

Island School of Building Arts
Gabriola Island



TIMBER FRAME BENTS
Skills Report

Student Name: Billy Baker

Course: Timber Frame Bents

Course Location: Gabriola Island Campus

Course Dates: April 24th - May 19th, 2006 (4 Weeks/160 hrs.)

Hours Absent: 0

Instructors: James Mitchell - Tristan Caron

Project: Hammer Bents

Three Timber Hammer Bent Frame Trusses with Connecting Girts forming a space of 20 ft. x 30 ft. with a cathedral ceiling 24 ft. high. Each Frame Truss is comprised of Douglas Fir 8" x 10" Posts with 6" x 10" Hammer Girts & Posts; 6" x 10" Anchor Beam, Principal Rafters, and 4" x 12" curved kneebraces. 8" x 8" Purlins form the gable roof system. This Project employs Centerline Square-rule Layout on virtually 'corrected' timbers thereby allowing for precise joinery on curved, twisted or tapered wood. The Tenon, Housing and 'Fat' result in strong, accurate joinery.

Instructors Comments

Eleven people from diverse backgrounds have come together to produce a work of structural art, one can ultimately live in. I have been impressed with the camaraderie and help that each has shown toward the other. Each of you have given 100 percent of your efforts... You have learned precise Joinery through your understanding, patience and control. At times one must confront confusion and frustration, from chaos comes order. The result of your efforts is one of the most accurate triple-jointed Timber Framing project endeavours I have had the pleasure to instruct. Truly a fine example of excellence in individual and team workmanship!

It's easy to tell that Billy seriously enjoys wood joinery... with all the attention and focus prevalent in the last course, without the lack of self confidence. His Principal Post and ~~Rafter~~^{Anchor Beam} on Bent III shows excellence in 'corrected' timber layout and joinery... as does his Stepped Lap joint on the Purlin and the 3' and 4' housed Kneebraces. His test fitting of the pieces was methodical and exact. Excellent work on Raising the Bent... extra weekend disassembly of previous Hammer Bent Buildings. Work Journal shows excellent drawings and notes and Spread Sheet. Very good classroom participation. Overall Billy has shown excellent comprehension.

of the Timber Framing skills
Presented Now on with Log Bldg!

Good Job billy!
good luck in the industry.
You are a good timber framer.
Tristan Caron.

Instructor
James Mitchell

Assistant Instructor
Tristan Caron

Progress Levels

1 = Not yet within expectations

3 = Fully meets expectations

= Not applicable

2 = Minimally meets expectations

4 = Exceeds expectations

Skills Description

Building Design

- 1 2 3 Building Methodology - History, Design and Vocabulary of Timber Framing.
- 1 2 3 4 Lofting Design – demonstrates ability to apply Centre-line Layout, Lofting of Hammer Bents.
- 1 2 3 4 Working Drawings – demonstrates ability to develop the individual Timber Bent component Shop drawings.
- 1 2 3 4 Frame Design – the ability to design appropriate joinery for specific requirements.
- 1 2 3 Calculating Volume, Weight and Centre of Gravity for Raising Bents.
- 1 2 3 Calculating Loads in Lifting Tackle for Raising Bents.

Project Design and Loft Hammer Bents, Connecting Girts and Purlins. Draft Joinery Shop Drawings

Wood

- 1 2 3 Properties, Grades and Seasoning – demonstrates an understanding.
- 1 2 3 Timber Selection & ability to identify timber defects and appearance and locate appropriately in the Bent.
- 1 2 3 4 Hand Power Planing and Edging – demonstrates a working ability.
- 1 2 3 4 Finishing, End Sealing and Repair - demonstrates a working ability.

Project Select timber location in Frame, based on appearance, defects and structural capacity

Tools

- 1 2 3 4 Identification – demonstrates appropriate tool for the job and proper handling.
- 1 2 3 4 Power/Hand Tool Operation and Safety – demonstrates consistent safe manner.
- 1 2 3 4 Sharpening and Maintenance – demonstrates ability to Sharpen and Maintain Tools.

- 1 2 3 4 Jig and Template Fabrication – fabrication of devices to enable repeated cuts or procedures
- 1 2 3 Mechanical Advantage – an understanding of various types and methods.
- 1 2 3 4 Personal Tools- Maintains an orderly Tool Box
- 1 2 3 4 Work Journal- demonstrates an understanding of the course teachings.

Project Makita, Mafell, Porter Cable, Milwaukee, Delta, Stihl, Hitachi, Skill power tools utilized. Use and Maintenance of hand tools.

Timber Layout

- 1 2 3 Timber Identification – ability to choose and orient Timber crown and face surfaces in preparation for 'Corrected' Timber layout.
- 1 2 3 4 Corrected Timber Layout – ability to correctly Level and place Grid Lines and test with Zero Line.
- 1 2 3 4 Square Rule Layout – ability to Locate and Layout Timber Joints using a Square Rule.
- 1 2 3 4 Template Layout – ability to employ Templates in Joinery Layout and Cutting.
- 1 2 3 4 Quarter Point Layout- ability to Layout a mathematical curve.
- 1 2 3 4 Joinery Test Fitting- ability to test Layout Line accuracy and Adjust appropriately.
- 1 2 3 4⁺ Inventory and Production Control- demonstrates an ability to maintain Production Inventory spreadsheets for timber Components. *Excellent Spread Shet!*

Project Able to identify and layout male and female joinery on 'corrected' timber.

Timber Joints

- 1 2 3 4 90 degree Tenon and Mortise (Blind and Through wedged)- demonstrates ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 Sloped Shoulder Tenon and Mortise- demonstrates ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 45 degree Tenon and Mortise with Sloped Shoulder – demonstrates the ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 Housing – demonstrates ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 Housed Knee Brace Centered/Offset Tenon and Mortise – demonstrates ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 Housed Lap- demonstrates ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 Fork and Tongue Mortise and Tenon- ability to Locate, Layout, Cut
- 1 2 3 4 Spline Joinery- ability to Locate, Layout, Cut and Assemble.
- 1 2 3 4 45 Degree Mitre- ability to Layout and Cut the virtual 'fat' for Corrected timber joinery.
- 1 2 3 4 Assembly and Labelling – ability to correctly Label Timber Bent

Components and 'tune' Frame during pre-assembly process.

- **1 2 3 4** Miscellaneous Joinery- *Purlin*
- **1 2 3 4** Drawboring and Pegging – ability to Locate, Layout and Drill offset peg holes for 'draw' effect. Peg size and spacing.
- **1 2 3 4** Frame Raising – demonstrates ability to plan and assist in Raising the Frame. *Extra weekend disassembly!*

Project Hammer Bent Construction, Preassembly and Raising of Framework.

Foundation Systems

- **1 2 3 4** Building Layout- demonstrates the ability to Layout the dimensions of a Project Building.
- **1 2 3 4** Grade levels and Excavation- demonstrates the ability to set Grade Levels and excavate for Project Pier Foundation.
- **1 2 3 4** Foundation Forms/Types- demonstrates the ability to set Temporary Foundation Piers.

Project Ability to use a transit level ; construct a temporary pier foundation.

Wall Systems

- **1 2 3** Types- understands the various types of Wall Systems.
- **1 2 3** Bracing Types- understands the effects of Diagonal; Diaphragm; and Tensioning forms of Wall bracing.
- **1 2 3** Modular Infill- demonstrates the ability to fabricate and place infill walls using Expanded Polystyrene (EPS) Infill with Acrylic Stucco Finish.

Project R20 Wall Infill Demonstration

Roof Systems

- **1 2 3** Types- understands the various types of Gable Roof Systems
- **1 2 3** Structural Beam Sizing- able to determine Roof Ridge and Purlin Beams from Structural Tables
- **1 2 3** Lofted roof Layout- able to full-scale loft roof dimensions for joinery and construction details

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