



## FIDDLER ON THE ROOF

The Centre for Performing and Visual Arts Program (PVA) of Central Memorial High School staged a production of the play "Fiddler on the Roof" this past spring. The stage set requirements called for the look of a small Russian village in the year 1905. We were happy to assist them in supplying materials to construct the set, however the most appropriate materials should have been weathered and aged looking. Fortunately for us, but not for the set, a lumber yard full of old weathered, grey lumber is not the model of a successful enterprise. We were able to provide the dimensional framing materials along with 1" Rough Cedar Boards for that rustic look, and Heavy Cedar Shakes for the roof. The set design crew painted the facades to provide an aged patina. If you ever wish to see the what a dedicate teaching staff and hard working, involved students are capable of delivering, look no further than one of the schools productions in the upcoming year. You will be impressed. In addition, if you would like to know about the schools program for your self or a young person interested in the Arts, who will soon be entering high school, visit their website [www.projects.cbe.ab.ca](http://www.projects.cbe.ab.ca). The program could always use additional funding assistance and would welcome donations.



Labour Day Weekend – We will be closed Monday, September 5, 2011.

## DO THE MATH

In the **Journal of Construction Engineering and Management / March 2011**; a research paper entitled “Combinational Algorithm for Optimizing Wood Waste in Framing Designs was presented. “As a result of elevated labor costs, a shortage of trades’ personnel, and a lack of efficient construction methods, many construction companies in Western Canada waste primary materials. In general these firms suffer from a lack of effective construction guidelines and process standardizations”. The paper focused on; “the use of mathematical algorithm which maximizes the use of wood materials for platform-framing residential construction. In particular, to reduce waste by generating a cutting list for wood studs and sheathing (OSB)”. A combinational analysis algorithm was developed and applied to determine the best cutting procedure for wood stick frame houses.

The majority of the analysis focuses on the linear programming aspects of solving the optimal cutting procedures for studs and sheathing to minimize the amounts of waste produced. Previous research conducted by Mah (2007) classified waste material waste by type such as joists studs drywall and sheathing and observed that for 5 houses (1700 sq.ft.) the average amount ranged between 751 and 1,349 kg.; with wood waste accounting for 89% of the total waste . Of this percentage, dimensional wood waste accounted for 49% (between 368 and 661kg). Sheathing represented 40% (between 300 and 540 kg).

### RESULTS

The predicted material waste if 8’, 9’ and 10’ studs are used is 0.585% of the total amount of stud material required in length. For the example given that would be .58% of 511.41 Lineal Meters = 3 M. Stretching it out to a total of 2 studs (2.35M) at proximate \$6.00 Clearly the majority of wood waste is not accounted for by stud cutting! But rather contained in the plate, joist blocking, lintels, headers or other miscellaneous framing requirements. The total waste for sheathing after running the optimization model can be reduced to 21 kg. An application of separating out floor from wall/roof sheathing was not distinguished. Assuming only wall/ roof sheathing is considered, and using the figures of 300 kg - 21 kg = 279 kg that would equate to 14 sheet at proximate \$105.00; based on the weight of a 4x8-3/8” sheet of OSB at 19.09 kg. There is no allowance made for proper construction techniques of aligning the sheathing edges parallel to all framing studs, trusses and other framing members where required.

In fairness, the application is under both theoretical and ideal conditions that would not be likely in residential jobsites due to working area limitations and other factors, however there were several observations that were made that are noteworthy; “The homebuilding industry is noticeably lacking in terms of comprehensive residential construction drawing system mostly because of the unique characteristics associated with each individual project; Thus the industry only provides architectural floor plans and elevations to construction trades such that trade personnel are relied upon to recall an accurate mental picture of the proposed design (This would also apply to our design and estimating personnel). As a consequence, material waste varies significantly from trade to trade for the same house model. Furthermore there are no incentives in the current practice to minimize material wastes, which is why materials are frequently misused at construction sites” “The minimization of material waste should have both an economic and an environmental impact since it facilitates sustainability in construction practice through the responsible use of primary resources.”



## D&E BURSARY, AT UNIVERSITY OF CALGARY

Davidson Enman Lumber provides for a **\$2,000.00 bursary** to a student entering third or fourth year of Civil Engineering at the **University of Calgary**. The competitive award is based on financial need, academic merit and an interest in the construction field. The **Davidson Enman Lumber Ltd Bursary** was established in 1975. **PROLINES** would like to congratulate this years’ recipient; **Mr. Nathan Feeg**.



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