defects, not workmanship.

Thank you for contacting Owens Corning,

Benjamin Abalos Jr.

Product Technical Specialist

GetPink | GETTECH Team

ITEM 4 ON SUMMARY (4)

P: 1-800-Get-Pink (438-7465)

GETTECH@owenscorning.com



Roofing



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One Owens Corning Parkway
Toledo, OH | 43659-0001 | United States

www.owenscorning.com



From: joesardotz@comcast.net <joesardotz@comcast.net>
Sent: Wednesday, March 9, 2022 5:43 PM
To: GETTECH (Owens Corning) <GETTECH@owenscorning.com>
Subject: Flashing at pitch changes

Hello,

I just received an email from you about 15 minutes ago and I replied saying I would send a few photos so as to verify.

Our code requires flashing at pitch changes however they defer to you in that if you are OK with no flashing at any of these pitch changes then code is OK with that.

Do you see anywhere her where there should be flashing at any of these junctions ?

ITEM 4 ON SUMMARY
(5)

Thank you very much !

Best regards

Joe Sardotz

You have been sent 4 pictures.

- IMG_8209.JPG
- IMG_8210.JPG
- IMG_8170.JPG
- IMG_8171.JPG

These pictures were sent with Picasa, from Google.
Try it out here: <http://picasa.google.com/>



Virus-free. www.avg.com

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Translations available: <http://www.owenscorning.com/emailfooter.html>

Joe Sardotz <joesardotz@gmail.com>
To: daniel coop <dc980g2@gmail.com>

Thu, Mar 10, 2022 at 12:24 PM

This from Owens Corning
[Quoted text hidden]



Eric T. McMullen
Senior Building Code Specialist
503.930.8849 | www.oregon.gov/bcd
eric.t.mcmullen@bcds.oregon.gov

"Working with Oregonians to ensure safe building construction while supporting a positive business climate."

ITEM # 4
ON SUMMARY

From: Joe Sardotz <joesardotz@gmail.com>
Sent: Thursday, March 10, 2022 5:43 PM
To: MCMULLEN Eric T * DCBS <Eric.T.MCMULLEN@dcbs.oregon.gov>
Cc: ROCCO Anthony J * DCBS <Anthony.J.ROCCO@dcbs.oregon.gov>; WILLIAMS Jeremy G * DCBS <Jeremy.G.WILLIAMS@dcbs.oregon.gov>; RAMOS Francisco M * DCBS <Francisco.M.RAMOS@dcbs.oregon.gov>
Subject: Re: Geodesic dome

Thanks Eric I appreciate this. FYI I called the manufacturer and they.....heck, I'll just send you what they sent me.

All the best to you and yours !

Best regards

Joe Sardotz

Oregon Roof Consulting and Inspection

www.Oregon Roof Consulting and.com. (Just started year #10)

On Wednesday, March 9, 2022, MCMULLEN Eric T * DCBS <Eric.T.MCMULLEN@dcbs.oregon.gov> wrote:

Hi Joe,

Unfortunately, there are rarely yes or no answers in the code world! But, yes, ORSC Chapter 9 applies to all construction of one and two-family dwellings and townhouses that fall within its prescriptive parameters. The ORSC is a prescriptive code that is intended to be followed to obtain a minimum determined outcome. In most cases, the code does not contemplate unique structures such as geodesic dome homes therefore it's not always a linear path.

The ORSC does address flashing at changes in roof slope or direction in Section R903.2.1, included below. A plain reading would indicate that flashing would be required at every change in direction or slope on a geodesic dome roof.

R903.2 Flashing. Flashings shall be installed in a manner that prevents moisture from entering the wall and roof through joints in copings, through moisture permeable materials and at intersections with parapet walls and other penetrations through the roof plane.

R903.2.1 Locations. Flashings shall be installed at wall and roof intersections, wherever there is a change in roof slope or direction and around roof openings. A flashing shall be installed to divert the water away from where the eave of a sloped roof intersects a vertical sidewall. Where flashing is of metal, the metal shall be corrosion resistant with a thickness of not less than 0.019 inch (0.5 mm) (No. 26 galvanized sheet).



ITEM #4 on SUMMARY

Joe Sardotz <joesardotz@gmail.com>

RE: Geodesic dome

7 messages

MCMULLEN Eric T * DCBS <Eric.T.MCMULLEN@dcbs.oregon.gov>

Fri, Mar 11, 2022 at 6:42 AM

To: Joe Sardotz <joesardotz@gmail.com>

Cc: ROCCO Anthony J * DCBS <Anthony.J.ROCCO@dcbs.oregon.gov>, WILLIAMS Jeremy G * DCBS <Jeremy.G.WILLIAMS@dcbs.oregon.gov>, RAMOS Francisco M * DCBS <Francisco.M.RAMOS@dcbs.oregon.gov>

Hi Joe,

You're welcome! The attached responses you shared from the roofing manufacturer are in line with how I would expect them to respond. In this case I'm reading that the manufacturer "recommends" flashing, but acknowledges face nailing the shingles as an option. Manufacturer recommendations are not the same as "shall" statement and are not enforceable. However, this is a scenario where ORSC Section R903.2.1 would govern and require flashing at the direction or slope changes.

An interesting complexity with this type of construction is that the ORSC definition of exterior wall would consider the portions of the "roof" noted by the arrow below as walls if they are greater than 60 degree slope. This would mean that technically, these portions would fall under ORSC Chapter 7 and would require the drainage requirements of Section R703.1.1. This brings us back full circle to my original response and why I indicated that unique designs such as this do not always fit neatly into the prescriptive code path.

EXTERIOR WALL. A wall that is used as an enclosing wall for a building, other than a fire wall, and that has a slope of 60 degrees (1.05 rad) or greater with the horizontal plane.



* I would advise you look at ORSC CHAPTER 7 (R703.1.1) APPARENTLY CODE CONSIDERS 'ROOF FACETS OVER 60 DEGREE 'WALLS' WHICH HAVE A DIFFERENT SET OF RULES *

Regards,
Eric

I've copied our program team on this correspondence for consistent communication purposes.