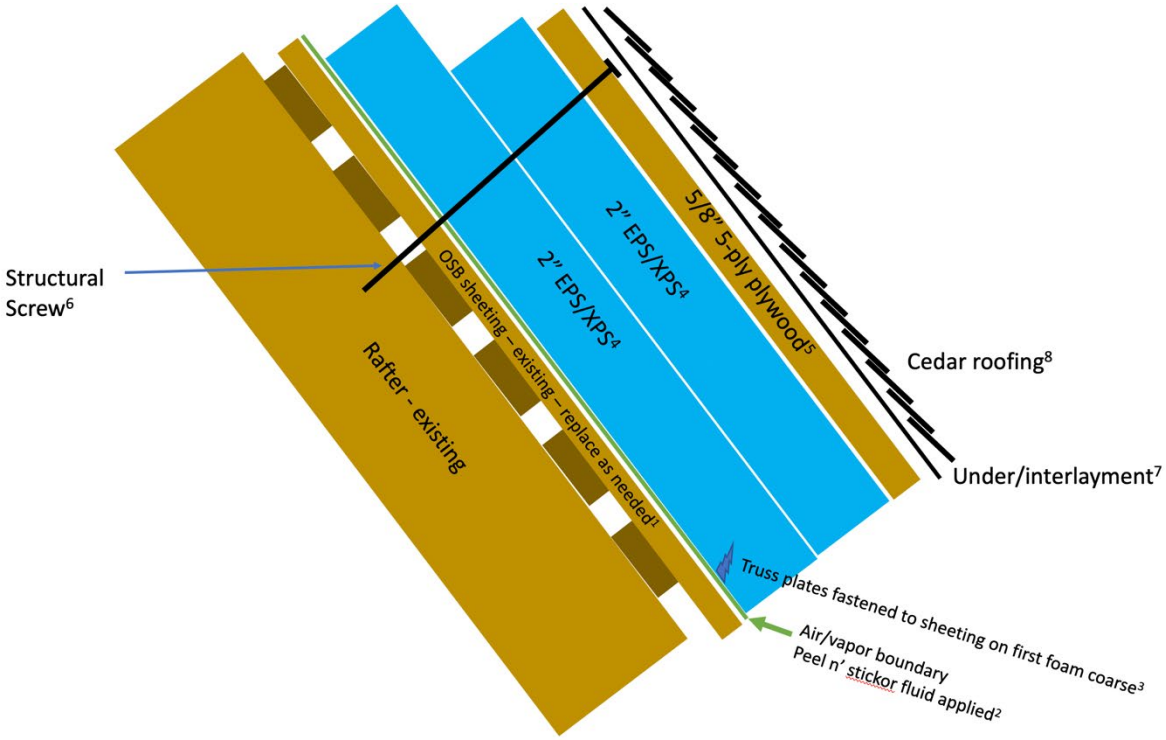
St. Peters roof project is being scheduled for 2025 and will require a capital campaign. Cost for this project will be between $350,000.00 and $500,000.00. Design was developed by Dr. Paul Cotter. Sam with Hard Rock Construction will develop a proposal/bid for the project based on this design. Sam work on St. Peters Church roof the last time it was done and has knowledge of the roof structure. Plans need to be started now in order to raise the money needed for this project.

Tentative St. Peters Roof Strategy

See notes of following pages



Notes from Figure

Note 1: Derivation

Here is an idea. It comes from several sources. I've designed and installed several roofs with this basic strategy, however, this has some unique challenges. I met with Marquam George on the design, I consulted John Straube's "High Performance Enclosures", and looked over Joe Lstiburek's materials. This is an amalgam of all these sources. There are variations to consider. There are certainly details to work out, but perhaps this is enough to start building an estimate.

I deliberately used 4" – I think we should go for that. It won't be super high performance, for that we would want a minimum of 12" of foam. It will be an improvement. Its performance, and more importantly, durability, is going to depend on proper air sealing. Note there are no nailers or sleepers are used in this design.

I think it would be good to estimate just a re-roof project – tear off existing, make necessary repairs, install underlayment paper and apply shingles – for comparison and consideration.

Note 2: Airsealing

Modifying a structure the way we are proposing changes the assembly (in this case, roof) from what I call a high energy assembly to a low energy assembly. The high energy assemble was built to dry and dry well – for 100+ years a lot of heat has been pumping through the assembly to keep it dry. To change to a low energy system, we have to make sure warm air from the interior is not entering the roof assembly and leading to interior moisture deposition on any cold surfaces.

For practical purposes, we will need to peel back the sheeting at the wall plate around the entire perimeter and air seal. Yeah, it's a fair amount of work, but without this step, we risk damaging the structure.

Superscript 1: OSB

I hate OSB and I wish it would go away from this struture, but it is already there. Inspect and replace where needed.

Superscript 2: Air/vapor boundary

This is a critical component. This could be a peel n' stick product (BlueSkin, Grace, etc.) or a commercial grade fluid applied product (lots of options out there; we can discuss). Regardless, the details have to be spot-on, including full perimeter sealing.

Superscript 3: Truss plate

Optional, but handy. These would be applied to the boundary layer and fastened into the sheeting with the teeth facing upward. Their sole purpose is just to hold the first layer and course of foam in place during construction.

Superscript 4: Foam

This could be unfaced expanded polystyrene (eps – "white foam") or extruded polystyrene (xps – "blue foam" – its actually black in our region now thanks to more environmentally friendly blowing agents). I'm an eps guy for such applications, although for what we are trying to do, it probably doesn't matter much. XPS has higher R-value, but eps is better in wet climates – regardless, if the foam in this assembly gets wet it won't really have an option to do much drying. I would really try to make 4" foam work.

Foam must be applied in 2 or more layers, all seams (vertical and horizontal) offset.

Superscript 5: Plywood decking

5/8" 5-ply plywood may be overkill, but decent plywood here will pay for itself in durability and peace of mind. Just do it.

Superscript 6: Structural screw

These should penetrate rafters 1-1/2" or so. Several options here, but a FastenMaster waferhead screw would work great.

Superscript 7: Under/interlayment

This is probably more of a system than it is one product. We should have a bit of space between the paper and the shingles. To get there, you could use a product that has both a underlayment paper and a spun plastic “brillo pad” material attached to it (several manufacturers make them). Alternatively, use 2 different products like a rated asphalt-saturated roofing paper and a brillo pad product like Benjamin Obdyke’s “Cedar Breather”.

MOST IMPORTANT POINT – DO <u>NOT</u> USE A NON-PERMEABLE ROOF UNDERLAYMENT!!!

This isn’t just my opinion – this is an industry standard and is mandated by the Cedar Shake and Shingle Bureau, ASTM, etc. If one is used and the roof fails, not matter what, Sam is screwed!

Superscript 8: Cedar roofing

Options abound for sourcing and I have assumed you want to replace with cedar (Certi-label or Certi-last might be options – not sure if we can get roof shakes from Prince of Wales). For some reason, the Historic Preservation Commission does not have heartache about converting to modern roofing products (I thought it was weird they had not trouble with an asphalt roof on Stevenson). Anyway, you could install an architectural shingle if interested. I can see why cedar might be preferred.