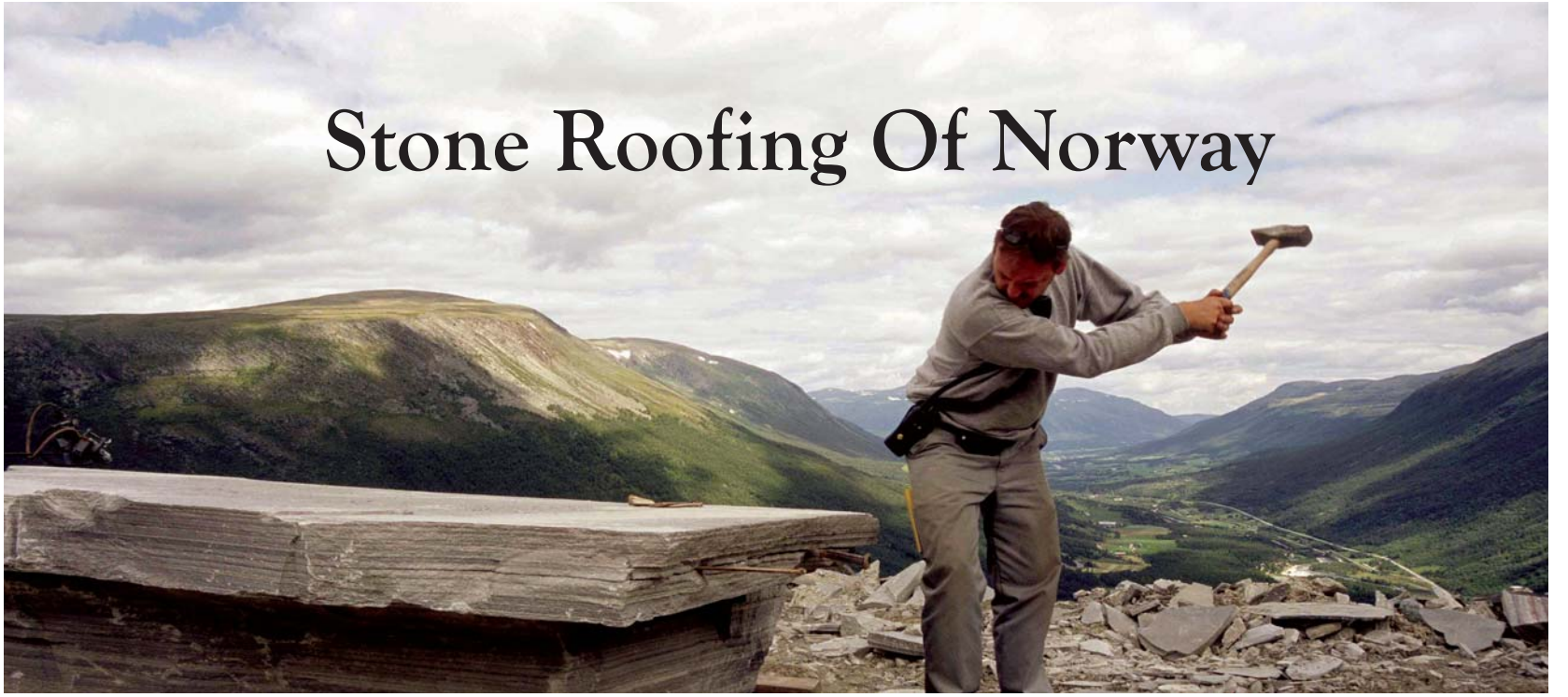
# Stone Roofing Of Norway



Mike McLaud has a history in stone. McLaud began his career in Seattle as a manager in a stone yard, then moved into the slate valley of Vermont. There he became a salesman at Vermont Structural Slate Co., a well known and respected slate producer in Fair Haven, where McLaud learned the ins and outs of roofing slate. His most recent interests include quartzite and phyllite roofing, leading to the founding of the Natural Slate and Quartzite Co., LLC, of Meadville, PA.

Few people realize that Norway is a producer of roofing slate and roofing stone. Nor do they realize that Norwegian stone roofing can be imported into the U.S. today via Mike's company. Mike has toured all the quarries in Norway as recently as this year. He's also been to Spain numerous times visiting slate quarries.

Norway has three principal towns which produce a natural stone roofing material: Otta, Oppdal and Alta, all visited by McLaud in recent years. Otta is a small town of about 2,750 inhabitants in central Norway nestled in a mountain valley at the confluence of two rivers. Its stone is a semi-weathering phyllite material called "Otta" (Figure 1). The Norwegians have commercially produced phyllite stone for a century, according to McLaud, where it is used for exterior panels, paving, interior flooring, and architectural products. It's also a common roofing material in that area. Phyllite roofs 100 years old or older are still in excellent condition, weathering to rusty, golden, copper or brown colors over time.

Figure 3: Oppdal

Both Oppdal and Alta stone, also named after the towns where they're quarried, are unfading quartzites, known for exceptional longevity, or, as McLaud says, " I've seen it on buildings over 300 years old." Alta stone, commonly formed into "beaver tail" shapes (Figure 2), is quarried in the arctic circle near the Alta River, one of Norway's premier salmon rivers. Oppdal stone roofing is characterized by untrimmed shingles (Figure 3). Both quartzite and phyllite are unlike slate in that they cannot be split on a grain, but have to be split along existing fissures.

Norwegian quartzite roofing comes pre-slotted for nailing and is typically shaped in "beaver tails," or as square shingles, 13"X13", 15"X15",18"X18", and 21"X21". Natural Slate and Quartzite Co. can import Norwegian roofing for

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Figure 1 Otta

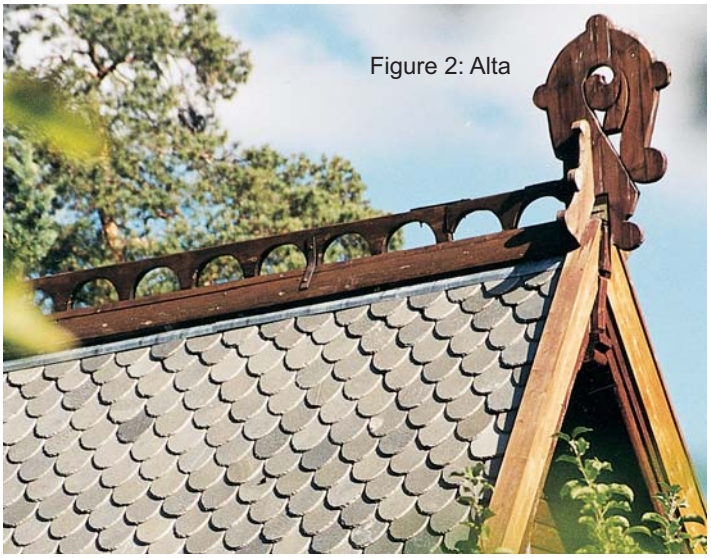
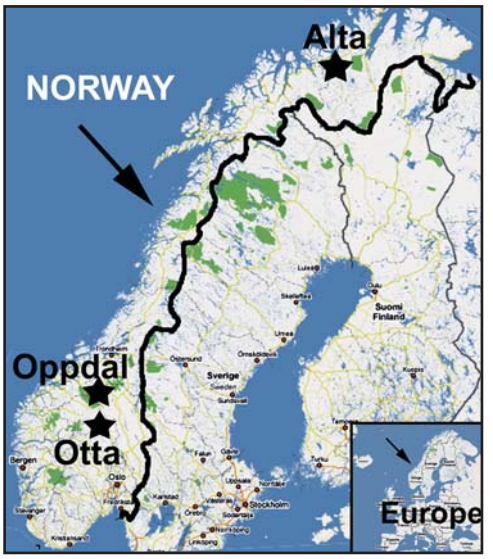


Figure 2: Alta

customers who can order in container quantities. The roofing slabs will ship in three thicknesses: 25% Thins (8-12mm); 50% Medium (12-16mm) and 25% Heavy (16-20mm). They can also import Franvisa Spanish black slate and Verde Lugo Spanish green slate in container lots for interested customers. McLaud also sells soapstone for counters, Spanish sandstone for walkways, Vermont slates for any purpose, Pennsylvania slate, wall stones, and Norwegian stone roofing.

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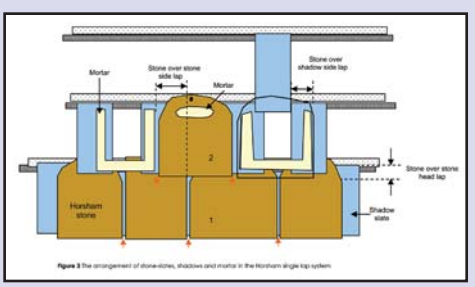
McClaud displays a variety of imported roofing shingles.

# HORSHAM STONE ROOFS

*Stone Roofing Association 2008 —http://www.stoneroof.org.uk/Horsham%20guide.pdf*

Here is an interesting, downloadable 16 page PDF document about stone roofing techniques that aren't discussed very often. Of particular interest to me was the use of "shadow" slates underneath heavy stone shingles, where thin slates are utilized in a manner similar to bib flashings on heavy stone roofs. I have seen this technique used on only one slate roof — a graduated roof with massive lower slates where thin, 3/16" slates were inserted under the vertical butt joints of the largest slates in order to fortify the water-shedding ability of the roof. *Horsham Stone Roofs*, among other things, illustrates a technique similar to this. This booklet was developed during a series of meetings and discussions with people experienced in the use of Horsham stones and it describes the state of the art.

Excerpt: "*There are two systems of roofing with Horsham stone — the 'normal' double lap system and single lapping which is unique to Horsham stone roofs. Both systems use random sized slates which are arranged on the roof with the largest laid at the eaves and gradually diminishing to the smallest at the ridge. Traditionally, in both systems, each stone-slate was top hung with wood pegs on split wood laths. Top hanging was essential when thin split laths were used, but the usual modern practice is to nail them to substantial sawn battens. It is conjectured that the earliest Horsham roofs — predating the 19th century — always used the 'normal' double lapping system, where course three overlaps course one, four over two, etc. This is the system which is almost always used for sandstones, limestones and slates throughout the UK. In the Horsham single lap system, the slates only overlap the slates immediately below — course two overlaps course one and so on. This leaves a gap along the perpendicular joints. This is weathered with pieces of metamorphic (Welsh) slate, known as shadows or shading, and these and the Horsham stone slates are bedded in mortar.*" [see illustrations below]

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