

## JUSTIFICATION' STATEMENT AS TO WHY WE NEED TO RECONSTRUCT THE EXISTING ROOF

The Roof Structure of the Existing Building is comprised of (4) roof structures as follows:

(REFER TO 11 X 17 EXISTING ROOF PLAN EXHIBIT INCLUDED HEREIN)

- I. A Main Double-Ended North/South Facing Gabled Roof Structure, further referred to herein as the Main Roof Structure and off-of this main roof structure are three secondary roof structures:
- II. a West Facing Gabled Roof framed off-of the main roof (over the original porch)
- III. an East Facing Hipped Roof also framed off-of the main roof
- IV. and a North facing Gabled Roof, that was added onto as an extension of the Main Roof Structure's North Facing Gabled Roof. This final structure was an addition made in the 1950's or 1960's.

*Deficiencies which have completely comprised the structural integrity of the entire structure are described below:*

- I. The Main Roof Structure's 'Ridge Beam' and secondary roof members framed off-of this "Ridge Beam" are all 2 x 4 members and spanning far beyond the structural capacity for these sized members.

**(Pic-1 Main Roof Ridge/Secondary Member – note vertical support for West Gable)**



*This has caused the entire Main Roof to bow or sag*

*More so none of the secondary members are properly nailed/secured to the ridge beam and or to the top plate of the walls they rest upon.*

It is clear that these main roof structure members have to be replaced with new appropriately sized members and being that the (3) aforementioned, secondary roof structures are framed off-of/tied into this main roof structure, would then require the secondary roof structures' members to be replaced as well and not only for this reason but also for specific conditions related to each of the (3) secondary roof structures as follows:

- II. The smaller west facing gabled, secondary roof structure (over the original porch) is missing a ridge beam altogether

**(Pic-2 West Porch No Ridge )**



*More so at the junction where this roof (SE corner) and the main roof structure (SW corner) meet along the exterior wall has no vertical continuity for the forces of these roofs to come down to the foundation and has caused the exterior wall along the south to literally bow out and is also literally tearing apart the roof and wall*



(Pic 3 – Junction Main Roof/West Gable  
at Exterior wall – note vertical support)



(Pic 4 – Junction Main Roof/West Gable  
at Exterior wall – note vertical support)



(Pic 5 – South Wall Pushed Out)





(Pic 6 – Junction Main/Porch Roof – method of vertical support implemented in order to attempt to support the roof deflection caused by poor design)



(Pic 7 – Junction Main/Porch Roof – Exterior Fascia)





- III. East Facing Hipped Roof is also compromised due to the same factors affecting the main roof in that the roof members are undersized, not properly secured to each other or to the top of wall they rest upon and lack of vertical continuity.

In addition some of the existing members of this Hipped roof has rotted out and showing evidence of previous termite damage

**(Pic 8 East Hipped Roof- Junction at Main Roof along exterior wall)**



**(Pic 9 East Hipped Roof – junction at Main Roof – Fascia damaged/misaligned w/Hipped Roof)**



This has caused the roof to sag and has caused this roof and the main roof structure to tear apart from each other.

**(Pic 10 East Hipped Roof Exterior SE corner and NE corner Deflection)**



**(Pic 11 East Hipped Roof Deflection)**





- IV. The North facing Gabled Roof, that was added onto as an extension of the Main Roof Structure's North Facing Gabled Roof was also poorly constructed sometime during the 1950's and 1960's, as with the other roof structures it is also lacking vertical continuity and lacking proper bracing at the exposed gabled end. The manner in which it was secured to the original north facing gabled roof is beyond deficient.

This roof structure is even more compromised than the Main Roof Structure, being that the Ridge Beam for this portion of the roof is comprised of a  $\frac{3}{4}$ " thick tongue and groove board, serving as the 'spine' for the secondary roof members framed off of this 'ridge beam' and to worsen the issue this ridge beam is improperly secured at both ends

**Pic 12 North Gable Addition – Ridge Beam**



**Pic 13 – North Gable – Ridge@ Ext. Wall**



Due to these conditions this entire portion of the Roof (North Gable Addition) has deflected and as evidenced in the following pics is literally dropping down and off of the main roof structure.

Pic 14 – North Gable Exterior Deflection – note deflection at Junction of Original North End Gable and Addition as well as deflection along the fascia



Pic 15 – North Gable Exterior Deflection – note deflection right at Junction of Original North End Gable and Addition





In addition to all these compromising factors and deficiencies, the overall roof construction was originally poorly built as further described below:

**Poorly designed and built, Existing Hand Framing & lack of vertical continuity.**

Structural system lacks any continuous vertical load paths at the points most crucial to support these randomly framed members, there is no vertical continuity of the loads from the roof structure to the exterior walls and then down to the foundations.

- Manner in which the different members are configured with each other
- Manner they are fastened to each other and to secondary members
- Undersized Structural Members
  - 2x4 ridge and secondary members at Double Ended Gabled Main Roof
  - Non-existent ridge beam at West Gable
  - Undersized Ridge Beam at North Gable (3/4 " Board)
- Randomly placed vertical supports improperly secured, some simply forced into place with friction and without fasteners
- Overall design and layout of the roof members done in a random fashion throughout, without any cohesiveness.

Some Examples of these conditions are depicted below

**Pic 16 – Unsecured Vertical Support at Junction of two Roofs**



Pic 17 – Horizontal support unsecured to North Gabled Wall



Pic 18– Randomly Placed Vertical Supports





All of these existing factors have caused severe damage which has caused the roof to deflect in several locations.

(SE Corner pic)



(NW Corner pic)



(NW Corner West Gable pic)



It is clear that the existing condition of this roof and the manner in which it was poorly constructed does not only compromise the longevity of this structure but has also created an unsafe structure that should not be considered occupiable in its current condition.

In order to save this structure, assure it longevity and in order to make it an occupiable/safe structure for occupants, the entire roof must be reconstructed.

Finally, note that the manner in which we are proposing to reconstruct it shall be an exact match of the existing roof shape/style/slope,etc....in other words from the exterior it will not be discernible that the original roof has been reconstructed.

In order to assure it is reconstructed in a manner to appear exactly as it does now (less of course the sagging/bowing/damage, etc..) we have taken meticulous records of the existing conditions by performing multiple on-site measurements of the structure that provided us with the information to not only re-create the entire original structure in a 3D-virtual model but also to produce a computerized printed 3-D physical model of the structure. With these two models, provides us a complete and true representation of the existing roof structure that will allow us to replicate its original appearance; however making it structurally viable.