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July 27, 2006

New England Lumber Specialties, Inc.  
202 Day Street  
West Springfield, MA 01089

Attn: George H. Lantz, Jr.

RE: Nels-Tek Trim Evaluation

Dear George;

In accordance with your request, this office has completed a cost comparison of Nels-Tek PVC trim. The focus of the evaluation was a comparison of the short and long term benefits of Nels-Tek PVC trim products, as they compare to pine trim, which is commonly used in residential construction in this area.

### **BACKGROUND INFORMATION**

Pine trim is a porous and fragile material which, even when meticulously primed and painted, will typically not last beyond 15 - 20 years in the harsh New England climate. Failure to properly prime and paint may reduce the total useful life by half in our experience. In fact, this office deals with many community associations which have severe pine trim failures after as few as ten years. Moisture transfer often renders pine trim unable to hold coatings. Cyclical moisture contact can cause pine trim to deteriorate, usually at the cut ends, in as few as five years.

For comparison purposes, we have assumed that the end user will paint Nels-Tek every 7 - 10 years, although it should be noted that Nels-Tek is not always painted. However, just as is the case with pine trim, proper preparation and application of the coatings ultimately determines the life cycle of the coating. Regarding painting, PVC trim products should not be painted dark colors if it can be avoided. Dark coatings will increase heat gain substantially, which will increase thermal expansion and contraction after installation. If Nels-Tek must be painted a dark color, additional special considerations regarding cutting and fastening are necessary.

There are two types of commonly used pine trim in the residential construction market in this area. Finger-jointed trim, which is made up of several smaller pieces of pine bonded together, makes up a small percentage of the pine trim (although increasing) that this office encounters. Solid pine trim is by far the most common trim material in this marketplace. PVC trim, while not previously used as often as pine, seems to be steadily gaining ground. This office has found finger-jointed pine to provide the shortest overall useful life, as the joints tend to separate over

time due to expansion and contraction. This office commonly views finger-jointed pine trim which is failing at the finger-joints in less than 10 years.

Solid pine trim is made from a single piece of pine, and is not jointed. While the vulnerable finger-joints are not an issue, solid pine trim has not proven to be a durable, long term trim material in New England. However, most of the premature failures that this office examines relate to poor preparation and painting. With meticulous attention to preparation and application of coatings, pine trim can provide a reasonable life, but still not equivalent to PVC trim.

PVC trim is relatively new to the market. In this context, "new" to the market means that these products have only become widely used in the last 10+ years. In this office's opinion, a product with less than 20 years of in-service time, is new. PVC trim shows promising characteristics which could allow it to remain serviceable beyond 30 years, based on the industry knowledge of vinyl siding. Most of the contractors with whom this office consults report that PVC trim is very easy to work with, requiring few special considerations. Vinyl siding is similar in composition to PVC trim, and we can look at the useful life of vinyl siding and safely assume that PVC trim will provide a similar life. This office is aware of several buildings that have vinyl siding that is over 30 years old, and is still performing.

## **EVALUATION PARAMETERS**

For the purpose of this evaluation, we will consider the relative value of using Nels-Tek trim as compared to both finger-jointed, and solid pine trim. This office has not compared Nels-Tek trim to any of the other PVC trim manufacturers on the market, and is not endorsing the use of Nels-Tek, or any other PVC product. Rather, this evaluation will focus on the initial installation cost of pine trim vs. PVC trim, along with the expected service life and anticipated maintenance costs of each, over a 30 year cycle. This will allow us to determine an average annual cost of each product.

This evaluation assumes that the new PVC trim will be painted white, or a similar light color. Nels-Tek recommends only light colors and pastels. Dark colors will cause increased expansion and contraction due to solar gain, and are not advised. Only 100% acrylic latex paints should be used on PVC trim.

Considering initial cost, expected useful life, re-painting cost and eventual replacement cost over a 30-year parameter, we will compare Nels-Tek to finger-jointed pine trim and to solid, #2 pine trim. For the purpose of this evaluation, we will consider 500 linear feet of 1" x 8" trim.

Based on industry averages, re-painting (including any necessary prep work) will cost \$2.00 per linear foot. Trim installation and replacement costs will be as follows; \$7.50/ln. ft. for finger-jointed pine, \$9.50/ln. ft. for solid #2 pine and \$11.00/ln. ft. for Nels-Tek PVC Trim.

### **Option #1 - Replacement at the end of the pine trim's life**

Option #1 is a 15 year old, light wood framed structure, with the original trim in fair condition, displaying some minor deterioration (which is the typical condition of 15 year old wood trim in

this area on the average home). Minor deterioration, for the purpose of this evaluation, refers to some small sections of decay, cracking at the board ends and failing paint.

Option #1 is to leave the existing trim in place, continue painting every 3 years until the trim is completely deteriorated. Repainting will cost approximately \$1,000 each cycle, with the trim completely failing within approximately 9 - 10 years. Repainting cost over that period will approximate \$3,000. Cost of replacement with finger-jointed, or solid pine, will range from \$3,750 to \$4,750. Once the trim is replaced, it will still require repainting every 3 - 4 years for the remainder of the 30-year cycle, at a total cost of \$4,000.

The total estimated cost for Option #1 ranges from \$10,750 to \$11,750. The major concern with this option is the consequential damage that may result from leaving deteriorated wood trim in place for too long. It has been this office's experience that leaving deteriorating wood trim in place can cause significant deterioration to the underlying substrate. While it is very difficult to determine exact cost, since all conditions will be different, it is safe to say that this practice would result in potentially thousands of dollars of damage. To summarize, while there is a tendency to try and maximize service lives, this practice often results in more cost than replacing slightly deteriorated wood trim with more resilient materials when deterioration begins, saying nothing of aesthetic concerns over rotting wood.

Option #1 is the worst possible way to approach deteriorating trim, in this office's opinion. If substrate damage were to occur because rotting trim allowed water to penetrate the building envelope, this option could cost over and above \$15,000 over the 30-year parameter, to say nothing of the poor aesthetics.

### **Option #2 - Replacement in the 15th year, as soon as deterioration begins**

Option #2 is to replace all of the original pine trim with new pine trim as soon as deterioration begins in the 15th year. Replacement cost again will range from \$3,750 to \$4,750. After replacement, the wood trim will need re-painting every 4 years or so, no matter which material is chosen, at a cost of \$7,500 (7.5 paint cycles) over 30 years.

Total cost of Option #2 over 30 years with finger-jointed pine used as replacement in year 15 is \$18,750. Note that as finger-jointed trim fails, the joints will tend to open up allowing excessive water penetration and damaging paint. For this reason, paint cycles sometimes must be accelerated, increasing the total cost of the material. For this reason, this office does not suggest using any finger-jointed materials. This total cost represents 3 cycles of replacement (now, in approximately 15 years and again in the 30th year) and proper preparation and re-painting every 4 years.

Total cost of Option #2 over 30 years with solid pine used as replacement material is \$17,000. This total cost represents 2 cycles of replacement (now, and again in approximately 20 years) and proper preparation and re-painting every 4 years. The 20 year assumed life, and 4 year paint cycles assume proper preparation (i.e. priming/painting front, back, top, bottom and all cut, butt and mitered ends) of the material prior to installation, and application of high quality coatings during paint cycles.

Total cost of Option #2 over 30 years with Nels-Tek as replacement material is \$9,500. This total cost represents initial replacement now with Nels-Tek, and re-painting every 7.5 years. If, Nels-Tek proves to have a much longer useful life (as some early indications seem to suggest), the potential savings increase as future replacements are avoided. Also, since Nels-Tek doesn't necessarily need painting immediately, or assuming that very high quality coatings with long service lives are used, the savings could increase further.

### **New Construction**

For new construction, utilizing Nels-Tek initially and assuming a minimum 30 year life for Nels-Tek, the potential savings are more dramatic as compared to using finger-jointed or solid pine initially, and in subsequent replacement cycles. Again, the comparisons will be made over a 30 year timeframe, and be based on 500 linear feet of material.

As indicated earlier, Nels-Tek is not always painted. If the desired trim color is white, which is the color that Nels-Tek is produced in, the material can be installed and not painted. This office's experience with PVC materials in general is that a chalky white residue forms somewhere around 15 years after installation. At that point, some users will paint for aesthetic purposes.

Also, some paint manufacturers are beginning to produce paints with long manufacturer's warranties. If these paints are proven to perform as the manufacturers claim they will, the paint cycles for Nels-Tek, which doesn't suffer moisture transfer or rot, could be much longer than the 7.5 year cycle that this office has suggested. The end user should consult with their paint supplier and the manufacturer to obtain the best recommendations for compatibility and useful service life for the various coatings being offered for use on Nels-Tek.

#### **New Construction Option #1 - New construction using finger-jointed pine trim.**

Initial cost of trim	\$3,750
Repainting (Years 4, 8 & 12)	\$3,000
Replacement (Year 15)	\$3,750
Repainting (Year 19, 23 & 27)	\$3,000
Replacement (Year 30)	<u>\$3,750</u>
Total Cost for Option #1	\$17,250

#### **New Construction Option #2 - New construction using solid pine trim.**

Initial cost of trim	\$4,750
Repainting (Years 4, 8, 12 & 16)	\$4,000
Replacement (Year 20)	\$4,750
Repainting (Year 24 & 28)	<u>\$2,000</u>
Total Cost for Option #2	\$15,500

**New Construction Option #3 - New construction using Nels-Tek.**

Initial cost of trim	\$5,500
Repainting (Years 7.5, 15, 22.5 &30)	<u>\$4,000</u>
Total Cost for Option #3	\$9,500

**Annual Estimated Cost Comparison (Based on 500 ln. ft)**

<b>Material</b>	<b>Replacement Use Annual Cost</b>	<b>New Construction Annual Cost</b>
Finger-jointed pine	\$625.00	\$575.00
Solid Pine	\$567.00	\$517.00
Nels-Tek	\$317.00	\$317.00

**SUMMARY**

This office's evaluation of the costs associated with the use of Nels-Tek PVC trim in place of pine trim revealed Nels-Tek, while still relatively new to the market, to be a viable alternative to pine trim. With strict attention to detail by the installer, specifically as it relates to fastening, PVC trim could prove to be the best long term replacement solution for pine trim.

**Conclusions**

This office's evaluation of Nels-Tek leads us to conclude that Nels-Tek is a viable, cost effective option for both new and replacement trim. Again, assuming a life on par with vinyl siding, PVC signage and fencing, and based on this office's experience with the product early in its "service life" the long term financial benefit of utilizing a non-decaying material such as Nels-Tek is apparent. Nels-Tek is also covered by a lifetime warranty (contact Manufacturer for details), previous warranties for PVC trim materials were typically 20 - 25 years.

Nels-Tek is also available in 4' x 8' sheet stock, which, when used in place of MDO (medium density overlay) board or painted plywood (two of the most commonly used sheet materials) similar long term savings and performance can be expected.

Should you have any questions, do not hesitate to call.

Sincerely,

Paul E. Martin  
Senior Project Manager