

# **SkillsUSA**

## **2011 Contest Projects**

### **Architectural Drafting**

Click the “Print this Section” button above to automatically print the specifications for this contest. Make sure your printer is turned on before pressing the button.

## **Architectural Drafting**

Please note the following changes in supplies as well as the scoring detail

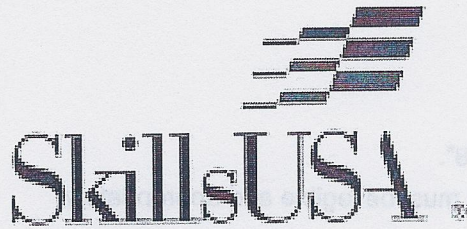
### **EQUIPMENT AND MATERIALS**

1. Supplied by the technical committee:

- a. The architectural drafting work station of a standard 6-foot table, a work area for reference material, a space for personal computer and a chair
- b. 110- volt electrical outlet
- c. Output hardware - plotter printer
- d. Drafting paper/vellum
- e. All necessary information and furnishings for judges and technical committees.

2. Supplied by the contestant:

- a. PC-type computer, monitor and input devices. Computers may be obtained from any source. Laptop computers are recommended.
- b. Removable data storage device, i.e. USB flash drive)
- c. Architectural software of choice.
- d. Students may bring published reference books, tables and software manuals. Reference materials must not take up more than 1 cubic foot of space and may be shared between contestants
- e. Typical personal drafting supplies desired for board drafting and freehand sketching subject to the approval of the technical committee.
- f. Battery-operated calculator
- g. Multi-receptacle power strip
- h. Students choosing to use board drafting equipment must bring their own drawing board, equipment and drafting supplies
- i. All competitors must create a one-page résumé using a word processor and submit the résumé electronically at: [www.skillsusa.net/newresume](http://www.skillsusa.net/newresume). Check the website for further instructions.



## Architectural Drafting

### June 23, 2011

Congratulations! You recently made a brilliant trade in the stock market and you now have the disposable income that will allow you to renovate the old barn located on the property your Grandparents' left you in their will. As the property and barn has been in your family for generations, it has been a hope of yours to be able to preserve the architectural legacy of the old barn by repurposing it and renovating it into a comfortable home.

The barn is constructed of heavy timbers and structurally is in sound condition. The stone walls at the perimeter of the first floor will require attention during the construction process, but assume they are in good condition for this exercise. Also assume the timbers on the perimeter of the second and third level are in good condition.

You will draft the preliminary construction documents for the barn renovation in order to get your first construction cost estimate. The barn has three levels; the main floor, the second floor and a loft. You will draft each of the three levels and two building elevations in addition to the drawings and information as noted later in this document. All drawings must be complete drawings, including dimensions and all appropriate annotations. Refer to the following information for specific requirements and materials.

You have two deadlines today. The hand sketch and lettering exercise are due at the first deadline which is at the lunch break.

The second deadline is 4:00 p.m. All remaining drawings and information are due at 4:00.

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Your task today is to provide the following documents:

- Hand sketch of exterior wall section cut where indicated on the attached floor plan sketch
- Hand-lettering exercise of the included quote using your best hand lettering technique.
- Dimensioned First Floor Plan created from included sketch.
- Dimensioned Second Floor Plan created from included sketch.
- Dimensioned Loft Plan created from included sketch.
- Two exterior elevations
- Openings Schedule(s)



## **General Information - Computer Generated Items**

- Use good CAD production techniques.
- You are allowed only one plotted sheet.
- Dimensioning, general text, and notes shall have a plotted height of 1/8".
- Other text (i.e. titles, room names) may be a height of your choice, but must be legible and appropriately sized using architectural conventions.
- Include a title and scale for each drawing on the sheet. Include a North arrow where appropriate.
- You will plot on a 24" x 36" sheet. Construct a border of a plotted size of 22" x 34". Place a 1" x 1" square (plotted size) in the bottom, right-hand corner of your sheet. Place your contestant number in this square.
- The scale of all required drawings will vary. Utilize wise sheet layout.
- Follow all written directions in this packet.

## **First Floor Plan – Computer-Generated Drawing**

1. First Floor per attached Sketch. (Use applicable information as included on the Existing Barn Plan as needed.)
2. First floor plan is to be plotted at a scale of  $\frac{1}{4}" = 1'-0"$ .
3. The exterior walls of the First Floor are 14" thick, solid stone. The top of the stone is 11'-0" above the concrete floor of the first floor.
4. The interior side of the stone walls shall be furred with 2 x 4 studs with 3  $\frac{1}{2}"$  batt insulation and  $\frac{1}{2}"$  gypsum board sheathing.
5. The exterior stone walls continue 36" below grade and sit on a concrete footing that is 42" wide by 14" deep.
6. All interior columns are 12" X 12" (actual size) heavy timber. They have mortise and tenon joints with wooden pegs to hold them together. The columns have 36" x 36" x 12" thick concrete footings if they do not bear on the exterior stone walls.
7. All Interior partitions on all floors are to be 2 x 4 wood stud framing with  $\frac{1}{2}"$  gypsum board on each side.
8. The first floor is concrete which shall be 4" thick reinforced concrete on 4" crushed rock with vapor barrier. The concrete slab will remain exposed as the finished first floor. The dimension from the concrete at the first floor to the finished second floor is 12'-0". Second floor to the loft floor is also 12'-0".
9. Roof rafters to be 4 x 12's with bearing at 26'-0" above the first floor line. Roof slope to be 8:12. Roof to have  $\frac{3}{4}"$  sheathing with standing seam metal finished roof. The roof shall be a gable roof.
10. Eaves to be closed with a continuous, vented soffit.
11. All overhangs to be 24" deep.
12. Show casework, appliances and plumbing fixtures. Do not show furniture.
13. Provide necessary interior and exterior dimensions for construction.



14. Dimension the rough opening of all exterior windows and doors.
  - a. Windows to be double-hung.
  - b. Exterior doors on the first floor to be 36 inch wide doors. All other doors to be 30 inches wide.
15. Indicate door and window sizes for each door and window in the opening schedules. Make sure each door and window is scheduled with a unique door number and window letter.
  - a. Include the openings schedules on the same plotted sheet as all other drawings.
17. Do not include electrical information.

### **Second Floor Plan and Loft Plan – Computer-Generated Drawings**

1. Second and Loft Floors per attached sketches.
2. Second and Loft Floor plans are to be plotted at a scale of  $1/8" = 1'-0"$ .
3. The exterior walls of the Second and Loft floors are framed with 12" x 12" (actual size) heavy timber columns, with 2 x 6 infill, 3/4" sheathing with lap siding on the exterior, 3-1/2" batt insulation and 1/2" gypsum board on the interior. The 12" x 12" columns bear directly on the 14" thick stone walls of the first floor.
4. The Second and Loft floors are framed with heavy timbers that are 12" x 12" in size. The floor is 1-1/8" tongue and groove solid wood flooring. The timbers and the underside of the floor are exposed from below.

### **Exterior Elevations - Computer-Generated Drawings**

Provide two exterior elevations, the South and the West elevations.

The elevations must be plotted on the same sheet as the other required CAD elements.

- Draft the both elevations at a scale of  $1/8" = 1'-0"$ .
- Provide proper annotation and dimensioning.

### **Hand Work – Wall Section**

Using the basic list of construction items provided below, the information previously stated in this document about the exterior wall construction types, and all notes included throughout this packet as applicable, develop a hand sketch of an exterior wall section including the footing, first floor, second floor, loft and roof. Wall section to be cut as indicated on floor plan sketch and identified with a letter "A".

-Hand draw the sketch at  $1/2" = 1'-0"$  on the provided paper. Put your contestant number in a 1" x 1" square at the bottom right corner of the hand sketch sheet.

-Provide all necessary components, as well as notes, dimensions, and material designations on your sketch. Include the entire wall from the footing, stone wall, and timber wall, up to, and including, the roof rafters and eaves. Break lines may be used to allow the sketch to fit on the sheet.



Include, at a minimum, the following on your hand sketch:

1. Concrete footing
2. 14" thick stone wall
3. Grade (especially as related to first floor)
4. Concrete first floor
5. Wood floor framing
6. Exterior wall construction types
7. Roof rafters
8. Any openings in section as applicable
9. Closed eave with appropriate depth overhang with continuous, vented soffit.
10. Exterior grade roof sheathing with finished roof material
11. Roof slope

### **Hand Work – Wall Section and Lettering Exercise**

Copy the following quote onto the provided graph paper using your very best hand lettering technique. Put your contestant number in a 1" x 1" square at the bottom right corner of the hand sketch sheet.

*"The creative vitality of architecture lay with those who embrace the new technology and celebrate it"*

*~Frank Lloyd Wright, 1901.*

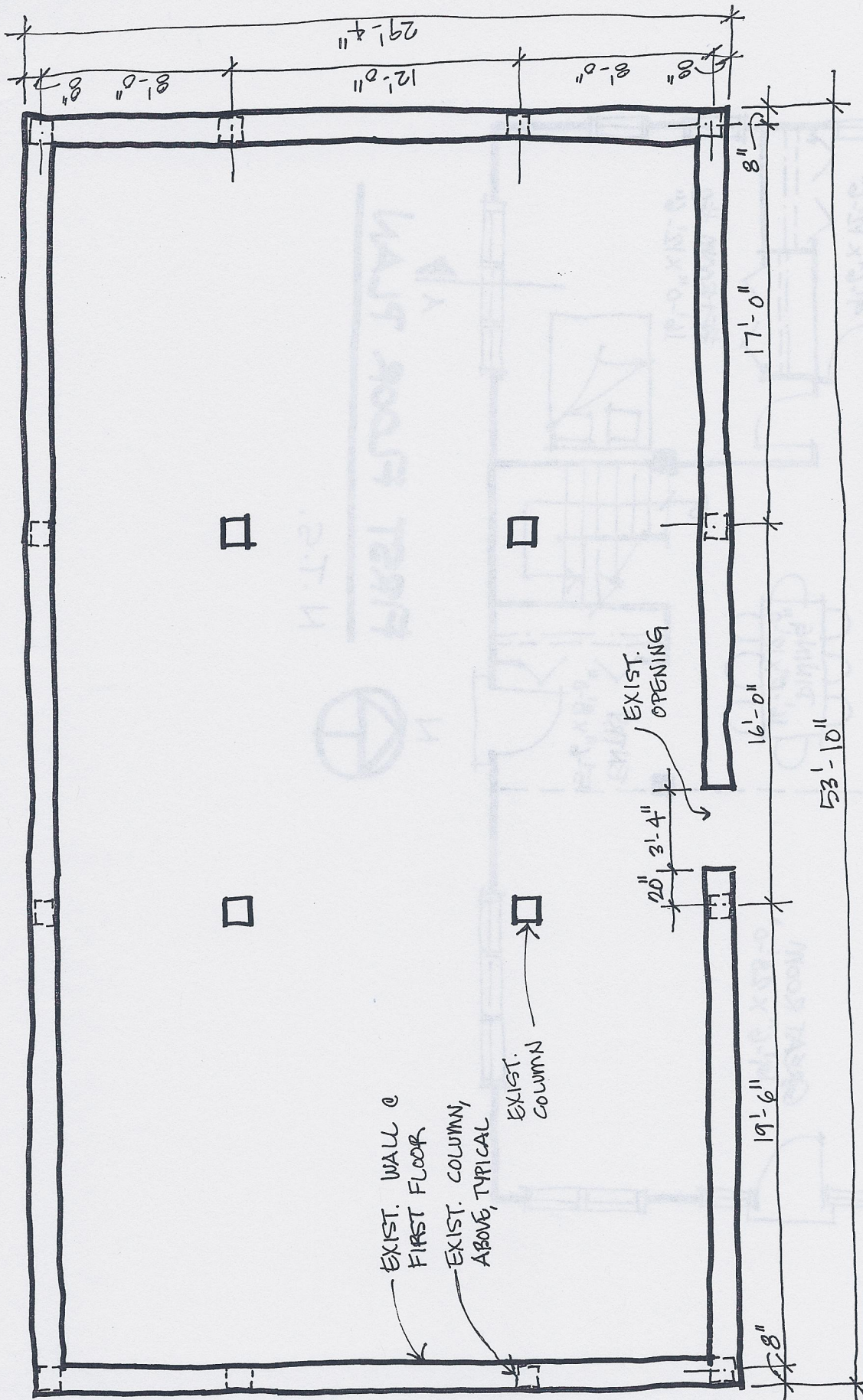
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Turn in the hand sketch and lettering exercise at the lunch break. Put your contestant number in a 1" square box on your hand sketch and your lettering exercise sheets. This shall be the only identifying factor on any of your sheets.

**\*\*Note:** When you turn in your hand work at the lunch break, you must ask for an additional packet of information regarding this competition. This additional packet will not be given to you unless you ask Ms. Boatright for it. An announcement will not be made at the lunch break to remind you to ask for this information. This additional information, however, is part of your judged competition.

Please name all of your electronic files with your contestant number, i.e. 123.pdf

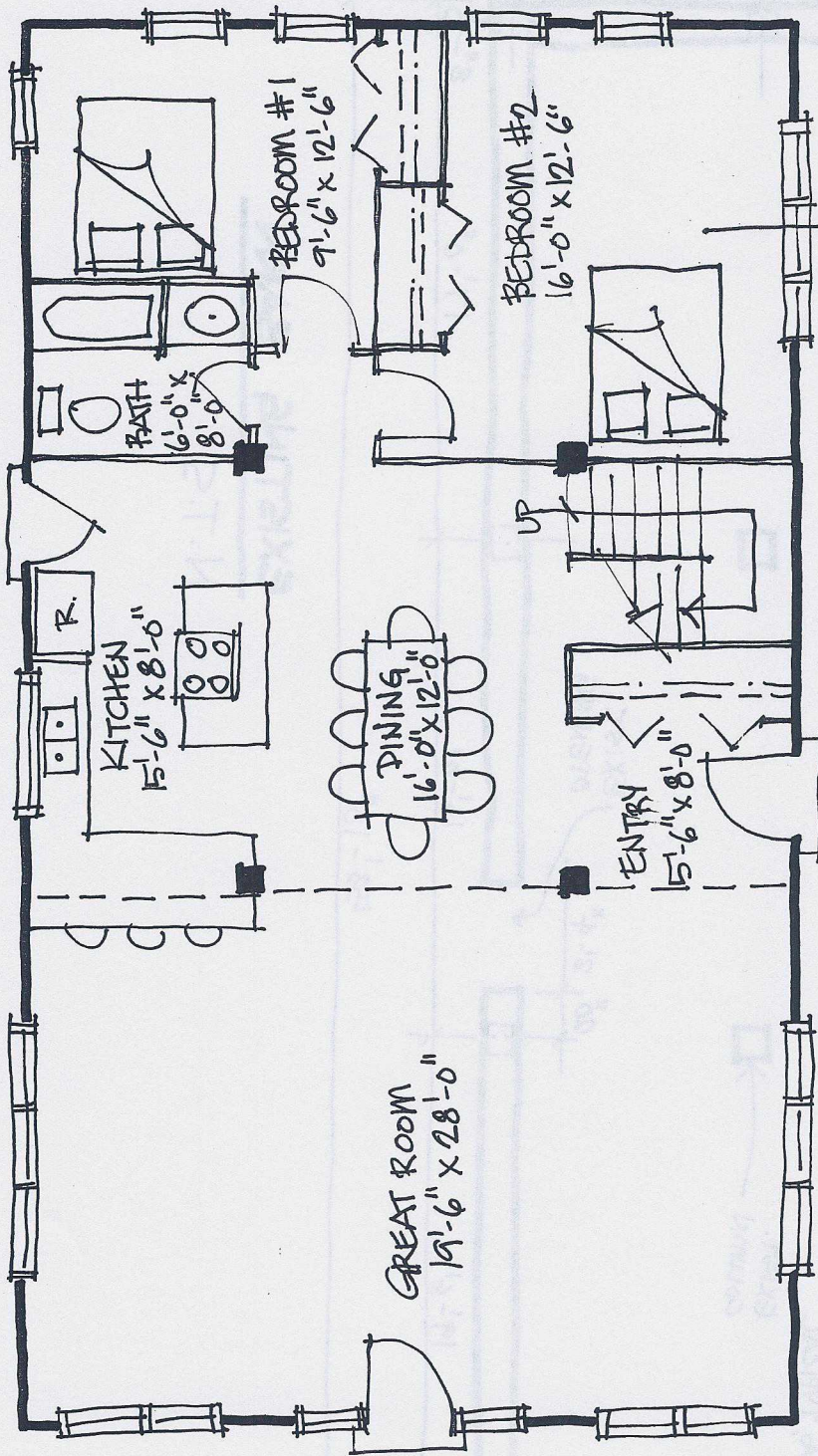





EXISTING BARN

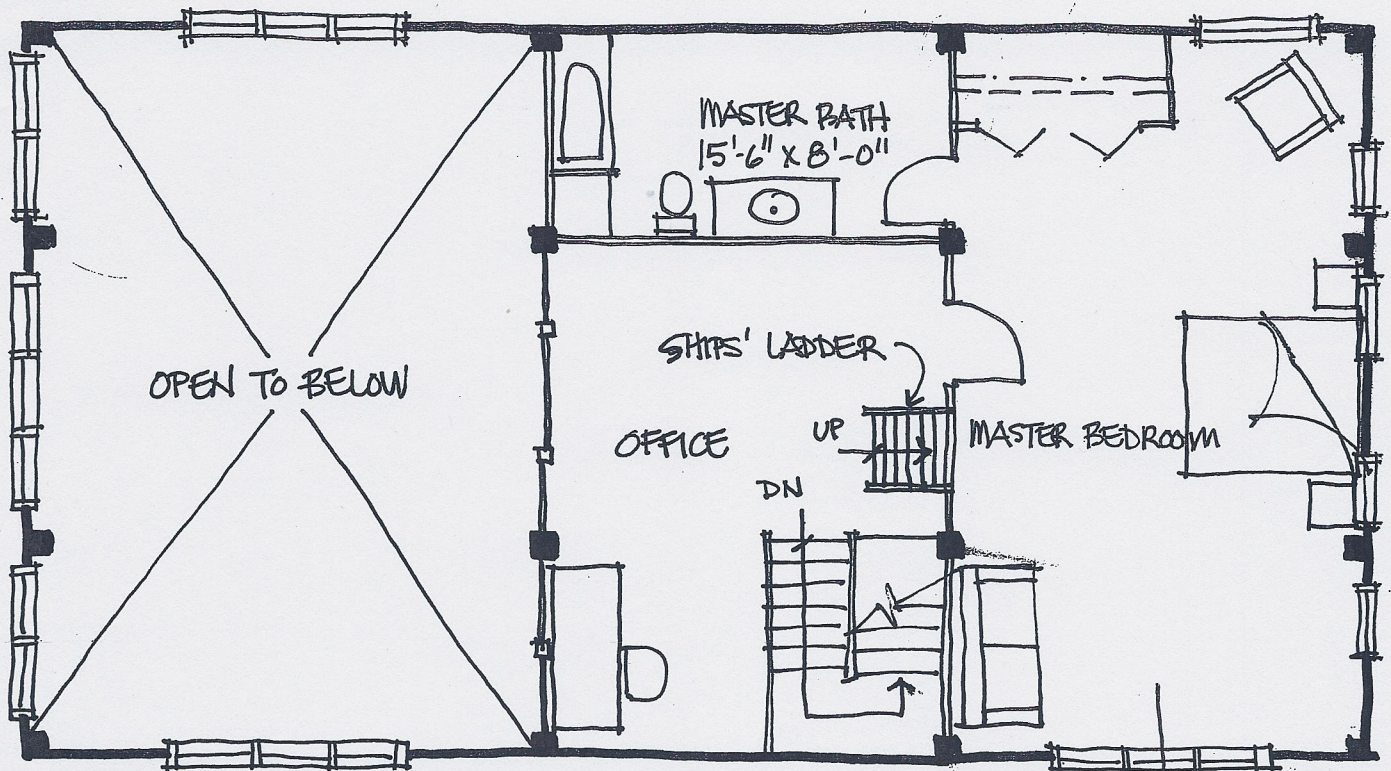
N.T.S.





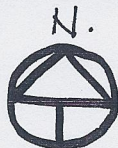
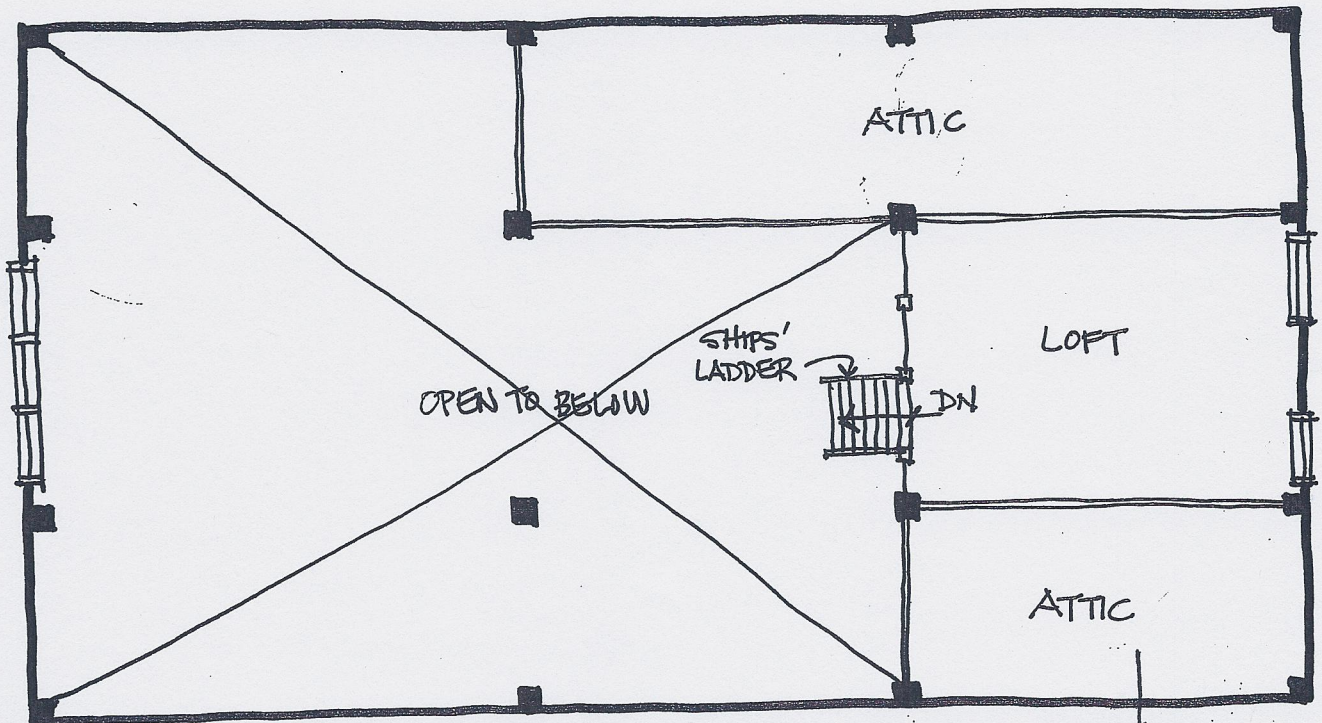

**FIRST FLOOR PLAN**  
 N.T.S.





## SECOND FLOOR PLAN

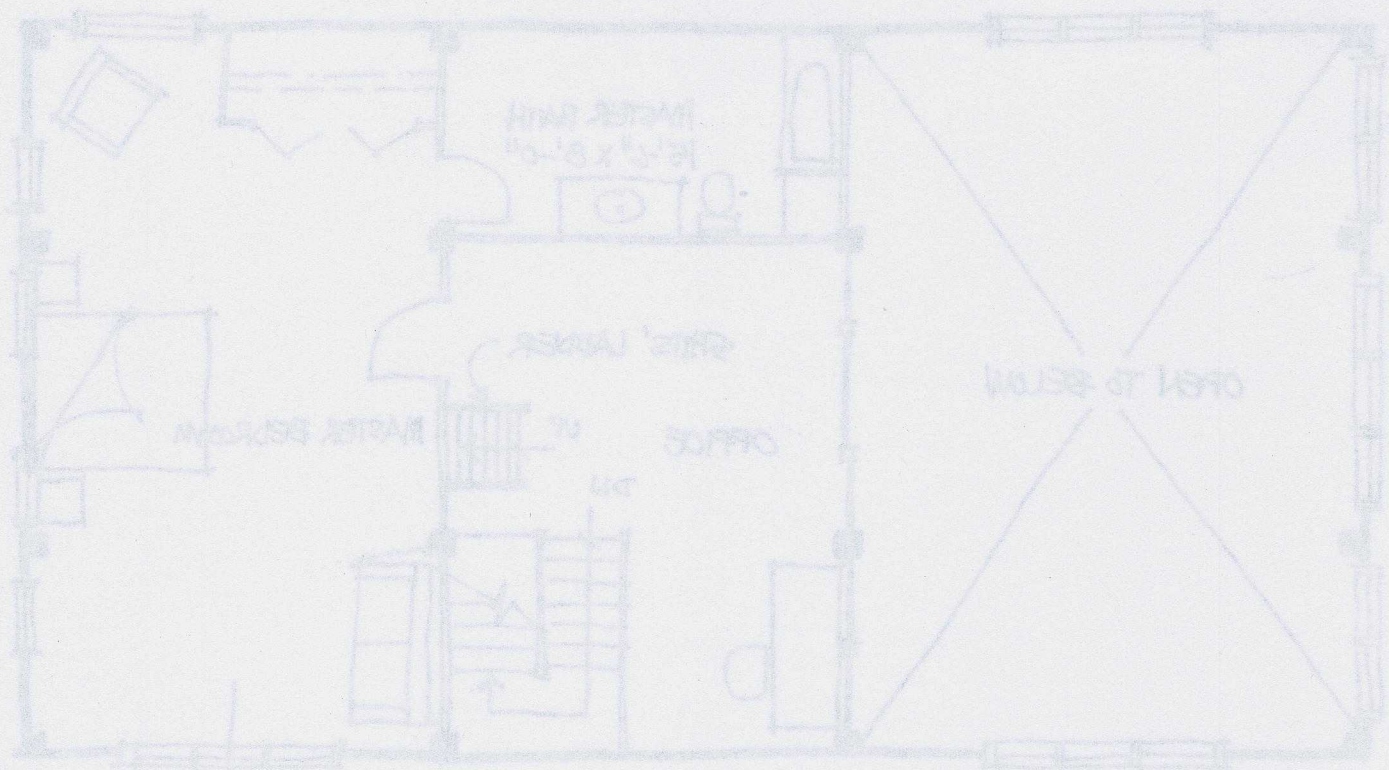
N.T.S.



## LOFT PLAN

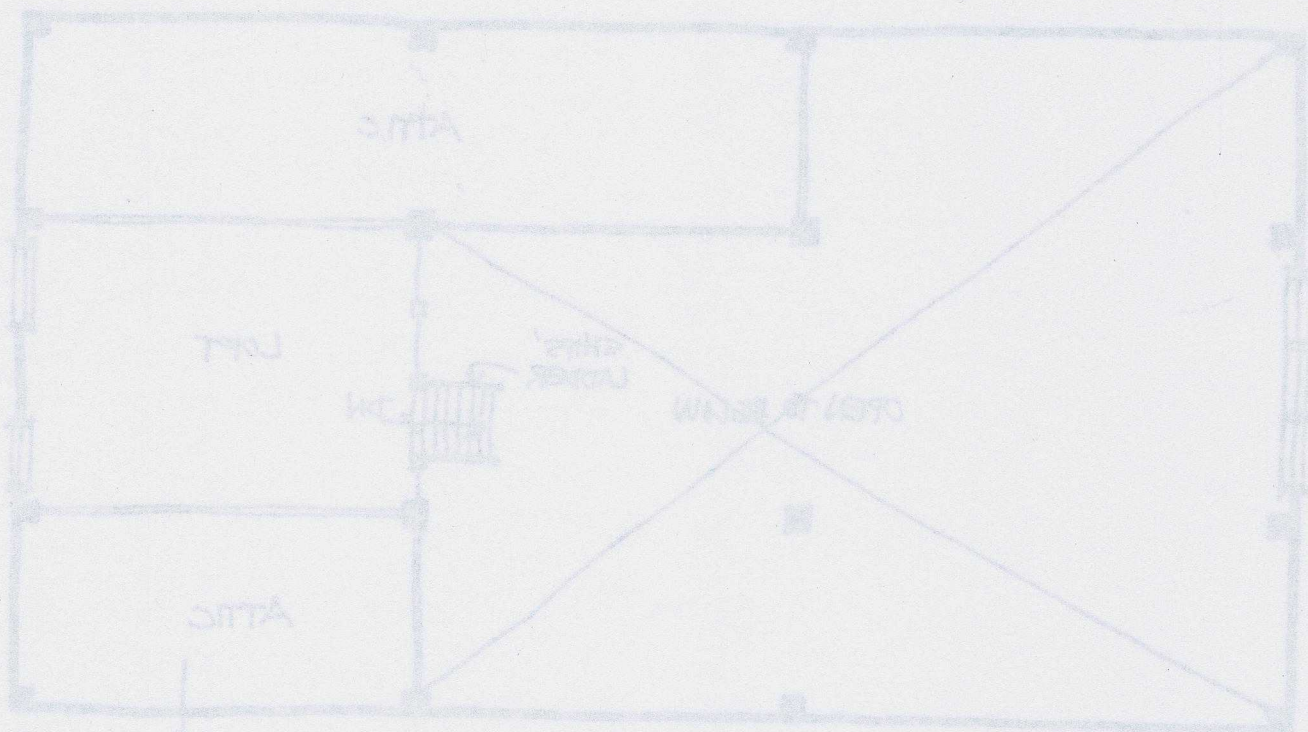
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SECOND FLOOR PLAN

H.T.S.



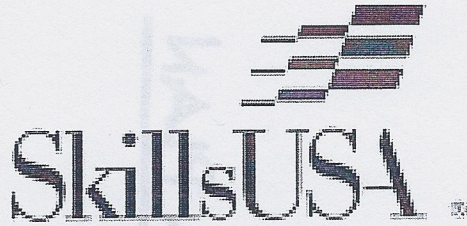
FIRST FLOOR PLAN

H.T.S.



1 of 1





Architectural Drafting  
June 23, 2011

### **Additional Information to be added to Problem Statement Packet**

1. Add the following drawing to your plotted sheet:

#### **Building Section - Computer-Generated Drawing**

Draft a full building section cut in the location as indicated on the attached Revised First Floor Plan sketch, identified with letter "B".

Scale of section to be  $1/4" = 1'-0"$ .

-Indicate the footings, exterior walls, interior walls, floor framing, roof rafters, and overhangs at a minimum on the section.

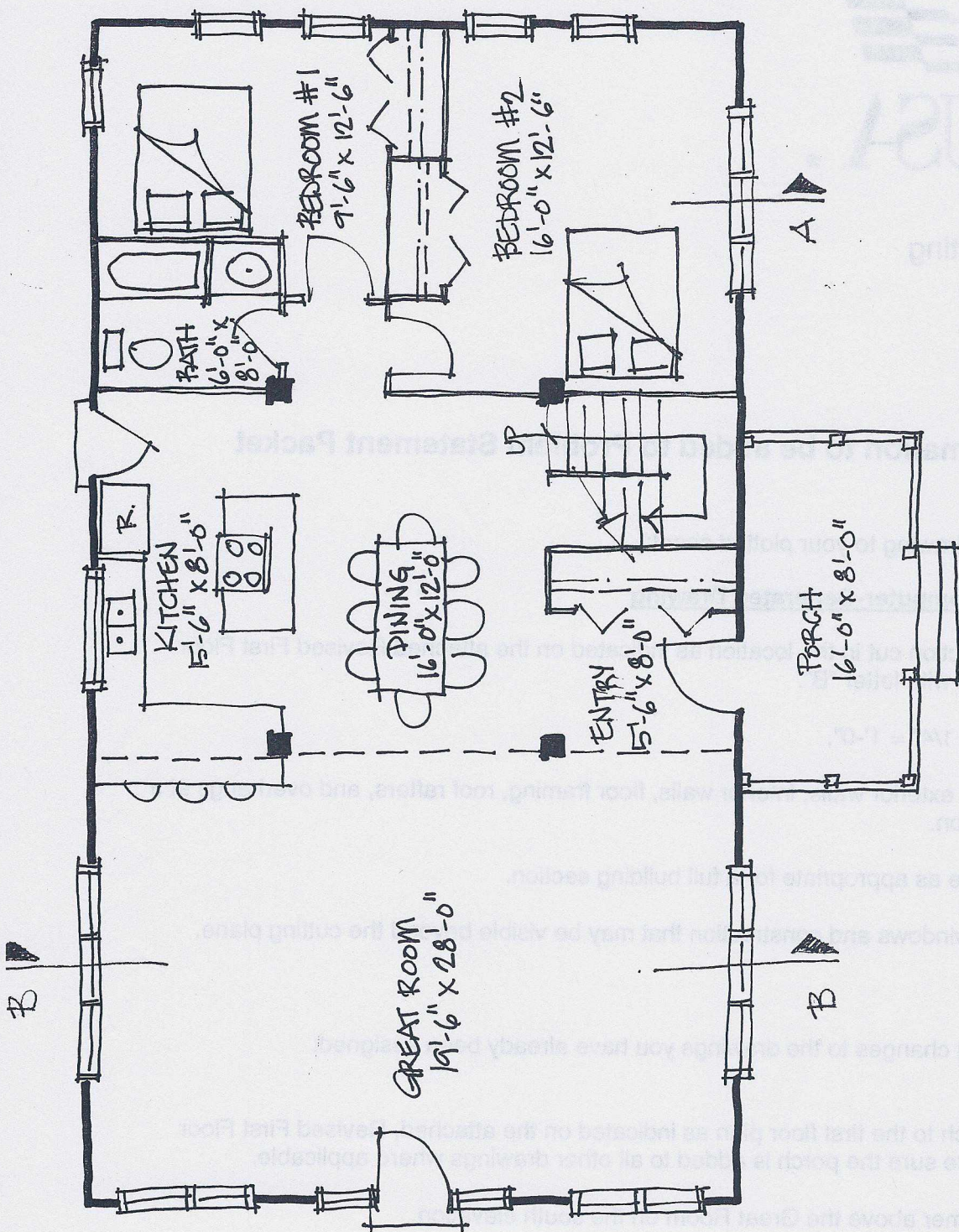
-Dimension and notate as appropriate for a full building section.

-Indicate any doors, windows and construction that may be visible beyond the cutting plane.

2. Make the following changes to the drawings you have already been assigned:

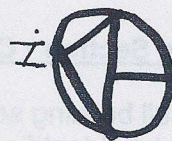
- a. Add a porch to the first floor plan as indicated on the attached, Revised First Floor Plan. Make sure the porch is added to all other drawings where applicable.
- b. Add a dormer above the Great Room on the south elevation.





# FIRST FLOOR PLAN

N.T.S.



REVISED