

# Bates Engineering – Consulting Structural Engineering

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December 8, 2015

Our File: 13-30-02

To: Town of Comox

Preliminary Structural Assessment "Shakeside" House

Prepared for Mack Laing House Conservation Committee

Bates Engineering was asked, by the Mack Laing House Conservation Committee, to complete a visual structural inspection of the above noted house. No material testing or exposing structural elements obscured from view is included in the scope of work. Building envelope and moisture ingress are specifically excluded from the scope of work and were completed by others.

We inspected the residence on Nov 27, 2015 accompanied by Mrs. Kate Panayotof, Mr. Cyrill Werlen and Mr. Al Fraser. The original building is reported to be approximately 65 years old.

No drawings were available for the original construction. The building is wood frame construction with a basement and attic access.

## Attic Framing

The roofs consist of cedar shakes on 1x10 shiplap strapping and 2x6 wood rafters. The Douglas Fir rafters generally appear in fair condition and good quality. However, some decay should be expected. Obvious signs of decay were observed in some of the strapping. The rafters are supported by knee walls resting on the 2x6 ceiling joists. There appeared to be a 1" sag in the ceiling. The rafters are also supported at the perimeter by a 16" extension of the ceiling joists; which forms the soffit. A close inspection of the over hang was not possible. The beam over the front deck appears significantly under sized. No shiplap or plywood was present on the gable ends.

## Wall Framing

The walls are likely cedar shakes, tar paper and 2x4 studs at 24" on center. It was difficult to confirm that there was shiplap on the exterior walls. The lintels were not visible during our inspection. The walls generally appear straight and show no signs of failure or decay other than the cedar shakes. However, some decay is likely due to the age of the building and should be expected adjacent to window and door openings. The walls should be exposed in a few locations to confirm the construction and possible damage around the windows.

## Main Floor Framing

The floor consists of 3x8 tongue and groove decking on 3 ply 2x8 beams at approximately 8.5 feet on center. The 3 ply 2x8 beams are supported on log columns. The t&g decking was badly decayed in the bathroom. The log columns have significant termite damage. The beams have some sag and decay at the perimeter.

### Basement

The basement appeared dry at the time of our inspection; however, the writer understands that the basement floods at very high tides during storm events. The foundation wall appears to be 6" thick and in some cases resting on organic soil. There is no footing under the wall and it lacks adequate frost and scour protection. Significant cracks were noticeable on the west, south and east elevation. This would indicate some settlement. The bearing pressure on the ground is in the order of 3500 psf. which would exceed the allowable capacity of the ground.

### Front Deck

The front deck appears to be lower quality and will need replacing.

The building structure is shown on the attached drawings sk1-3.

Although the structure is not built to present building code standards, it has performed adequately to date. However, in the writer's opinion, the following repairs should be considered:

#### Immediate Repairs/ Upgrades required:

Repair or replace front deck including roof beam over  
Seal the cracks in the foundation walls  
Replace the log columns in the basement; complete with metal saddles  
Upgrade or replace built up beams in basement  
Repair the rotten t&g decking  
Do not use the attic for storage or occupancy (if storage or occupancy is desired further upgrades will be required)

#### Future Repairs:

Replace the rotten strapping on the roof when the shakes are replaced.  
Improve the heel connection between the ceiling joists and the rafters.  
Double up the collar ties at the ridge and improve the connection.  
Install diagonal ship lap on the gable ends in the attic to resist wind and seismic loads.  
Provided hold down clips from ceiling joists to exterior walls for wind uplift  
Confirm ship lap present on main floor walls to resist wind and seismic loads  
Sheet over t&g decking with plywood for wind and seismic loads.  
Bolt the sill plate to the basement walls  
Flood a new footing under the existing foundation walls down to firm bearing. (Depth to sound bearing is not known and an archaeologist report may be required)  
Provide a raised berm around the house or possibly raise the basement floor

Provided the building envelope is repaired, structural repairs completed and the loads on the building are un-changed, the building structure will continue to perform adequately in the future.

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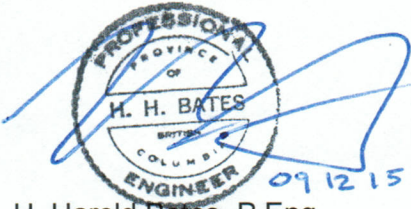
If the use of the building is changed, the occupant load on the building will need to be reviewed with the building department. If the floor load is increased further structural upgrades will be required.

The findings in this report are based on visual observations only. Some of the framing and foundations are obscured from view and should be exposed to confirm the condition of the structure prior to proceeding with any upgrade or repair plans.

I trust the foregoing meets your present requirements and if you have any questions or concerns please contact the undersigned.

Yours truly,

**BATES ENGINEERING**



H. Harold Bates, P.Eng.

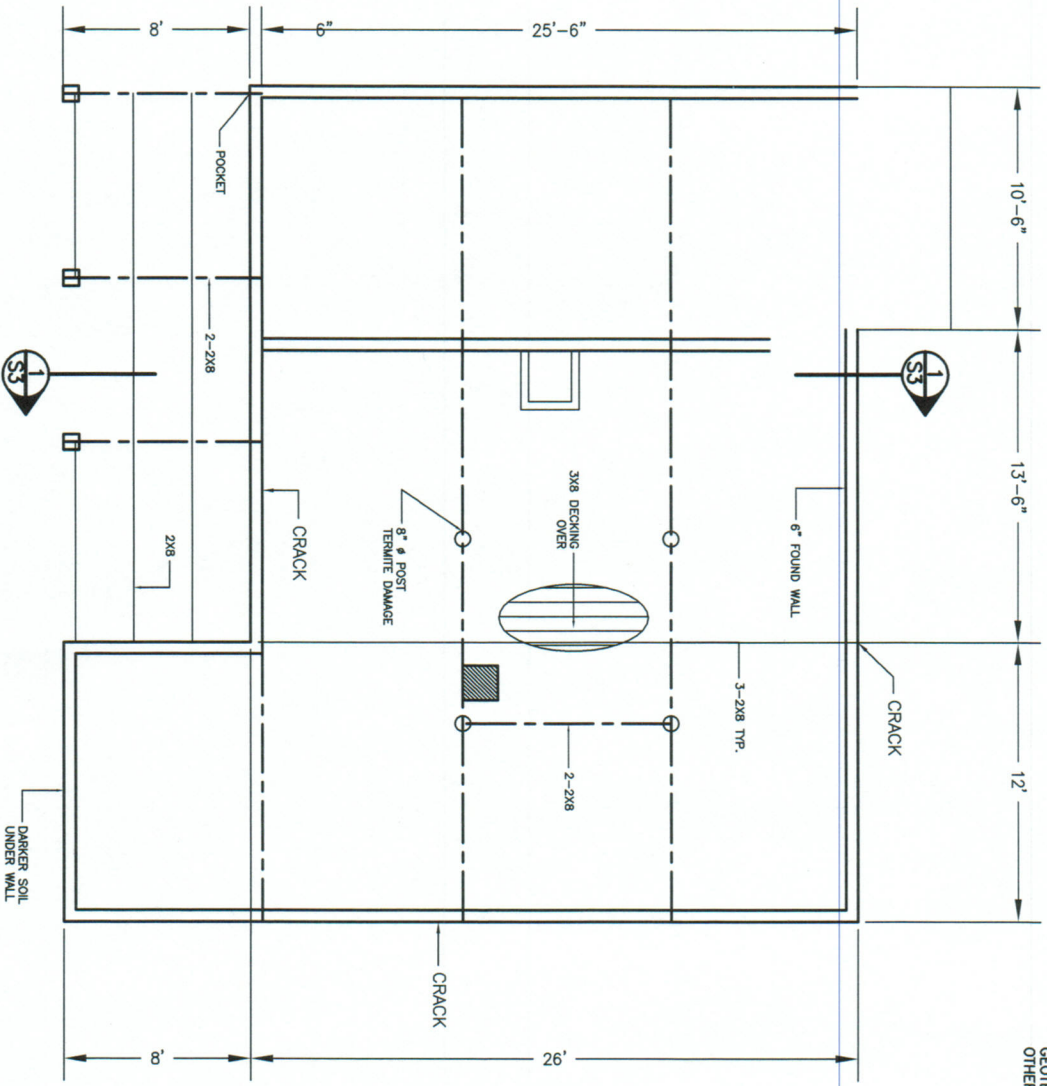
Encl: sk1-3

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NOTES:  
 AS-BUILT FRAMING SHOWN IS APPROXIMATE ONLY.  
 DIMENSIONS SHOWN ARE APPROXIMATE ONLY.  
 BUILDING ENVELOPE AND MOISTURE INGRESS REVIEWED BY OTHERS.  
 GEOTECHNICAL REQUIREMENTS TO BE REVIEW BY OTHERS.



1 PLAN  
 S1 N.T.S.

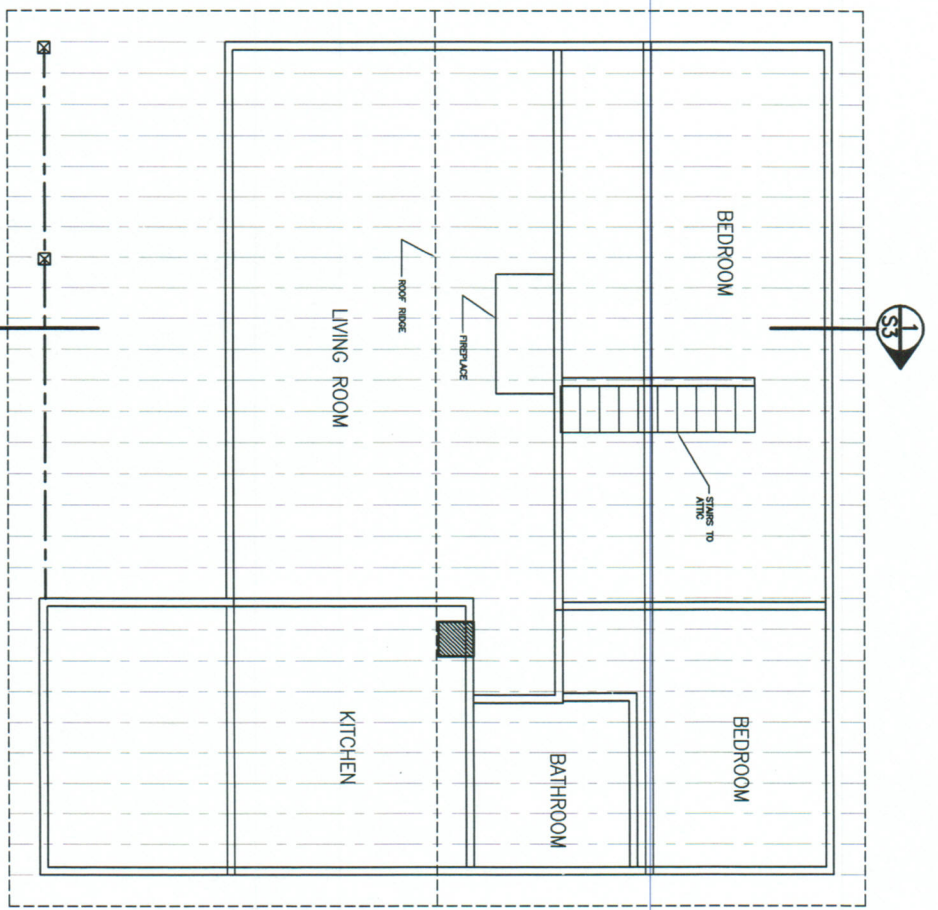


SCALE: \_\_\_\_\_  
 DATE: DEC 07/15  
 DRAWN/APPROVED: H.H.B.  
**MACK LAING**  
**SHAKESIDE**  
**STRUCTURAL INSPECTION**

**BATES**  
 ENGINEERING  
 DRAWING No. S1  
 REV. \_\_\_\_\_

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H.H.B.

MACK LAING  
SHAKESIDE  
STRUCTURAL INSPECTION



1 PLAN  
S1 N.T.S.



**BATES**  
ENGINEERING  
DRAWING No. S2  
REV.

SCALE: \_\_\_\_\_  
 DATE: DEC 07/15  
 DRAWN/APPROVED H.H.B.

**MACK LAING  
 SHAKESIDE  
 STRUCTURAL INSPECTION**

**3 SECTION**  
 S1 N.T.S.

**BATES**  
 ENGINEERING  
 DRAWING No. S3  
 REV. \_\_\_\_\_

