



# CLOUGH, HARBOUR & ASSOCIATES

ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

11 KING COURT  
KEENE, NEW HAMPSHIRE 03431  
TEL. 603-357-2445 • FAX 603-357-8770

December 30, 1996

Beth Fox, Administrative Assistant  
Town of Swanzey  
Post Office Box 9  
E. Swanzey, NH 03448

RE: Structural Inspection of Whitcomb Hall, West Swanzey  
CHA File No. 6118

In accordance with your request, we performed a structural inspection of Whitcomb Hall on December 21, 1996. The contract called for us to "thoroughly inspect all accessible components of the building's support system from the basement to the roof framing, noting the location, extent and severity of deficient structural members." We were to also "inspect for rot, insect infestation, water damage, excessive deflection and integrity of joint connections." If problems were discovered, we were to make "recommendations for repair or replacement of the structural members and/or joint connections."

The building is a two-story, wood frame building located on the north side of Main Street in West Swanzey, NH. It was built in 1916 and its outside dimensions are 70'-4 1/2" x 40'-4 1/2", with an 8'-0" x 14'-2 1/2" front porch. The foundation is built of granite blocks and the roof is covered with slate.

In general we found the building to be in excellent structural condition, which is remarkable given its age and the fact that it has been unoccupied since 1988. The external walls are plumb and true-to-line. The ridge is straight and level and the slate shingles appear to be stable and intact.

We will now describe in detail the various structural components of the building, noting the condition of each and, where necessary, making recommendations which will promote the structural integrity of the building.

## FOUNDATION

The foundation is built of large granite blocks with all joints mortared. The 6'-2" high wall is capped with 16" deep granite blocks approximately 6'-0" in length. We were not able to investigate the footing under the wall, but based upon the condition of the wall, they are performing their proper function. The mortar in the joints appears to be in good condition except at several locations along the intersection of the wall and slab where water had seeped into the basement, bringing with it fine grained soil deposits. The ground water level at the time of the inspection was 2" below the surface of the concrete slab. There was evidence that the seepage of water and soil through the wall was taking place at the time of the inspection.



ALBANY, ROCHESTER, SYRACUSE, BUFFALO, LAKE PLACID, GOSHEN & NEW YORK CITY, NY  
MALVERN & WILKES-BARRE, PA • HARTFORD, CT • SPRINGFIELD, MA • KEENE, NH  
RUTLAND, VT • FALMOUTH, ME

*"Satisfying Our Clients by Meeting Their Needs Through Dedicated People Committed to Total Quality."*

## **Recommendation for foundation improvement**

The infiltration of soil and water through the joints can be remedied by cleaning out the joints as far into the wall surface as possible and repointing the stone work with new mortar.

## **FIRST FLOOR FRAMING**

The first floor framing is set on 3 ½" diameter cast iron columns. There is no sign of rusting or deterioration of the iron work throughout the height of the columns. The column foundations were not accessible so it was not possible to inspect them, but they appear to be performing their structural function as the floor they support is level and true. The locations of the column are indicated on Fig. 2. The main beams span the narrow dimension of the building on top of the iron columns, which are supplemented by wooden capital pieces as shown in Fig. 2. Floor joists, 2" x 10 ½" span the long dimension of the building on a spacing of 16". The floor joists are set on 2" x 3" ledger boards as shown on Fig. 3. The framing is in excellent condition with the exception of a small section of decayed wood on the main beam on column line E between column lines 3 and 4. The decay is only approximately ½" deep and appears to be localized in a 3' to 5' area. There is also some checking in the main beams at several locations, but this checking does not negatively impact the strength of the beams.

## **FIRST FLOOR**

The first floor layout is indicated in Fig. 4. There are four wooden columns supporting the second floor level, along with two bearing walls which run the narrow dimension of the building. The wall along the westerly end of the main room appears to be a bearing wall, but it is offset several feet from the main beam below. The floor is level in both directions and there is no indication of sagging or deflection.

## **SECOND FLOOR**

The second floor layout is indicated in Fig. 5. The bearing wall for the balcony is over the basement main carrying beam, but is not directly over the bearing wall directly below. The stage wall framing is not load bearing. The floor of the main room is solid and level in both directions. The framing for this floor was inaccessible, but it is probable the beams running the narrow dimension of the building are 12" x 12" and the joists running the long dimension of the building are 2" x 12". The exterior walls of the main room are also true and plumb. The tin ceiling shows signs of paint flaking over the balcony and over the stage, but there is no evidence of water infiltration in these areas.

## **ROOF**

The roof is supported by five steel and wood trusses as shown in Fig. 6. These trusses are in excellent condition, but are all slightly out of plumb with their tops leaning toward the street. In the first truss adjacent to the access stairs, additional 2" x 4" members were wedged in place as shown on Fig. 6. There were no members like this inserted on the other four trusses. In addition, one diagonal brace extends from the ridge beam to the top panel point of the first truss. This was

obviously an afterthought, as the lumber is different than the rest on the project. The roof framing consists of 2" x 6 1/2" rafters which rest on the exterior walls, a longitudinal beam which sits on the panel point of the truss and connects at the ridge beam. These rafters support 1" thick longitudinal decking of various widths, which in turn supports the slate roofing.

### **Recommendations for roof improvement**

In order to ensure the long-term stability of the roof, we recommend that lateral bracing from the ridge beam to the top panel point of the trusses be inserted at each truss as shown in Fig. 7. We do not recommend that you try to move the trusses back into a vertical position, but only keep them from moving any further out of plumb.

We also recommend that new verticals be placed under the panel points supporting the longitudinal beams. These should be 6" x 6" and be spiked into the diagonal member and the lower chord as indicated in Fig. 8.

### **SUMMARY**

With the exception of the minor repairs to the foundation stone work and the roof trusses, the building is in excellent condition. Decay is nonexistent, at least to the extent of those members which are accessible, throughout the building.

We appreciate the opportunity of working with you on this project and would be happy to continue this relationship with you if and when you decide to embark on the rehabilitation of this fine old structure. Clough, Harbour & Associates has the personnel to provide all of the services you would need to convert the building into a new police facility or to meet other needs of the Town of Swanze.

We will be glad to discuss this structural report with you at any time.

Very truly yours,

**CLOUGH, HARBOUR & ASSOCIATES LLP**  
**Engineers, Surveyors, Planners**  
**& Landscape Architects**



F. E. Griggs, Jr., PE & PLS



Rob Hitchcock, PE  
Project Manager



**CLOUGH, HARBOUR  
& ASSOCIATES LLP**  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

COMP. BY FEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHITCOMB HALL



GLOUGH, HARBOUR  
S. ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

PROJ. NO. \_\_\_\_\_

SUBJECT BUILDING DIMENSIONS

MAIN STREET

BUILDING  
NORTH  
↓

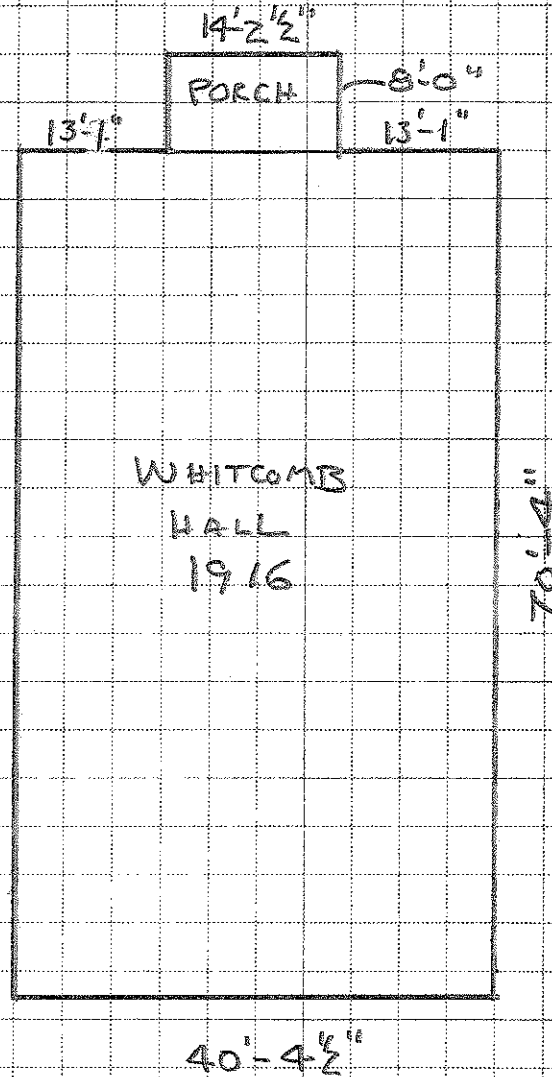


FIGURE 1

COMP. BY FEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHITCOMB HALL



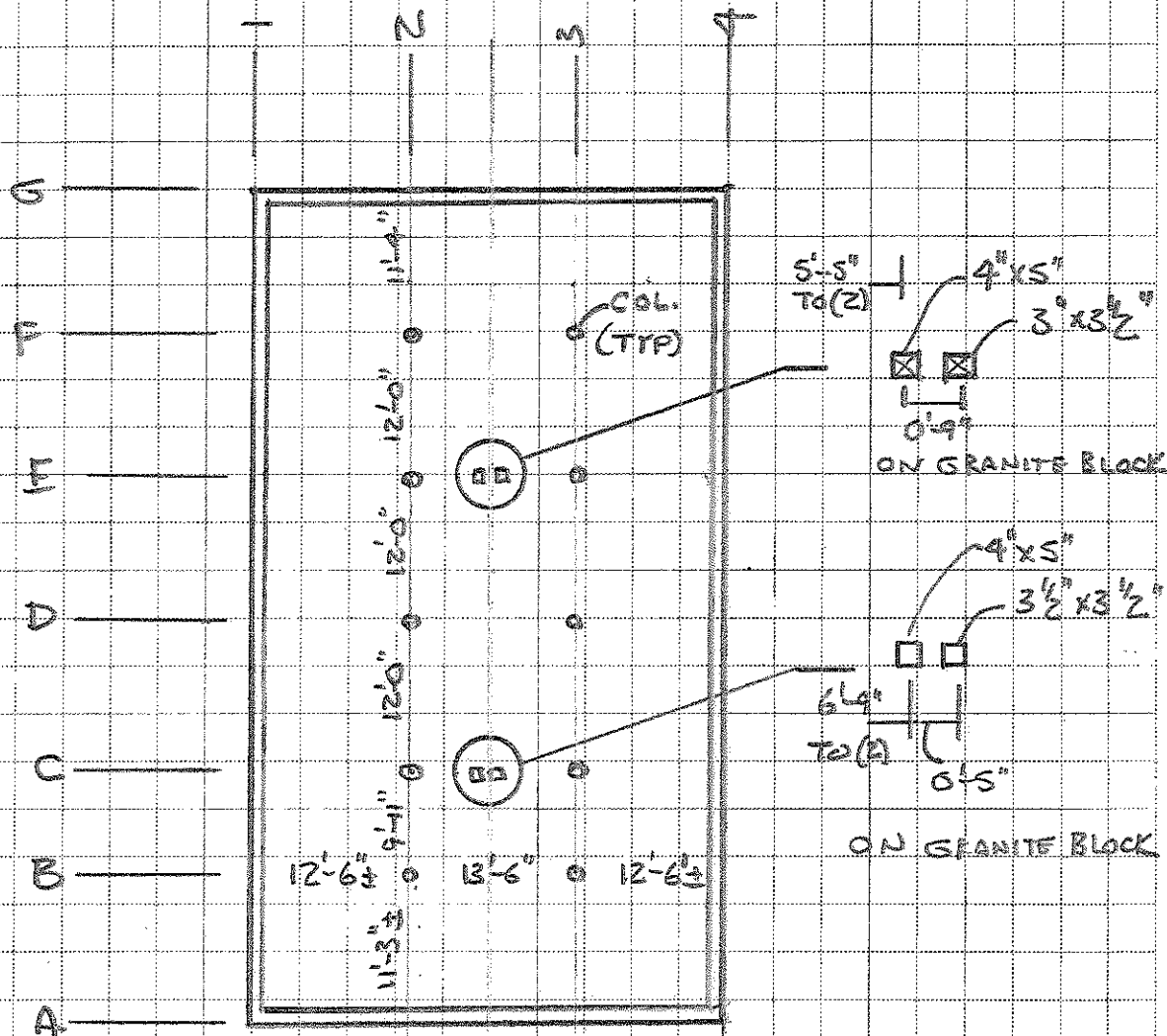
**CLOUGH, HARBOUR  
& ASSOCIATES LLP**  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

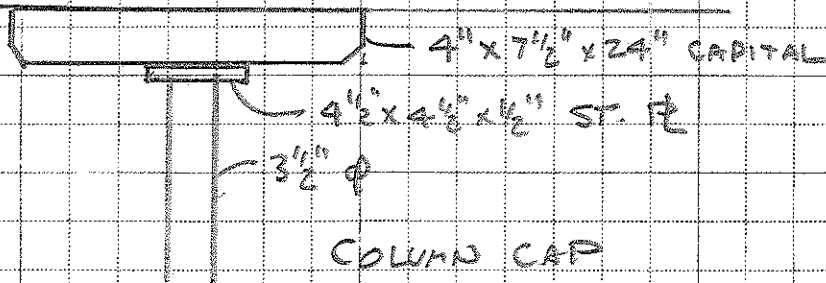
PROJ. NO. \_\_\_\_\_

SUBJECT BASEMENT PLAN



COLUMNS — 3 1/2"  $\phi$  CAST IRON  
HEIGHT OF COLUMN 6'-2"

JOIST 2" x 10 1/2"  
ROUGH SAWN



COLUMN CAP  
DETAIL

FIGURE 2

COMP. BY FEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHIT COMB HALL



CLOUGH, HARBOUR  
& ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

PROJ. NO. \_\_\_\_\_

SUBJECT FIRST FLOOR FRAMING

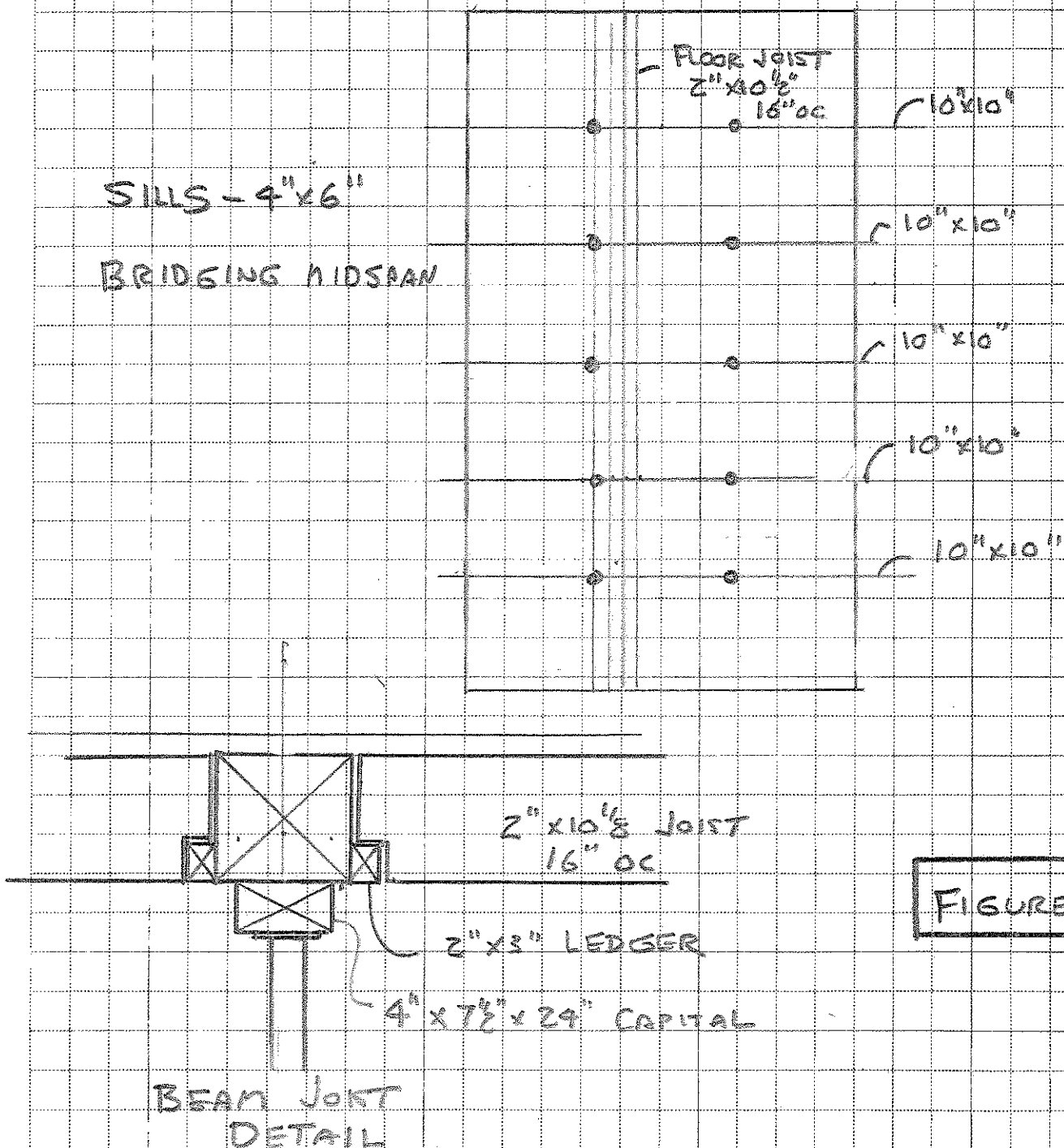


FIGURE 3

COMP. BY PEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHITCOMB HALL

SUBJECT FIRST FLOOR PLAN

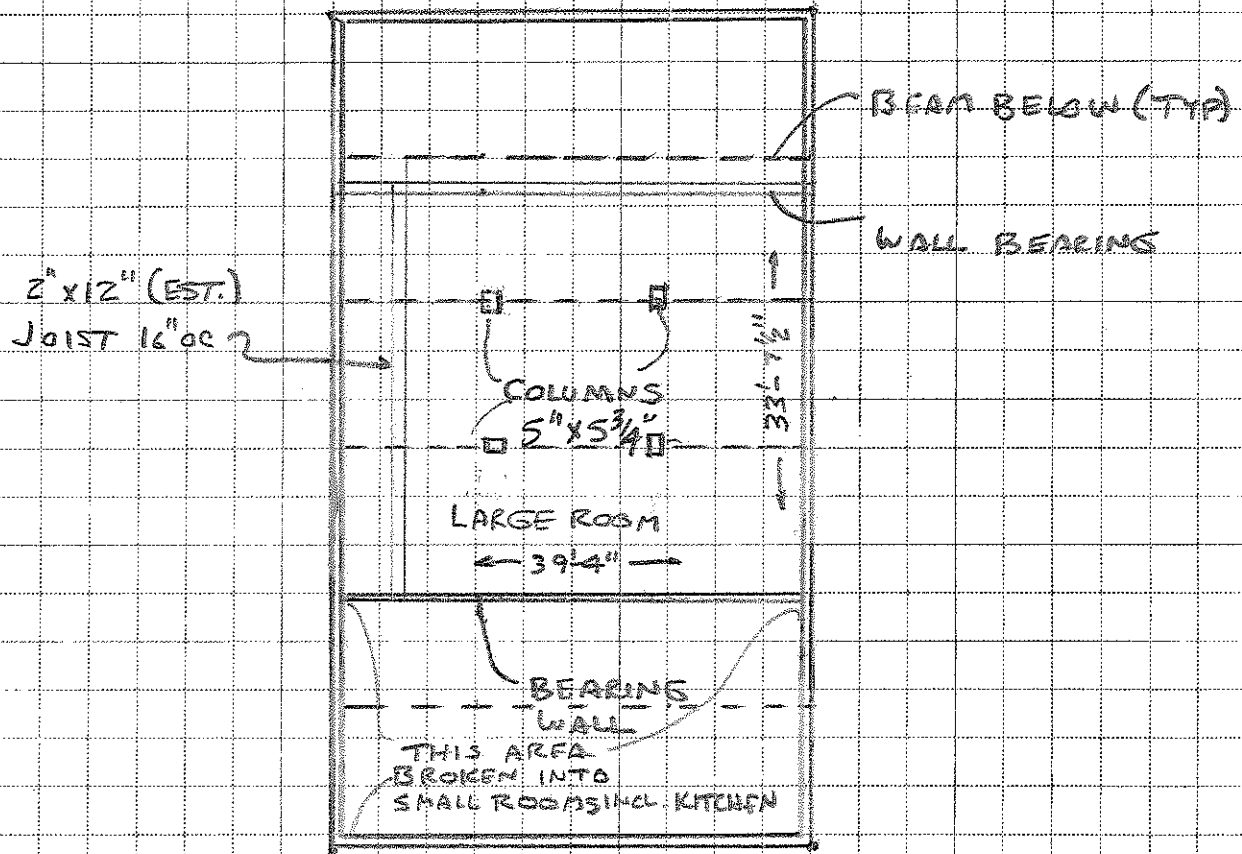


CLOUGH, HARBOUR  
& ASSOCIATES LLP  
ENGINEERS SURVEYORS PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

PROJ. NO. \_\_\_\_\_



FLOOR FRAMING  
NOT ACCESSIBLE  
JOISTS 12" DEEP (PROBABLY 2"x2")  
BEAMS PROBABLY 12" x 12"

FIGURE 4

COMP. BY PEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHIT COMB HALL

SUBJECT 2ND FLOOR PLAN



ClOUGH, HARBOUR  
& ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

PROJ. NO. \_\_\_\_\_

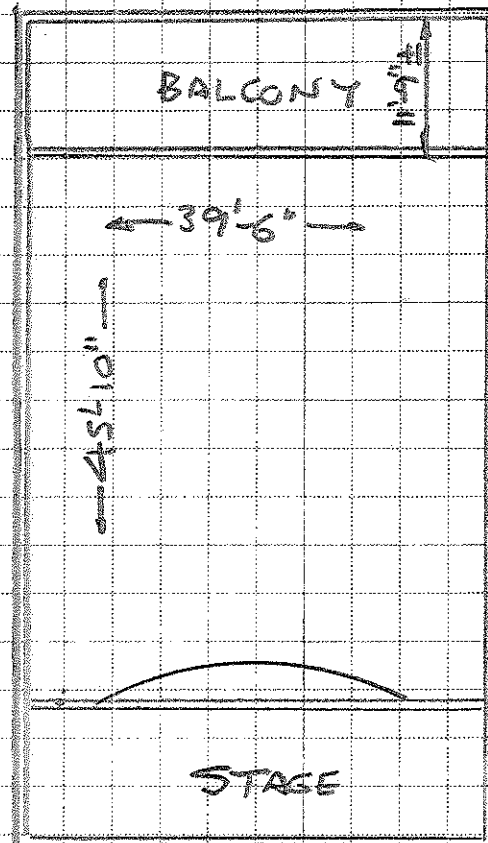


FIGURE 5



COMP. BY PEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHITCOMB HALL



CLOUGH, HARBOUR  
& ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

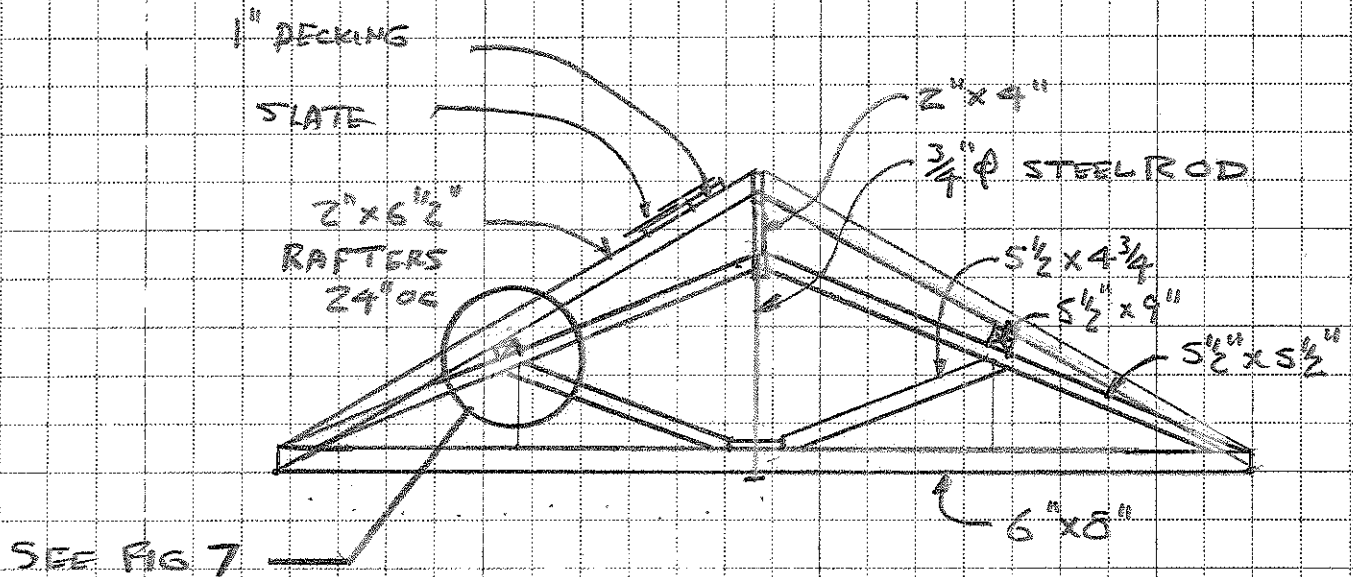
SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

PROJ. NO. \_\_\_\_\_

SUBJECT ROOF TRUSS PLAN AND DETAILS

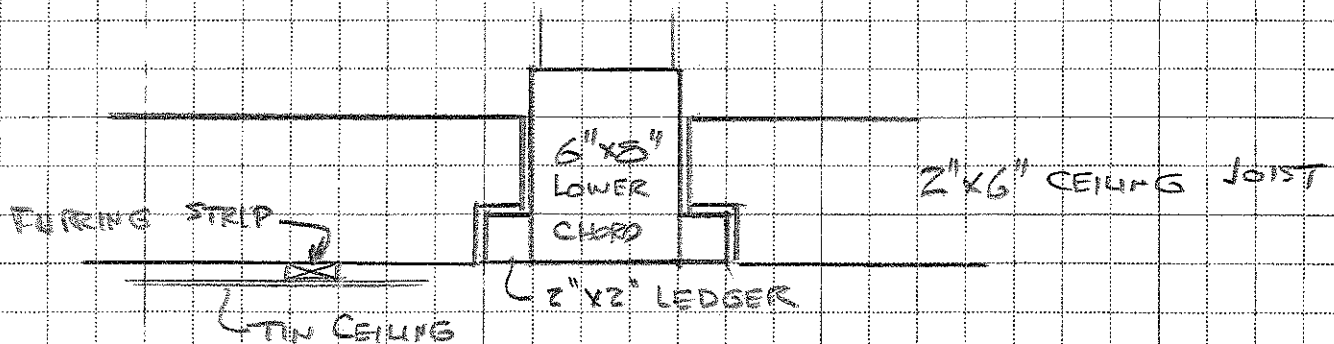
FIGURE 6



ROOF TRUSS  
SCALE 1/8" = 1'-0"

FIVE (5) TRUSSES SPACED 12'-0" ON CENTER

CEILING JOIST FRAMING



COMP. BY

FEG

CHECK BY

PROJ. NAME &amp; LOC.

WHITCOMB HALL

CLOUGH, HARBOUR  
& ASSOCIATES LLP  
ENGINEERS, SURVEYORS, PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET

OF

DATE

12/23/96

PROJ. NO.

SUBJECT

BRACING OF TOP PANEL POINT OF ROOF TRUSSES

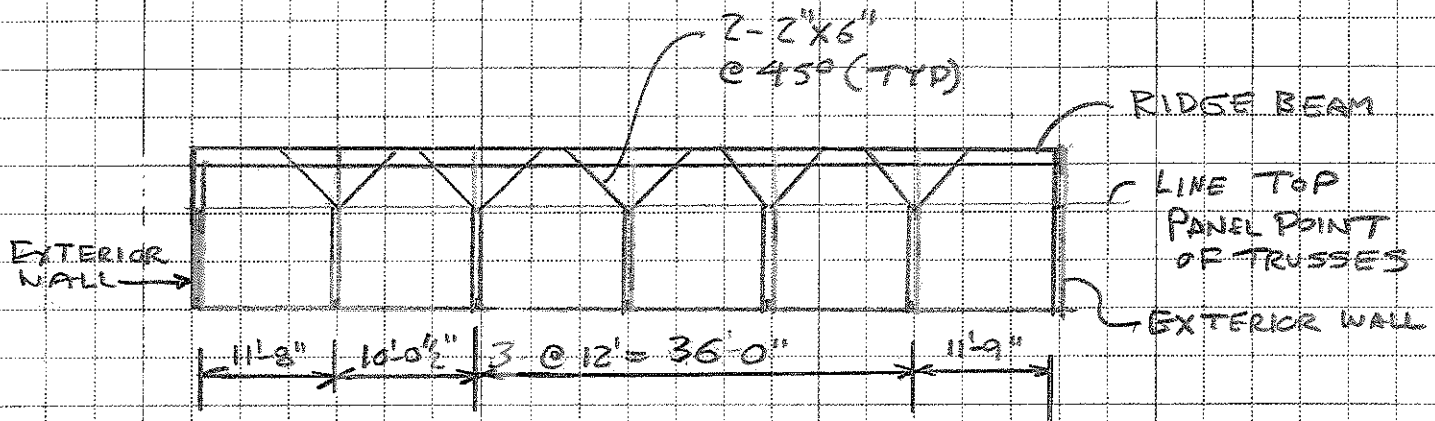
TRUSS BRACING  
RECOMMENDATION

FIGURE 7

COMP. BY PEG

CHECK BY \_\_\_\_\_

PROJ. NAME & LOC. WHITCOMB HALL

SUBJECT

ROOF TRUSS MODIFICATIONS

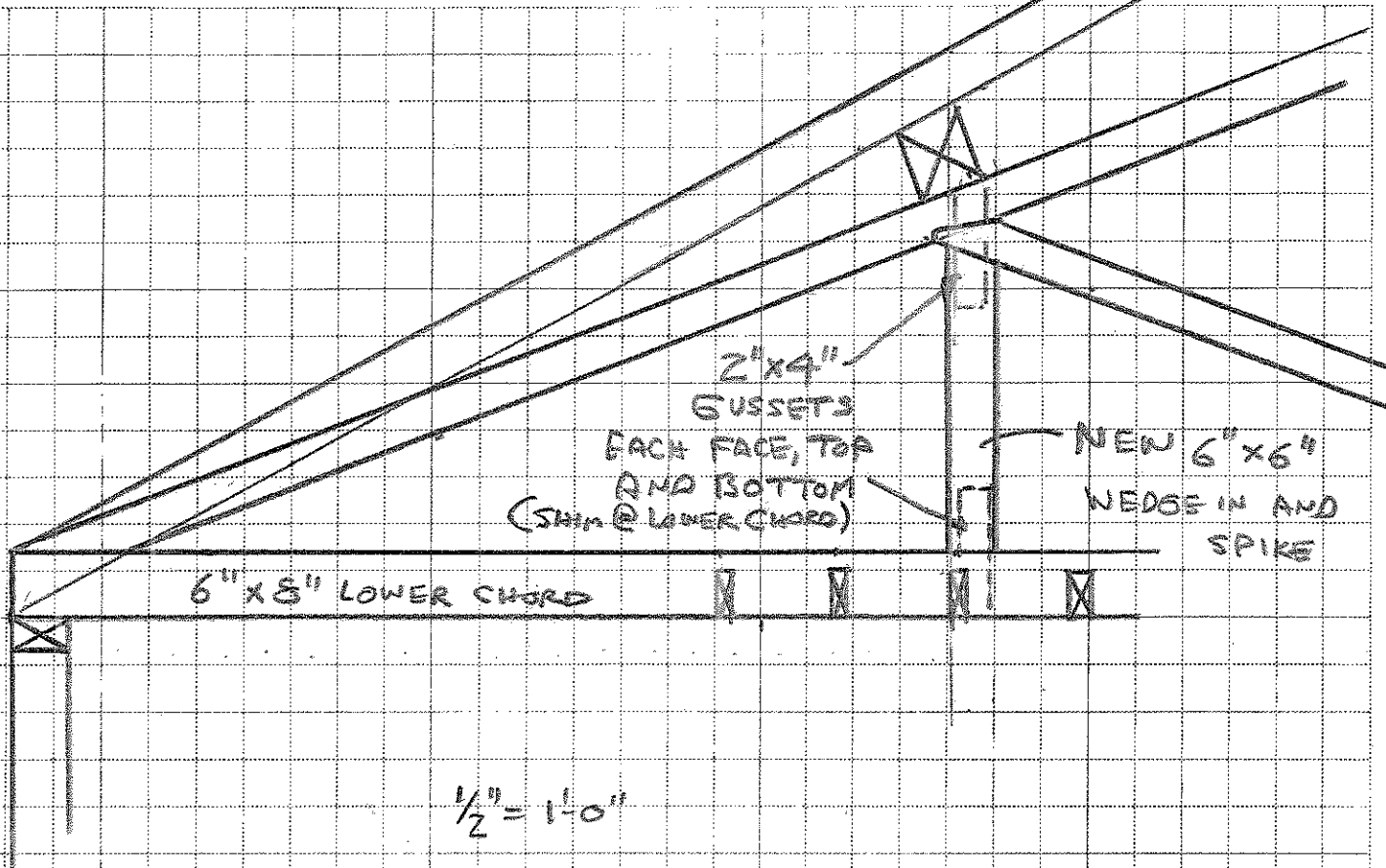


CLOUGH, HARBOUR  
& ASSOCIATES LLP  
ENGINEERS SURVEYORS PLANNERS  
& LANDSCAPE ARCHITECTS

SHEET \_\_\_\_\_ OF \_\_\_\_\_

DATE 12/23/96

PROJ. NO. \_\_\_\_\_



TRUSS MODIFICATION  
(TYPICAL BOTH SIDES)

FIGURE 8