



Challenging Designs & Innovative Solutions in Heavy Timber

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What you should learn today?

- Timber is the sustainable material choice
- Timber is a high-tech, sophisticated material
- Timber buildings come in all shapes and sizes
- Everyone should be designing with timber



Green Design

- Only 1-3 % of construction is 'green'
- Gaining momentum
- ¼ of all harvested wood worldwide is for buildings
 - major impact on planet and society
- WWF 'One Planet Living' lists need to reduce energy use and material waste in building design

WOOD is most sustainable material option!



Green Design

- Steel uses 2x energy than timber in production
- Steel produces 1.5x more CO₂
- Steel produces 120x water pollution
- Similar for concrete – cement (8% CO₂ GHG)

WOOD is most sustainable material option!



Hanover, Germany, Expo 2000

- Wood canopies - Expodach
- Out buildings from various countries



Swimming Pools - France

- Pool shell in St. Quentin-en-Yvelines
- Pool roof at Sète, France



Highway bridges - France



Courtesy: Arborescence, France



Courtesy: Arborescence, France



Financial benefits of green schools (\$/sq.ft.)
 "Greening America's Schools" October 2006

Energy	\$9
Emissions	\$1
Water and wastewater	\$1
Increased earnings	\$49
Asthma reduction	\$3
Cold and flu reduction	\$5
Teacher retention	\$4
Employment impact	\$2
Total	\$74
Cost of greening	(\$3)
Net financial benefits	\$71



Stadiums – Europe

- Lillehammer 1994
- "Viking Hull" approx. 300 ft span glulam arches
- Skating oval – approx. 280 ft. span glulam arches
- Sports centre - France



Glulam

- Kiln-dried material
- Stress-rated lamination stock
- Best laminations on outer surfaces

- Reduced material variability = increased reliability
- Increased reliability = higher strength capacities



Computer Numerically Controlled (CNC) Equipment

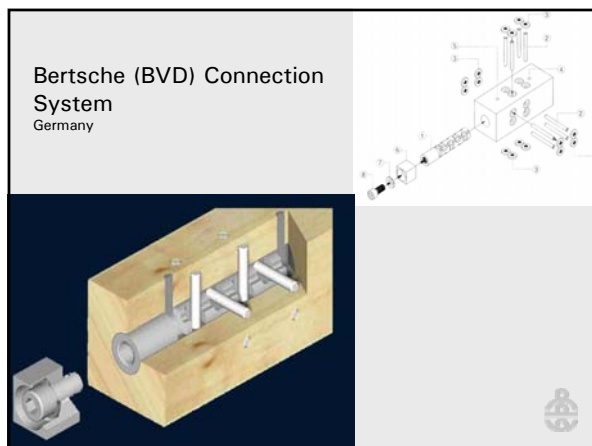
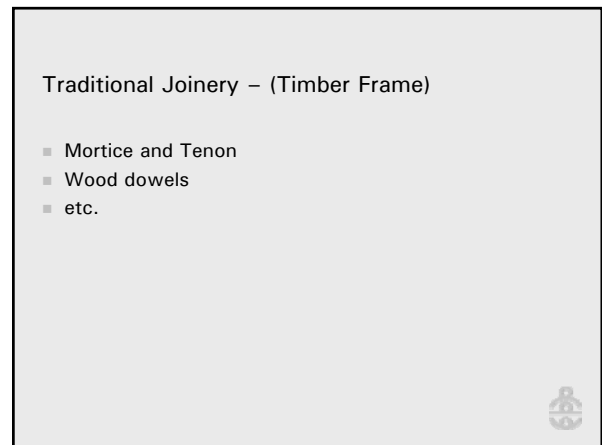
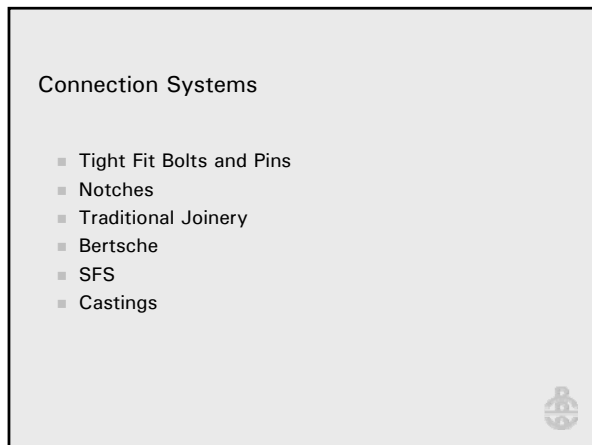
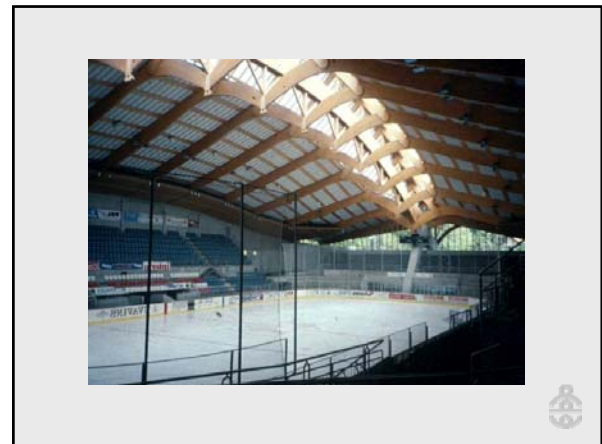
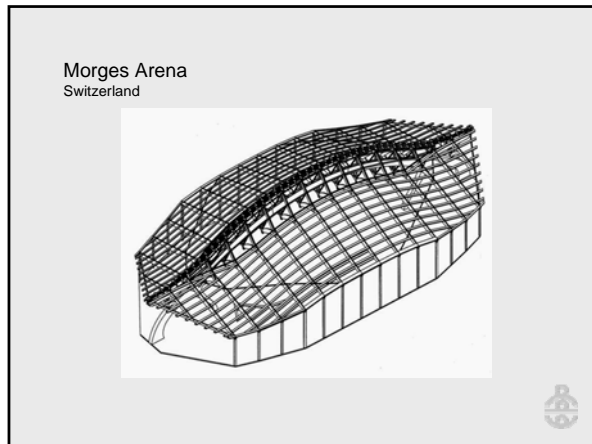
- Hundegger K2 – 3 axis (Germany)
- Creneau – 5 axis (France)

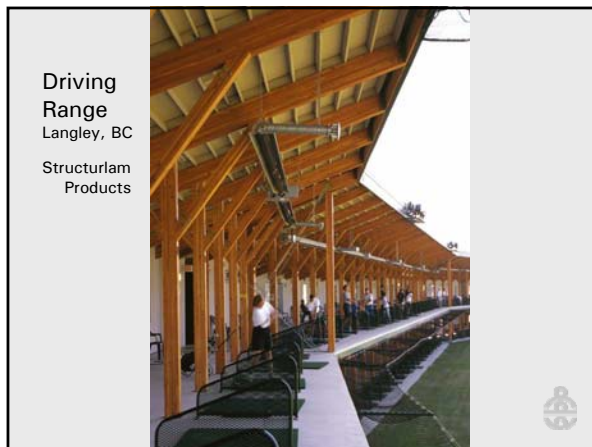
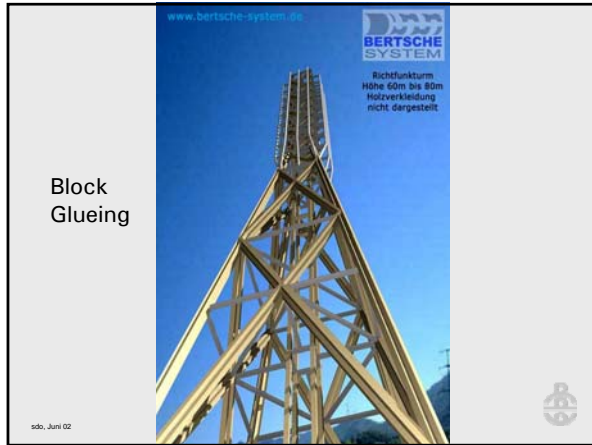
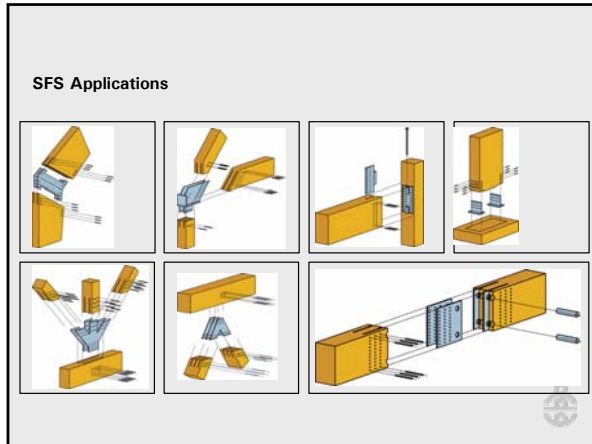


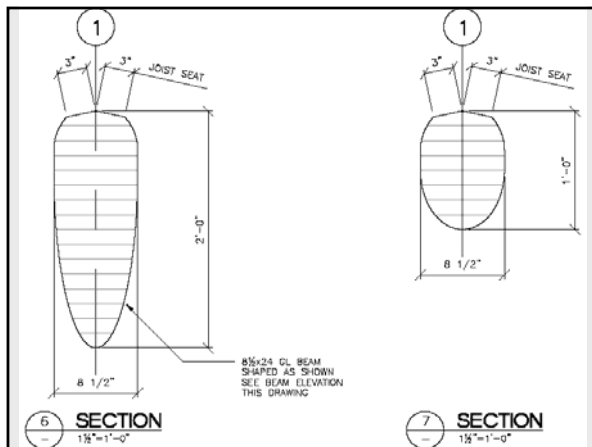
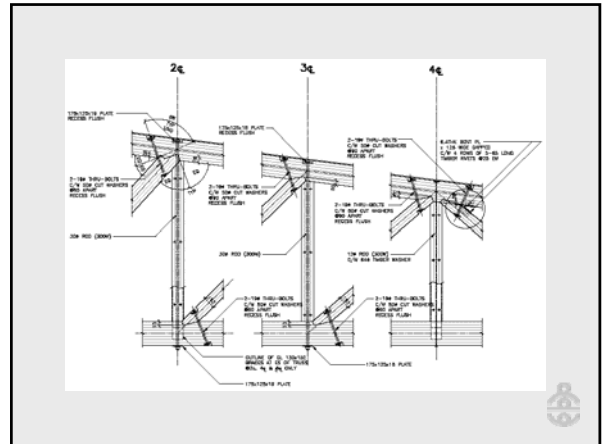
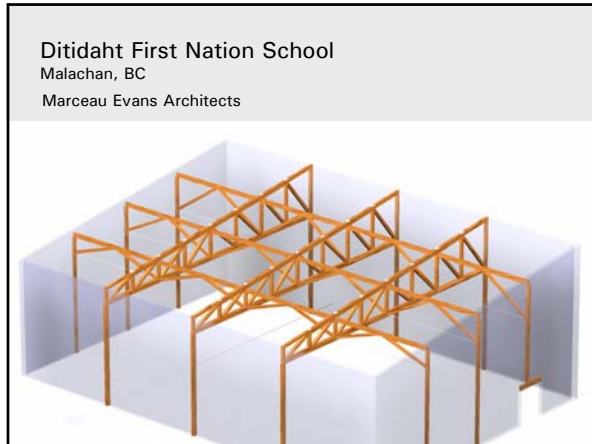
3D Modelling + Detailing

- *CadWork*® (3D CAD + shop drawing software)
- *Rstab* (Analysis software compatible w. *CadWork*)












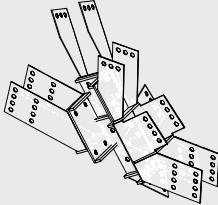

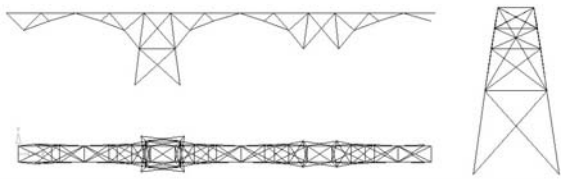


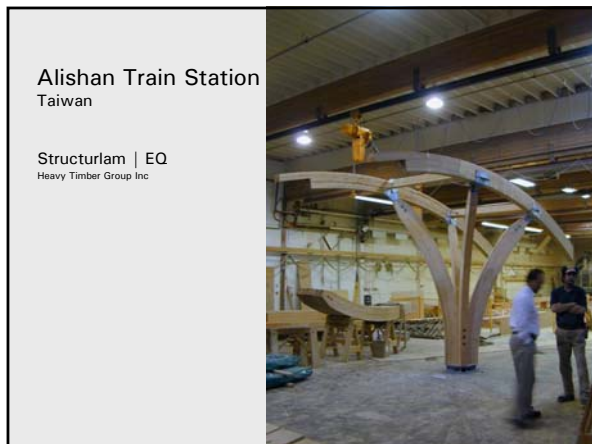
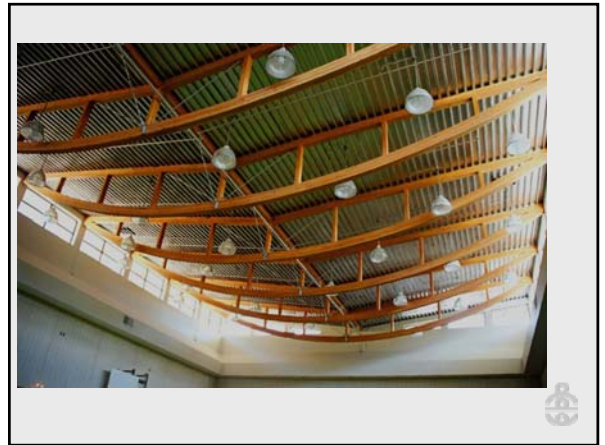
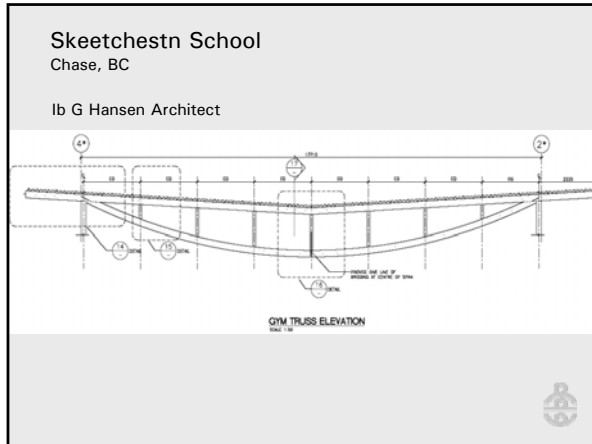
Doig River Band Community Center
Rose Prairie, BC

Ib G Hansen
Architect



McCulloch Trestle pedestrian bridge,
Penticton, BC

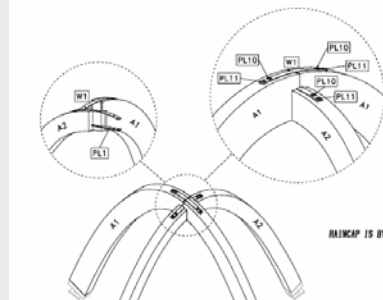




Nicola Valley Institute of Technology
Phase I, Merritt, BC
Busby + Associates Architects



Rogers Pass Monument, BC



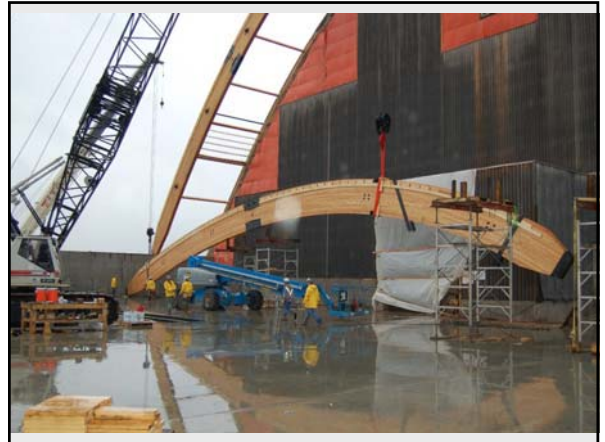
Rogers Pass Monument, BC



Great Wolf Lodge, Niagara



AGRIUM Potash Storage and Handling
Vanscoy, Saskatchewan
Structurlam Products



Raleigh Durham Airport, North Carolina
Fentress Bradburn Architects
ARUP

