# **Versatrim**

## **Removable Wood Trim System**

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"This project was carried out with the assistance of a grant from Canada Mortgage and Housing Corporation under the terms of the Housing Technology Incentives Program. The views expressed are those of the author and do not represent the official views of the Corporation"



# versatrim

Simply Trimendous

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## Abstract

Versatrim is a new and innovative way of attaching interior trim. The process consists of wood mouldings that are grooved out on the rear face in order to accept a plastic spline. The plastic splines are fastened to the wall using nails, screws or staples; the mouldings are then tapped onto this spline. Versatrim can work around doors, windows, crown mouldings and baseboards. The trim can be premitred, precut and prefinished. A variation of this, used with door frames in new home construction, is a parallel groove in the jamb, which an extrusion piece of plastic can be secured into, by a tap of a mallet. This stabilizes the door frame without the use of shims or nails. There are many advantages of Versatrim, including the following:

- trim can be removed and reapplied in a matter of seconds to make painting and wallpapering easier
- installation takes approximately one third of the time
- less skill is needed to install versatrim
- versatrim can be prefinished
- allows for hiding stereo and security wires behind the trim
- incorporated in the trim are design features to allow for attaching drop cloths, and gaskets to prevent heat loss.
- no unsightly nail holes to fill and sand.

#### **Executive Summary**

Versatrim is a revolutionary new trim product that has few similarities to the traditional method of trimming a house. Versatrim, consists of a plastic spline and moulding which makes it easy to install and remove trim. This brings tremendous advantages to the process of trimming; ease of painting or wallpapering, hiding of stereo wires etc. Because of the great paradigm shift, it was felt necessary to put the product through comprehensive testing to prove to the inventor, consumer and manufacturer, that Versatrim has tremendous advantages and few drawbacks. Testing was mainly done in the areas in which this new product differs from traditional trim i.e. it's attachment system; a plastic spline, and how this spline held the moulding under different conditions of humidity. Research was also done in the areas of prefinishing and precutting of the product before it reaches the consumer. Considerable effort was put into demonstrating this product to key players in the Industry.

Through this process of experimentation, improvements were made on the original design, so much so, that further patents were necessary. Versatrim has succeeded in making a very simple process of a procedure that once demanded considerable knowledge and skill to accomplish properly.

### **Background Statement**

The need to develop the very first prototype of Versatrim came as a result of an attempt to hide the unsightly holes that nails make in interior trim. From trying to disguise these marks to avoiding them, the development of this spline and groove product was initiated. The first reason for the invention is now insignificant in the magnitude of other benefits that this process brings to the moulding market. [See Abstract section]. The Versatrim process has expanded considerably from its beginnings, as the method can be applied to baseboards, chair rail and crown mouldings. The product would be of benefit in new home construction and home renovations. At the Canadian Home / Hardware / Housewares Trade Show Versatrim received considerable interest from hardware store owners, specialty shops, small contractors and major lumber distributors

## **Objectives**

1] To determine the effects of humidity on the force needed to attach and remove Versatrim.

2] To find the optimum shape and size of the spline and groove.

3] To demonstrate this product to key people in the industry.

4] To monitor Versatrim's effectiveness to perform in the traditional manner but with the added advantages.

5] To investigate product finishing techniques.

6] To find a computer program that can determine the precut lengths of moulding. Appendix F]

## **Description of the System**

Versatrim consists of various mouldings in a variety of woods which have been installed on different shapes of splines. Refer to pictures and slides that have been submitted. [Appendices A and B].

Boiseries amovibles - Bryan A. Wilson.

#### <u>Résumé</u>

Versatrim est une nouvelle boiserie révolutionnaire qui a peu de choses en commun avec la méthode traditionnelle de pose des boiseries dans une maison. Versatrim est constitué d'un profilé plastique et d'une moulure facile à poser et à enlever. Ce produit offre des avantages considérables pour la pose des boiseries. Il facilite l'application de peinture ou de papier peint, permet de dissimuler les fils d'une chaîne stéréophonique, etc. Étant donné le caractère hautement novateur du produit, on a cru bon de lui faire subir une batterie de tests afin de prouver à l'inventeur, au consommateur et au fabricant que Versatrim possédait d'importants avantages et peu d'inconvénients. Les essais ont surtout porté sur les aspects de ce produit qui diffèrent des produits traditionnels, c'est-à-dire son mode de fixation, un profilé plastique, ainsi que la façon dont ce profilé retient la moulure dans différentes conditions d'humidité. La recherche a également porté sur la finition et la coupe du produit avant sa distribution au consommateur. Des efforts considérables ont été consacrés à la démonstration de ce produit aux intervenants clés de l'industrie.

Tout au long du processus d'expérimentation, des améliorations ont dû être apportées au concept original, tellement en fait qu'il a fallu obtenir de nouveaux brevets. *Versatrim* réussit à rendre très simple un processus dont l'exécution appropriée exige des connaissances et des aptitudes considérables.



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### **Detailed Description of the Work**

Shaper cutters were manufactured in order to make the necessary profile in the back of the mouldings. These cutters were designed to provide adjustability so the width of the grooves in the back of the mouldings could be altered. This was done by the addition or deletion of shims. Some of these shims were made as thin as one thousandth of an inch. Time was spent cutting the moulding's back profile before reaching a starting point acceptable for testing the force needed to attach and remove the mouldings. Other cutters were made to cut the front profile. Then both sides of the trim were moulded. This was done in oak first, as this species tends to be affected most by changes in humidity. Then other types of wood were used to determine if the different woods gave different results. Testing occurred in the following areas:

- The moisture content of the wood was measured, as well as the humidity levels in the air where the mouldings were installed. Further testing is also required to determine what effect applying a finish to both sides of the moulding would have on stabilizing the moisture content of the wood.
- Several different plastic splines were designed to better hold the rear face of the mouldings.
- Methods of holding the miters together have been experimented with and an excellent procedure has recently been invented that makes the mouldings fit tightly together.
- Modifications have been made to the baseboard process but this process is not ready for market yet. In discussions with a patent attorney, it was decided that a new patent would have to be filed to cover the Versatrim baseboard method more thoroughly.

## Analysis of Collected Data

# **<u>Objective #1</u>** To determine the effects of humidity on the force needed to attach and remove Versatrim.

One of the most important aspects of the testing was the affect of humidity on this product. Attaching and removal of Versatrim always works well, but more force is required under high humidity conditions and less force under low humidity conditions. After experimentation it was realized why the original design accommodated humidity changes. An explanation of humidity and its effects on wood is now in order to understand the conclusions of the test data.

During the process of drying the wood, eventually a fluctuating moisture balance between the dryness of the wood and the humidity of its environment will be reached. Wood therefore has to be preshrunk to a moisture content consistent with the humidity within a house. There is a need to control any subsequent gain or loss of moisture in order to minimize dimensional change. In short, the atmospheric humidity determines the moisture content of the wood, and the moisture content, in turn, determines the dimension of the wood. Relative humidity is the ratio of the amount of moisture in the air at a certain temperature to the amount it would be able to hold at that temperature. Nature determines our atmospheric humidity. In buildings we routinely manipulate nature's air, either by heating it up or cooling it down, and sometimes by adding or subtracting moisture from it. It is important to realize the effect of our heating or cooling air without accompanying humidification or dehumidification. Heating air increases its ability to hold moisture. In subzero winter weather, outdoor air has a lower humidity as it seeps into homes. Conversely, summer air usually holds an abundance of moisture because of its high temperature. If the air is cooled, thus reducing its capacity to hold moisture, the relative humidity rises even higher. Therefore, an extreme in humidity exists within houses between seasons. This is a concern for a product like Versatrim, as performance characteristics vary depending on the humidity. The design features of Versatrim which minimize the humidity effects will be discussed later. Wood will always respond to changes in atmospheric humidity. Changes in the dimensions of wood are much more pronounced in fiber-saturated wood i.e. green, as opposed to kiln dried wood. Seasonal extremes must be averaged. The low moisture conditions associated with winter, spring and fall weather seem to outweigh the effects of short-term, high-humidity summer extremes. Thus 7.5% to 8% range of moisture content of the air is appropriate. Most wood is kiln dried to between 6% and 8% moisture content. This is the moisture content at which mouldings are manufactured. Further discussion of testing will follow.

Dealing with modified wood products such as MDF [Medium Density Fiberboard], with the adhesives and other additives involved, as well as the heat applied in manufacturing, the equilibrium moisture content could be affected considerably. However, MDF varies very little compared with other woods and in the testing, it was found that there was virtually no dimensional changes over the humidity range tested. Therefore the performance of Versatrim was not affected at all by these humidity changes. The wood that Versatrim was tested with was found to be between 9% and 9 1/2% moisture content. For testing, humidity was controlled by a dehumidifier, the humidity was brought down and then towards the end of the testing period allowed to go back up.

Because Versatrim can be prefinished, it would probably be 'shrink wrapped' in plastic for transportation. This would help prevent problems with humidity changes, as well this wrapping would hold the pieces of trim straight until installation. Many lumber bins in home building centers have trim that is crooked because of the way it is stored.

The next important point tested for Versatrim was the dimensional change in wood, due to humidity changes. The amount of movement varies according to the orientation of the wood cells and is usually measured separately in the three principal directions: tangential, radial and longitudinal. Longitudinal shrinkage in normal wood is considered negligible. Versatrim can be affected by both tangential and radial movement. Tangential shrinkage [perpendicular to the grain and parallel to growth rings] is always greater than radial [perpendicular to growth rings]. Versatrim is affected by a combination of tangential and radial shrinkage depending how the boards are originally cut from the tree. There is uneven shrinkage and swelling to deal with as well. For the most part this is due to defects in wood or improper storage while drying.

Usually mouldings are not affected by uneven shrinkage characteristics because only the best lumber is used in trim. As mentioned, Versatrim was affected by the quality and attempts to use damaged wood were not successful.

# **Objective # 2** To find the optimum shape and size of the spline and groove.

An important observation noted during testing was the lack of variance in the groove size that fits over the spline protrusion. This was an unexpected benefit of the original design in which the groove width was made 3/8ths. of an inch. This was a good design feature as wood moves in relation to its size. Because the groove was designed to be narrow, it doesn't change to any great extent. In fact oak, which of all the woods tested, moves the most, only varied 8 thousandths of an inch, and MDF didn't move any measurable amount.

When the distance between the grooves was measured, it was found that there was a considerable amount more variance. Oak in this instance moved 20 thousandths of an inch. The design of the spline had to be changed considerably. The leg that sticks up from the spline was therefore altered so that it looks like a backwards 'c'. It has more flexibility in order to adjust to tolerance changes of machining or humidity. Another design feature being experimented with is a protrusion that is half the size of the one presently used so that the groove is half the size, and therefore this would keep the force required to attach and remove the trim much more consistent. Having this groove half the size would also allow more room in the back of the trim to accommodate wires.

It was important to note how stable MDF is and how well suited it is for the Versatrim product. MDF is becoming common as a moulding material and is often being veneered with real wood so that it looks exactly like solid wood trim but with less costs and other desirable characteristics [less prone to humidity changes etc.] A characteristic of MDF that is not beneficial is that it's density causes nails to leave bumps in the surface of the trim. Versatrim is not affected by the dense nature of MDF as nails aren't driven through the trim. As well, some Canadian mouldings can be very thin and wouldn't work as well with Versatrim as a thicker moulding is required. With MDF, because it is a relatively inexpensive substrate, versatrim can be offered at a competitive price. It was found that wood that is slightly on the dry side is better in the manufacture of Versatrim. As the humidity increases, the moulding grips the spline for a better hold. Moulding manufacturers now start with dry wood for traditional trim so this preference will suit the manufacturing of Versatrim very well.

From past experience, but needing further verification, coating both sides of the trim protects the wood against humidity effects and this should make Versatrim mouldings more stable.

Another aesthetic advantage Versatrim has, occurs when wood shrinks at the door miters. An unsightly gap appears over the doorway. When this happens, the side pieces of Versatrim can be taken off and just moved up to close the gap.

# <u>Objective #3</u> To demonstrate the product to key people in the industry.

Versatrim has been demonstrated to key people in the industry during and after the completion of CMHC testing. Through the Canadian Consulate General I was able to attend a marketing meeting of the Wood Moulding and Millwork Producers Association in North Carolina in August 1995. I have since become an associate member with this association. I was able to discuses the product with a number of CEO's of major American moulding companies. At this time Versatrim was viewed with some skepticism, however, I've kept in contact with a number of these executives and their response to the product is now more positive. In October, 1995 I attended the National Sash and Door Show in Boston, Massachusetts. There was a considerable amount of interest at this show and I was able to show a video of the product from the television series called "Today's Inventor" that aired September, 1995.

From the several new contacts I made there I am presently talking with a couple concerning distributing this product.

I was able to exhibit at the Canadian Housewares/Home Improvement/and Hardware Show in Toronto, February, 1996. At this time I had a new product video running on display as well as regular demonstrations of Versatrim. A number of distributors showed interest in carrying the product but want more information on packaging and pricing of this product. Other people in the industry have been exposed to the product through local radio and newspaper articles. There has also been a feature in the Northern Ontario Business magazine that I have been interviewed for. [A copy of this is in the appendix H].

#### **<u>Objective # 4</u>** To monitor Versatrim's effectiveness to perform in the traditional manner but with the added advantages.

Versatrim has been in my home in various forms for eight years. It has stood up to humidity changes and hundreds of attaching and removal demonstrations. Versatrim has also withstood severe humidity changes that occurred during transportation to the Toronto Trade Show. The product showed no wear and tear after being pulled off and put back on steadily, each day of this trade show.

#### **<u>Objective #5</u>** To investigate product finishing techniques.

Versatrim can be prefinished in the factory as nails are not used on the trim or the surface of the trim defaced in any way. There is nothing needed to finish the trim after it leaves the factory, except to tap it in place.

Prefinishing eliminates many frustrating, time-consuming steps for the home owner and/or contractor. Such things as trying to hide or disguise nails, puttying and sanding. No more taping the walls, shielding the floor, applying stain or paint, sanding and then applying varathane. And doing all this from the uncomfortable position of bending, stretching, leaning. Therefore, the process to finish mouldings in the factory setting was investigated. The primary source of investigation for this process was at The International Woodworking Fair that I attended in Atlanta Georgia August 1994. Advanced technology does exists which can finish moulding fast and cost effectively.

# <u>Objective #6</u> To find a computer program that can determine the precut lengths of moulding.

Since Versatrim can come prefinished and since there are recognized problems with accurately cutting mouldings to the right length and at a perfect 45 degree angle, it will be an asset to be able to precut trim before delivery. To do so a computer program was needed to assist in determining the size of the mouldings. However, a very simple spread sheet was experimented with that, along with the inclusion of simple measurements, will determine the exact sizes to which the mouldings need to be cut. [An example of this type of spread sheet is included in the Appendix F].

### <u>Comparison of Versatrim and Traditional Trim</u>

Wood mouldings have been an important architectural element for centuries. Mouldings add warmth and beauty to a room. They also are used to cover up rough surfaces while adding that elegant finishing touch. Versatrim does all of this but a whole lot more. Because of its removable nature it adds many features while staying securely on the wall until removed. Versatrim will cost approximately 25% more but the time- saving installation will more than compensate for this cost in labour savings.

#### Strengths, Weaknesses and Limitations of Versatrim

#### Strengths:

#### Versatrim's greatest strength is its removability:

- removable for painting
- removable for wallpapering
- removable for hiding stereo or security system wires
- removable for refinishing the mouldings

#### Versatrim can be Pre-Done:

- can be prefinished [no nail holes to ruin a perfect finish]
- can be pre-mitred and cut to length

#### **Installation:**

- doors can be installed in about half the time
- nails, screws or staples can be used to fasten the plastic spline

in new construction the doors no longer need shimming. The plastic spline, acting as a continuous contact between the jamb and the wall provided rigidity.

#### Weight:

• since Versatrim is routed out in the back, there is far less weight and therefore Versatrim is less expensive to ship

#### <u>Weaknesses:</u>

- Versatrim will cost approximately 25% more than traditional trim
- under high humidity conditions [as could be experience in humid countries] Versatrim could possibly fail to perform as it was designed. However, Versatrim could be manufactured for these countries by adjusting the rear profile to compensate for their weather conditions.
- crown mouldings have not been fully developed to hold up as well as the traditional method of nailing.
- there is real paradigm shift since mouldings have nailed up for centuries, therefore it will take an education process to make people realize that Versatrim stays on the wall just as well as traditional trim

### **Limitations:**

Versatrim can not be made out of very thin wood and not all face profiles are possible, as the face profile may interfere with the rear profile, i.e. where the face profile inverts the rear profile may have to invert as well, to hold the plastic extrusion. Somewhat thicker profiles can avoid this problem.

Versatrim requires a substantial shift in the method of installation and contractors have to see the advantages of this system before they may be willing to make a change in their construction methods.

#### **Conclusions:**

In conclusion, the Versatrim process has been substantially improved due the funding provided by CMHC under its HITP program. Initially there were unknowns and limitations to this method. But Versatrim has proven itself to be reliable and to perform as well as traditional trim but with all the added benefits.. The consumer is ready for this paradigm shift to a more convenient product. The housing industry has been moving in this direction for a long time with its manufacturing of products that are user-friendly. Up to now trim has been the area which has not been simplified to any great extent, but now Versatrim is poised to revolutionize the industry.

## **Picture Summary of the Versatrim Process**

Former Elements of Versatrim



1. This is the very first prototype of Versatrim. [then called Pro Trim that time]. It consisted of small strips of maple [the spline] screwed to the wall and jambs fastened with metal corner brackets.



2. This picture shows the back of the moulding with the 'groove' that fits over the 'spline'.



**Present Elements of Versatrim** 

This prototype was one of many former plastic "splines". Notice the black part on the leg of the "spline". This was done of co-extrusion [2 different types of plastic]. The black part was a very pliable, rubbery type of plastic which I thought should have grabbed the groove and held the inside of the moulding securely to the wall. Instead, it tended to hold the moulding out from the wall.



This present "spline" has a basckwards "C" for a leg to hold the inside edge of the moulding tight to the wall. This works much better.



This is another view of the present "spline". Notice the "arrowhead" protrusion on the bottom of the spline. This is inserted into the slot in the jamb. [shown in the next picture].



6. This is a jamb. Notice the slots into which the 'arrowhead' protrusion of the plastic spline fits. Once the plastic spline is in the jamb, it will not come out.



7. The plastic spline is either stapled, nailed, or screwed to the wall. The system consists of a corner piece at each side of the door and then 5 foot pieces of spline extending to the floor.



8. The plastic corner piece is welded together as shown in this picture. After being welded, the seams are cleaned for a smooth finish.



9. Notice the finger holds on this back view of the moulding which are used to remove the moulding from the wall.



10. This 'Hoffman' joint consists of a dovetail slot in each mating piece of wood and plastic key. This joint provides an extremely tight mitre joint which can still be taken apart.

Appendix A - 5





11. Nailing is shown as the method of attachment in this picture.

12. The plastic spline can also be screwed to the wall.

Appendix A - 6



13. Stapling will probably be the preferred method for contractors as it is the fastest method of fastening. However, it requires an industrial type staple gun.

## Installing Versatrim Around Windows



14. When installing Versatrim around windows, the mouldings are cut to size and used as a template to position the plastic pieces. The next step inserts the plastic corner pieces into each end of the mouldings.



15. The moulding is then placed at the top of the window and the exposed plastic pieces stapled into place.



16. This shows the opposite side being stapled into place.



18. The same procedure as picture 17 is then followed for the right side moulding. However, before the exposed plastic is fastened into place, the bottom moulding is lightly tapped into place to position that last piece of plastic. This allows the side piece to be held tightly in place while the bottom moulding is removed.



17. A corner piece of plastic is inserted into the left bottom piece of moulding, put in place and then the exposed plastic fastened into place

> 19. After removing the bottom piece of moulding the exposed plastic piece is stapled in place. Then all the mouldings are removed and the hidden pieces of plastic are securely stapled in place. To finish the job the mouldings are then snapped back onto the splines.





20. This is a door jamb being fastened together.



21. After the jamb is together, welded plastic corner splines are tapped into the slots in the jamb. Plastic extension pieces are then put into the jamb slots. [Not shown].

Appendix A - 10



I

22. After the door jamb is leveled and plumbed the plastic splines are fastened to the wall.

23. The mouldings are then snapped onto the plastic splines for the finished job.

## Advantages of Versatrim



24. Mouldings are removable to facilitate painting. Note how roller can be run right up alongside the plastic spline. There is no need to cut in with finishing brushes



25. Removable mouldings also facilitate wallpapering as the rough edges of the wallpaper get hidden under the trim.



26. Stereo of security system wires can be run through the hollow in the plastic spline.



27. The corner plastic spline has the tip of the corner nipped off in order to pull the wires through before insertion into the next piece.

### <u>Slides</u>

- 1. Former spline
- 2. Corner of spline
- 3. Weld in plastic spline
- 4. End view of plastic spline
- 5. Spline being nailed into place
- 6. Spline being screwed into place
- 7. Spline being stapled into place
- 8. Wires running through the plastic spline
- 9. End of the corner of the plastic spline open to allow wires to be pulled through
- 10. End of spline open with wires shown
- 11. All mouldings off the splines around a door
- 12. Hoffman joint
- 13. Slots in jamb that except the plastic spline in new construction
- 14. Top moulding on spline over door
- 15. All mouldings off the plastic splines around a window
- 16. Top moulding on window
- 17. Top and left mouldings on around a window
- 18. All window mouldings on except bottom piece
- 19. All mouldings on around a window
- 20. Taking moulding off a closet door opening
- 21. Top moulding being taken off over a closet door
- 22. Piece of finger-jointed pine covered with oak veneer
- 23. Piece of moulding made from sawdust and glue compressed together





# Month: January

Week: 3rd.

Appendix E - 1

Date: Janua	ry 16th.			98° . 440° .			a share
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	^			12.5%	.387	1.385	8
Poplar				12.5%	.386	1.384	8
White Pine	-8.6 C	74 %	70%	12.5%	.386	1.382	
MDF				12.5%	.383	1.375	5
Mahogany				12.5%	385	1 381	6
Cedar				12.5%	385	1 381	6
Date: Janua	rv 17th			12.3 70		<u> </u>	<u> </u>
Oak				12.5%	387	1 385	8
Poplar	1			12.5%	386	1.305	
White Pine	-83C	79 5%	71%	12.5%	386	-1.30+	
MDE	0.5 C	17.570	/ 1 /Okress	12.5%		1.302	
Mahogany		in the same		12.5%	.305	1.373	6
Wallogally Cedor				12.5%		1.301	0
Deter Ionwo	10+L			12.3%			0
Date: Janua	<u>ry 18ur.</u>		(Pa)	10 500	<u> </u>		
				12.5%	.387	1.385	8
Poplar		000	<b>—</b> • <b>—</b>	12.5%	.386	1.384	8
White Pine	-2.1 C	93%	72%	12.5%	.386	1.382	7
MDF				12.5%	.383	1.375	5
Mahogany				12.5%	.385	1.381	6
Cedar	· · · · · · · · · · · · · · · · · · ·			12.5%	.385	1.381	6
Date: Janua	ry 19th.						
Oak				12.5%	.387	1.385	8
Poplar				12.5%	.386	1.384	8
White Pine	1 C	94.5%	72%	12.5%	.386	1.382	77
MDF	5.5.5			12.5%	.383	1.375	5
Mahogany				12.5%	.385	1.381	6
Cedar				12.5%	.385	1.381	6
Date: Janua	ry 20th.	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1					
Oak				12.5%	.387	1.386	8
Poplar				12.5%	386	1 384	8
White Pine	-13C	90%	71%	12.5%	386	1 382	
MDF	1.5 0	1010	1170	12.5%	383	1.302	
Mahogany			a di seconda di second Seconda di seconda di se	12.5%	385	1 381	6
Cedar		1	•	12.5%	385	1.381	
Date Janua	ru 91et	is mpa		12.5 %			
Oak	uy 2101.			12 50%	397	1 206	<b>Q</b>
Doplar				12.570	.30/	1.300	O
Poplai White Dine		07 EM	700	12.5%	.300	1.304	
White Pine	-2.9 C	81.5%	∴ <b>/0%</b>	12.5%	.380	1.382	<u> </u>
				12.5%	.383	1.375	
Mahogany				12.5%	.385	1.381	6
Cedar				12.5%	.385	1.381	<u>b</u>
Date: Janua	ry 22nd.	1997 - 19	2011 - 1 2011 - 1	interpretation and the second se	a na	na n	ARA CONTRACTOR
Oak				13%	.387	1.387	8
Poplar			an taon an taon Taon an taon an	13%	.386	1.385	8
White Pine	-2.5 C	87.5%	70%	13%	.386	1.383	7
MDF				13%	.383	1.375	5
Mahogany			ng pangan di sangan sa	13%	.385	1.382	6
Cedar				13%	.385	1.382	6

# Month: January

Week: 4th.

Date: Janua	ry 23rd.		2. see 6. 1993				8: T.S. A.Z.
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	in order valskeiger C.	2	and the second	13%	.387	1.387	8
Poplar		of tentes (station) Marine		13%	.387	1.385	8
White Pine	-5.2 C	84.5%	69%	13%	.386	1.383	7
MDF			a second	13%	.383	1.375	5
Mahogany	r - an eana Traiteachta			13%	.385	1.382	6
Cedar	i i conq <sub>eli</sub> ng I i i conq <sub>eli</sub> ng I i i	general a compo Construction Salation de la construction		13%	.385	1.382	6
Date: Janua	rv 24th.				and the second		
Oak		i mana in the second	<ul> <li>Constraint and the second se Second second se</li></ul>	12.5%	.387	1.386	8
Poplar	n an		an a	12.5%	.387	1.385	8
White Pine	-7.4 C	78.5%	68%	12.5%	.386	1.382	7
MDF	an a			12.5%	.383	1.375	- 5
Mahogany			e Alexander etc.	12.5%	385	1 382	6
Cedar				12.5%	385	1 382	6
Date: Janua	$\frac{1}{1}$ rv 25th					1.502	
Oak		jan ya		12.5%	387	1.385	<u> </u>
Poplar		an a		12.5%	386	1 384	8
White Pine	-114C	77 5%	68%	12.5%	386	1.382	7
MDE		,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		12.5%	383	1 375	
Mahogany	an that a start of the start of		n linger von Angeler von	12.5%	385	1 381	6
Cedar				12.5%	385	1 381	6
Date Janua	rv 26th	1		12.370		1.501	
Date: Janua	u y 2001. I	ter series and the series of t		12.5%	387	1 3 8 5	Received a second se
Danlar				12.5%	286	1.305	<u> </u>
Poplai White Dine	1000	7201	670	12.570	.300	1.304	
MDE	-12.070	137/0	0770	12.5%	.300	1.302	
Mahagany		n del dense por No del		12.5%	.303	1.373	5
Manogany				12.5%	.303	1.301	0
Cedar		1. 343-42-41 		12.5%	.365	1.301	U
Date: Janua	iry 27tm.	Calendary and the		1007	207	1 <u>1 204</u>	
Оак	i de la deservação de la d Esta de la deservação de la			12%	.30/	1.304	
Poplar	1000	(7.50)	670	12%	.380	1.383	
White Pine	-10.3 C	07.3%	o/%	12%	.383	1.381	0
		r gama da Maria	proved in the second	12%	.383	1.3/3	<u> </u>
Mahogany		New York Constant State	n an	12%	.383	1.381	0
Cedar			A STATE OF A	<u> </u>	<u>رەد. ا</u>	<u> </u>	
Date: Janua	ary zöth.	in the second			202		······································
Oak				12%	.380	1.384	<u> </u>
Poplar		مدنس	(77.07	12%	.380	1.383	
White Pine	-16.1 C	64.5%	6/%	12%	.385	1.381	0
MDF			्रिकेट स्थिति स्थिति । स्थित्र स्थिति ।	12%	.383	1.3/3	3
Mahogany		n an	5.82. Sec.	12%	.384	1.381	6
Cedar	2	La de		12%	.385	<u> </u>	6
Date: Janua	ary 29th.	<u>i Alton Zana</u>	in a starting				
Oak			n an	12%	.386	1.383	7
Poplar				12%	.386	1.382	7
White Pine	] -13.4 C	75%	68%	12%	.385	1.381	6
MDF		a da anti- a da anti- cana da anti- da anti-	and the second sec	12%	.383	1.375	5
Mahogany			n in the solution of the solut	12%	.384	1.380	6
Cedar	ш., 			12%	.385	1.380	6

# Month: January & February

Week: 5th.

Appendix E - 3

Date: Janua	iry 30th.						at the second second
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak			<b>č</b>	12%	.386	1.383	8
Poplar		118 - 12 - 13 - 13 - 13 - 13 - 13 - 13 - 13		12%	.386	1.382	8
White Pine	-5.3 C	76.5%	68%	12%	.385	1.381	
MDF				12%	.383	1.375	5
Mahogany		1		12%	.384	1 380	6
Cedar	1			12%	385	1 380	6
Date: Janua	rv 31st			1270		1.500	
Oak				12.5%	386	1 383	<u> </u>
Poplar				12.5% 12.5%	386	1.303	
White Pine	-17C	85 5%	69%	12.5%	386	1 381	
MDE	-1.7 C	05.570		12.5%		1.301	
Mahogany		17 - 17 - 17 - 17 - 17 - 17 - 17 - 17 -		12.5%		1.375	<u> </u>
Codor	· · ·			12.5%	.304	1.380	<u> </u>
Ceual Datas Kahari	and I always		and a second	12.5%		1.380	0
Date: rebru	lary Ist.					1 000	
Oak				12.5%	.387	1.383	8
Poplar		-	<b>1</b> 0 <b>1</b> 1	12.5%	.386	1.382	8
White Pine	-9.2 C	74%	69%	12.5%	.386	1.381	7
MDF				12.5%	.383	1.375	5
Mahogany	н. Н			12.5%	.384	1.380	6
Cedar				12.5%	384	1.380	6
Date: Febru	ary 2nd.	a the second	h	A state of the	ya ka sa	and the second sec	
Oak				12%	.387	1.383	8
Poplar		a series and		12%	.386	1.382	8
White Pine	-16.5 C	55.5%	66%	12%	.386	1.381	7
MDF			1.	12%	.383	1.375	5
Mahogany				12%	.384	1.380	6
Cedar				12%	.384	1.380	6
Date: Febiu	larv 3rd.	and a second	and a second second	· · · ·		2	
Oak			21 VI	12%	386	1 383	8
Poplar				12%	386	1 382	8
White Pine	-127C	72%	67%	12%	385	1.302	
MDE	12.7 0	12,10	0170	12%	383	1.301	
Mahogany				12%	384	1.375	6
Cedar	100 A.	1		12%	384	1.380	6
Data - Febru	ary Ath			1270		1.500	
Oak	y =7111.			170%	386	1 282	<b></b>
Doplar		a dan		1270		1.303	<u> </u>
Topiai White Dime	1000	6007	67.01	1270	.300	1.302	07
white Pine	-18.8 C	09%	01%	12%	.383	1.301	
MDF				12%	.383	1.373	
Manogany				12%	.384	1.380	6
Cedar	<u> </u>			12%	.384	1.380	L <u>b</u>
Date: Febru	ary 5th.		$\label{eq:states} \left\{ \begin{array}{ccc} c_{1} & c_{2} & c_{3} \\ c_{1} & c_{2} & c_{3} \\ c_{2} & c_{3} & c_{3} \\ c_{3} \\ c_{3} & c_{3} \\ $			and the second sec	·····
Oak		an a	1. ** - 5, 1. <sup>1.</sup> 1. **	12%	.386	1.383	8
Poplar				12%	.386	1.382	8
White Pine	-27.8 C	49.5%	65%	12%	.385	1.381	7
MDF			с. • # - 1	12%	.383	1.375	5
Mahogany			le National de la companya	12%	.384	1.380	6
Cedar		in the second	e e la	12%	.384	1.380	6

# Month: February

Week: 2nd.

Appendix E - 4

Date: Febru	ary 6th.	1		a and a second	w	Safe Root a	
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				12%	.386	1.383	8
Poplar	1 V.			12%	.386	1.382	8
White Pine	-26 C	51.5%	64%	12%	.385	1.381	7
MDF		i i i i i i i i i i i i i i i i i i i		12%	.383	1.375	5
Mahogany				12%	384	1 380	6
Cedar				12%	384	1 380	6
Date: Febru	arv 7th	L				1.500	
Oak				12%	386	1 383	8
Poplar		11 A.		12%	386	1 382	8
White Pine	-20.6 C	52%	63%	12%	385	1 381	7
MDF	20.0 0	3270	0370	12%	383	1.301	
Mahogany		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	74. T	12%	384	1.375	6
Cedar				1270	38/	1.380	6
Date: Febru	ary 8th			1270		1.300	
Oak	ary our.			1707-	204		•
Poplar			· · ·	1270	.300	1.303	<u> </u>
White Ding	10.2 C	60 50%	6207	1270	.300	1.302	
MDE	-19.5 C	00.370	0370	1270	.303	1.301	
Mahagany				1270	.305	1.373	
Codor				12%	.304	$\frac{1.380}{1.280}$	0
Deter Tehm	Oth			12%	.384	1.380	0
Date: rebit	ary 9th.			1007	206	1.202	
Danlar				$\frac{12\%}{12\%}$	.380	1.383	8
Popiai White Dime	1100	7707	CAO	12%	.380	1.382	8
While Pine	-11.9 C	13%	04%	$\frac{12\%}{10\%}$	.385	1.381	
		1997) 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19		12%	.383	1.375	
Manogany				$-\frac{12\%}{10\%}$	.384	1.380	6
Cedar Deter Februar	1041	1971 	n an	12%	.384	1.380	6
Date: Febru	ary 10th.	- Sugar		100	204	1.000	
Dak				12%	.386	1.383	8
Poplar		0.0 4	e e ou .	12%	.386	1.382	8
white Pine	-9.2 C	83%	03%	12%	.385	1.381	
MDF			a de la companya de La companya de la comp	12%	.383	1.375	5
Mahogany			an An an An	12%	. <u>384</u>	1.380	6
Cedar	11.1			12%	.384	1.380	6
Date: Febru	ary 11th.		4.5				
Uak		1997 - 1997 -		12%	.386	1.383	8
Poplar			ا مر مو مو	12%	.386	1.382	8
White Pine	-9.2 C	83%	65%	12%	.385	1.381	
MDF				12%	.383	1.375	5
Mahogany			kan sa	12%	.384	1.380	6
Cedar				12%	.384	1.380	6
Date: Febru	ary 12th.			. en anna an anna an an an an an an an an a	988-05	i kanga sanga s Sanga sanga sang	a sheri a an a
Oak	1			12%	.386	1.383	8
Poplar				12%	.386	1.382	8
White Pine	-18.3 C	58%	63%	12%	.385	1.381	7
MDF		\$1. \$1.		12%	.383	1.375	5
Mahogany			2 - 1 M 2	12%	.384	1.380	6
Cedar	· · · · · · · · · · · · · · · · · · ·			12%	.384	1.380	6

# Month: February

Week: 3rd.

Date: Febru	ary 13th.		,				
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	$[1 L_{a} - 10H_{a}]$
Oak				12%	.386	1.384	8
Poplar		an a	na stal	12%	.386	1.383	8
White Pine	-12.6 C	57%	61%	12%	.385	1.381	7
MDF				12%	.383	1.375	5
Mahogany				12%	.384	1.381	6
Cedar		с. 1997 г. – 1997 г. – 1		12%	384	1 380	6
Date: Febru	ary 14th.					<u></u>	
Oak		<u>e.</u>		12%	386	1 383	8
Poplar		8 A.A.		12%	386	1 382	8
White Pine	-135C	63 5%	62%	12%	385	1.302	
MDE	-15.5 C	0.5.570	0270	1270	505	1.301	
Mahogany			No. 11 120 - 12 120 - 12	1270		1.375	6
Ceder			72.	12.70	.304	1.300	0
Data Fabra	anu 15th			1270	.304	1.300	0
Date: reolu	lary 15th.	3 <sub>85</sub>	<u> </u>	1007	200		<u> </u>
				12%	.386	1.384	8
Poplar	010	00.50	6407	12%	.386	1.383	8
White Pine	-9.1 C	80.5%	64%	12%	.385	1.381	7
MDF			14 11	12%	.383	1.375	5
Mahogany				12%	.384	1.381	6
Cedar				12%	.384	1.380	6
Date: Febru	ary 16th.		्र दिखे द		an gala ang bin Tang Balan Sana ang bin	рания - С	e defension di pro-
Oak			нц. — — — — — — — — — — — — — — — — — — —	12%	.386	1.384	8
Poplar				12%	.386	1.383	8
White Pine	-9.2 C	70%	63%	12%	.385	1.381	7
MDF				12%	.383	1.375	5
Mahogany		et a ser a	) i ja v	12%	.384	1.381	6
Cedar	and the second	an a		12%	.384	1.380	6
Date: Febru	ary 17th.						
Oak		n na na sina si sa si		11.5%	.386	1.384	7
Poplar				11.5%	.386	1.383	7
White Pine	-7.5 C	75%	63%	11.5%	.385	1.381	6
MDF				11.5%	383	1.375	
Mahogany				11.5%	384	1.381	6
Cedar			a de la companya de l La companya de la comp	11.5%	384	1 380	6
Date: Febru	ary 18th	L		11.570			
Oak			· · · ·	11 5%	386	1 384	7
Poplar		· · · .		11.5%	385	1 383	7
White Dine	-37 C	71 5%	63%	11.5%	385	1 381	
MDE	-3.7 C	71.570		11.5%	383	1.301	5
Mahagany				11.5%	294	1.375	6
Manogany_		14		11.5%	.304	1.301	6
Deta	104		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	11.3%	.384	1.380	
Date: Febru	lary 19th.	1973 1971 1971 1971 1971 1971 1971 1971		11.50	00/	1 204	
Uak		1 4 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		11.5%	.386	1.384	/
Poplar				11.5%	.385	1.383	1
White Pine	-3.7 C	61%	62%	11.5%	.385	1.381	6
MDF		the second second	1919 - 1910 - 19	11.5%	.383	1.375	5
Mahogany			a de la companya de l	11.5%	.384	1.381	6
Cedar				11.5%	.384	1.380	6

# Month: February

Week: 4th.

Date: Febru	ary 20th.						
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	<b>1</b>			11.5%	.386	1.381	7
Poplar				11.5%	.385 -	1.381	7
White Pine	5.2 C	75.5%	62%	11.5%	385	1.379	6
MDF				11 5%	383	1 375	5
Mahogany				11.5%	384	1.379	6
Cedar			баранан сайтан сайта Сайтан сайтан	11.5%	384	1.370	6
Date: Febru	1 19rv 21st		Auto Argenti	11.5 %	L . <u>.</u>	1.379	
Oak	$\frac{101 \text{ y}        $			110	286		
Poplar				1170		1.300	7
White Dine	1410	5507-	600	$\frac{11\%}{11\%}$	.303	1.379	
MDE	-14.1 C	5370	00%	$\frac{11\%}{11\%}$	.303	1.378	0
Maharan				11%	.383	1.375	
Manogany		li anno 1995. Anno 1997 - Anno 1997		11%	.384	1.378	6
Cedar					.384	1.378	6
Date: Febru	lary 22nd.		······································	n Star Bart	and the second	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	
Oak				11%	.386	1.380	7
Poplar	]			11%	.385	1.379	7
White Pine	-13.2 C	70.5%	61%	11%	.385	1.378	6
MDF				11%	.383	1.375	5
Mahogany				11%	.384	1.378	6
Cedar	1			11%	.384	1.378	6
Date: Febru	ary 23rd.	and the second s			en i santari	and the second	1997 - CS
Oak				11%	.386	1.380	7
Poplar	t stars			11%	.385	1.379	7
White Pine	-82 C	78.5%	62%	11%	385	1 378	6
MDF				11%	383	1 375	5
Mahogany	ł		and the second secon	11%	384	1 378	6
Cedar				11%	38/	1.378	6
Date: Febru	1 19rv 24th					1.570 Sec.	
Date: 1 colt	lary 27111.	<u></u>		110	386	1 380	7
Doplar				1170	.300	1.300	7
White Dine	150	500	600	$\frac{1170}{1107}$	.303	1.379	6
Wille Fine		52%	00%	11%	.303	1.378	0
MDF		e Sant - Santa		11%	.385	1.373	
Manogany		a de la companya de l	an h An Anna - Anna An	$\frac{11\%}{11\%}$	.384	1.378	6
Cedar	0546		and a second sec	11%	.384	1.378	0
Date: Febru	iary 25th.		e (Star Content of Star) Se Marine -	1107	204		
Oak				11%	.386	1.380	7
Poplar		4	e e e e e e e e e e e e e e e e e e e	11%	.385	1.379	1
White Pine	-20.5 C	47.5%	58%	11%	.385	1.378	6
MDF				11%	.383	1.375	5
Mahogany				11%	.384	1.378	66
Cedar				11%	.384	1.378	6
Date: Febru	ary 26th.	**JU <sup>4274</sup> 27	250	المحمد المحكون	a tanan sa	n Alexandra a an	a de la companya de la
Oak	$(f_{i},g_{i}),\ldots,g_{i}) \in \mathbb{R}$			10.5%	.385	1.389	7
Poplar	1			10.5%	.384	1.378	6
White Pine	-20.7%	49.5%	57%	10.5%	.384	1.377	6
MDF			n a da a constante da constante d Esta constante da cons	10.5%	.383	1.375	5
Mahogany	1			10.5%	.384	1.377	6
Cedar			n shirt and	10.5%	.384	1.377	6
Journ	1 · · · · · · · · · · · · · · · · · · ·	and the second					I Ŭ

## Month: February & March

Week: 5th.

Appendix E - 7

Date: Febru	ary 27th.	97		a an	nan agaalaa		- Alexandria - Alexandria
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Type	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	<b>^</b>	<b>-</b>	L Transform	10.5%	.385	1.378	7
Poplar				10.5%	.384	1.378	6
White Pine	-13.1 C	47%	55%	10.5%	.384	1.377	6
MDF				10.5%	.383	1.375	5
Mahogany	en El anti-			10.5%	.384	1.377	6
Cedar		1 T 64		10.5%	384	1 377	6
Date: Febru	arv 28th		9. 			1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	
Oak				10.5%	385	1.378	7
Poplar			Bulk fig.	10.5%	384	1.378	6
White Pine	-10.2 C	52.%	54%	10.5%	384	1 377	6
MDF	10.2 0			10.5%	383	1 375	<u> </u>
Mahogany	5 · ·			10.5%	384	1 377	6
Cedar				10.5%	384	1.377	6
Date: March	h let			10.5 //		L	
Oak	1 130			10.5%	385	1 378	7
Poplar		n darfe	1	10.5%	384	1 378	<u> </u>
White Dine	_12 1 C	10%	53%	10.5%	38/	1.370	6
MDE	-12.10		5570	10.5%	383	1 375	5
Mahagany		41 M A		10.5%		1.375	6
Coder				10.5%	.304	1.377	
Data	a and	and the second	y mr. w.g	10.5 %		1.3//	
Date: Walc	u znu.		<u>р</u>	10.5%	205	1 270	7
Dak		1. 1.		10.5%	.303	1.378	6
Topiai White Dine	15 1 C	52 501	5207	10.5%	.304	1.370	6
MDE	-15.1 C	33.370	55%	10.5%	.304	1.377	5
Mahagany		na se		10.5%	.303	1.373	6
Ranogany			an a	10.5%	.304	1.377	6
Deta Mara	h 2rd			10.5%		1.577	<u> </u>
Date: Iviaic			ियोक्षेत्र 	10.5%	205	1 270	7
Darlar	1 d. 4.			10.5%	.303	1.370	
Poplar White Direc	10.2.0	6501	5101	10.5%	.384	1.370	6
While Pine	-10.2 C	03%	54%	10.5%	.304	1.377	5
Mahagany			in e dan tu	10.5%	.303	1.373	5
Cadar			· · · ·	10.5%	394	1 277	6
Data Mara	 h /th	<u> </u>	*****	L_10.J <i>%</i>		1.377	
Oak Nate	u +ui.	<u> </u>	F	10.5%	285	1 278	7
Doplor				10.5%	384	1.370	6
Topiai White Bine	810	75 50%	560%	10.5%	39/	1.370	6
Winte Pine	-0.4 C	15.5%	<b>JU%</b>	10.5%	202	1.377	5
Maharany				10.5%	.303	1.373	6
Codor				10.5%	.304	1.377	<u> </u>
Deter Marce	5 5 fb 10 10			10. <i>37</i> 0	.J04		UU
Date: Marc	u əm.		A CONTRACTOR AND A CONT	1007	201		<u> </u>
Dak		1944		10%	.384	1.3//	<u> </u>
Poplar	1100	707	Free	10%	.384	1.3/0	<u> </u>
White Pine	-14.2 C	/0%	56%	10%	.384	1.376	<u> </u>
MDF				10%	.383	1.375	5
Mahogany	the second second	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	e Satis La estado		.384	1.376	<u> </u>
Cedar	r'-			10%	.384	1.376	5

# Month: March

Week: 2nd.

Appendix E - 8

Date: Marc	h 6th.	المنتخبي المراجع المنتخبين. المنتخبي المنتخب أرسي	And the second s	Connection and the second	an a	yan Kanada	
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Type	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	$[1 L_{a} - 10H_{a}]$
Oak				10%	.384	1.377	6
Poplar				10%	.384	1.376	5
White Pine	-12.5 C	68.5%	55%	10%	.384	1 376	5
MDF				10%	.383	1.375	5
Mahogany				10%	383	1 376	
Cedar				10%	384	1.376	5
Date: March	h 7th			10.10		1.570	
Oak				10%	384	1 377	6
Poplar				10%		1.376	
White Pine	12	73 50%	5100	10%	384	1.376	5
MDE	-12	13.570	JH 70	10%		1.370	5
Mahagany				10%	.303	1.375	5
Cadar				10%	.303	1.370	5
Detet Mariel				10%	384	1.370	<u> </u>
Date: March	<u>n oui.</u>			100	204	1.077	
Dak			N., 1	10%	.384	1.377	6
Poplar		60.01	<b>F</b> 4 07	10%	.384	1.376	5
White Pine	-15.2 C	60%	54%	10%	.384	1.376	5
MDF	97.11	1 1 1 1 1 1		10%	.383	1.375	5
Mahogany		1 		10%	.383	1.376	5
Cedar		·		10%	.384	1.376	5
Date: Marc	h 9th.					n ngang dag dar State State State State State State State State State State State	
Oak		1 (C) 		9.5%	.384	1.375	5
Poplar				9.5%	.383	1.375	5
White Pine	-17 C	42%	51%	9.5%	383	1.375	5
MDF			-	9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar				9.5%	.384	1.375	5
Date: March	h 10th.	200	L.	and the second second	: المراجع المراجع	state and	
Oak				9.5%	.384	1.375	5
Poplar				9.5%	.383	1.375	5
White Pine	-14.6 C	60%	52%	9.5%	.383	1.375	5
MDF				9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar				9.5%	.383	1.375	5
Date: Marc	h 11th.	Carlor Anno C		·* • · · ·	a sette de la companya de la compa	A CONTRACT OF A CONTRACT	and and and a set of
Oak			· · ·	9.5%	.384	1.375	5
Poplar		and the second		9.5%	.383	1.375	5
White Pine	-2.4 C	69.5%	53%	9.5%	.383	1.375	5
MDF				9.5%	.383	1.375	5
Mahoganv			ala Alaman	9.5%	.383	1.375	5
Cedar				9.5%	.383	1.375	5
Date: March	h 12th.						
Oak				95%	384	1 375	5
Poplar	a da el Sector de la companya			9.5%		1 375	5
White Dine	250	710	5101-	0.5%		1.275	5
MDE	2.5 C	/170	J470	7.5%		1.575	
Mohogony				9.5%	.303	1.375	5
Ivianogany		· .		9.3%	.383	1.373	<u>J</u>
Cedar	· · · ·	a se prime		<u>9.3%</u>	.383	1.375	5

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# Month: March

Week: 3rd.

Appendix E - 9

Date: Marcl	h 13th.	an a		RENE CONTRACTOR			
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	р			9.5%	.384	1.375	5
Poplar				9.5%	.383	1.375	5
White Pine	6.9 C	71.5%	54%	9.5%	.383	1.375	5
MDF			200 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar			S.#	9.5%	.383	1.375	5
Date: Marcl	n 14th.	4.24 <b>7</b>	1				· · · · · · · · · · · · · · · · · · ·
Oak				9.5%	.384	1.375	5
Poplar	i de la companya de l Companya de la companya de la company			9.5%	.383	1.375	5
White Pine	8.2 C	63%	53%	9.5%	.383	1.375	5
MDF				9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar				9.5%	.383	1.375	5
Date: Marcl	h 15th.	at with	States and		Section 2	and the second	
Oak				9.5%	.384	1.375	5
Poplar				9.5%	.383	1.375	5
White Pine	7.1 C	77.5%	54%	9.5%	.383	1.375	5
MDF		r.		9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar		·		9.5%	.383	1.375	5
Date: March	n 16th.					in the second	
Oak			2 P 49 Y - 2	9.5%	.384	1.375	5
Poplar	e <sup>i</sup>			9.5%	.383	1.375	5
White Pine	.9 C	77.5%	54%	9.5%	.383	1.375	5
MDF				9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar				9.5%	383	1.375	5
Date: March	h 17th.		84.5 				
Oak				9.5%	383	1.375	5
Poplar				9.5%	.383	1.375	5
White Pine	-2.6.C	61.5%	54%	95%		1 375	5
MDF				9.5%	.383	1.375	5
Mahogany			• •	9.5%	.383	1.375	5
Cedar							
Date: Marcl	n:18th.		2	· · · · · · · · · · · · · · · · · · ·			
Oak			<u>. 100 (10)</u>	9.5%	.384	1.375	5
Poplar	1. A. A.			9.5%	.383	1.375	5
White Pine	1.3 C	64%	53%	9.5%	.383	1.375	5
MDF				9.5%	.383	1.375	5
Mahogany				9.5%	.383	1.375	5
Cedar				9.5%	.383	1.375	5
Date: Marcl	h 19th.	the first of the second se			unan, enders to	A Contraction of the Contraction	
Oak		<u></u>		9.5%	.384	1.375	5
Poplar	i a se		n da serie da serie En esta serie da serie	9.5%	383	1 375	5
White Pine	270	74 5%	52%	95%	383	1 375	5
MDF	2.70	17.370	5270	9.5%	383	1 375	5
Mahogany			ан. 1	9.5%		1 375	
Cedar	1	•	8a -	0.5%	383	1 375	5
				7.5%	.303	1.373	J

# Month: March & April

Week: 4th.

Appendix E - 10

Date: Marc	h 27th.	ing and a second s					n fan fan fan fan fan fan fan fan fan fa
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	· ·	in a state of the second s	······································	9%	.383	1.373	5
Poplar		i antera d	and the second	9%	.382	1.373	5
White Pine	.4 C	60.5%	44%	9%	.383	1.373	5
MDF	1	l i se da Na		9%	.383	1.375	
Mahogany				9%	.383	1.374	
Cedar		* =:* `		9%	.383	1.374	5
Date: Marc	h 28th.	· · · · · · · · · · · · · · · · · · ·	a ser a s	l			
Oak		- 	······································	8.5%	383	1 372	4
Poplar				8.5%	382	1 372	4
White Pine	39C	45%	43%	8.5%	382	1 372	<u> </u>
MDF		1570	13.70	85%	383	1.372	5
Mahogany				8.5%	383	1 373	<u> </u>
Cedar	{		8	8.5%		-1.373 	
Date: Marc	h 20th						
Date. Wale	<u>11 27111.</u>			<u><u> </u></u>	383	1 271	
Doplar				8.5%		1.371	4
White Dine	00	50%	120%	<u> </u>		1.372	<u> </u>
MDE	.90	J970	4270	0.570	.302	1.372	
Mahagany				0.3%	.303	1.575	
Codor				0.5%	.303	1.373	4
Detai	L 2046			0.3%	.303	1.373	4
Date: Marc	11 JULI.	n an				1 271	
Danlar	•			8.5%	.383	1.3/1	4
Poplar Nul ite Disc			1107	8.5%	.382	1.372	4
White Pine	0 U	50.5%	41%	8.5%	.382	1.372	4
MDF			e de la companya de l	8.5%	.383	1.375	5
Manogany	ľ			8.5%	.383	1.3/3	4
Cedar		· · · · · · · · · · · · · · · · · · ·		8.5%	.383	1.3/3	4
Date: Marc	h 31st					1.071	2°
Oak				8.5%	.383	1.3/1	4
Poplar				8.5%	.382	1.372	4
White Pine	-4 C	45%	40%	8.5%	.382	1.372	4
MDF	ris -			8.5%	.383	1.375	5
Mahogany		an a	a statistica.	8.5%	:383	1.373	4
Cedar			• statik <u>·</u>	8.5%	.383	1.373	4
Date: April	<u>1st.</u>	an a				बिके का स 	
Oak				8.5%	383	1.371	4
Poplar				8.5%	.382	1.372	4
White Pine	-1.7 C	60%	41%	8.5%	.382	1.372	4
MDF				8.5%	.383	1.375	5
Mahogany	ļ .			8.5%	.383	1.373	4
Cedar				8.5%	.383	1.373	4
Date: April	2nd.	Est and the second			un in differi Alleria		
Oak				8.5%	.383	1.371	4
Poplar	]		27.2 5.1.10-1	8.5%	.382	1.372	4
White Pine	] -1 C	72.5%	43%	8.5%	.382	1.372	4
MDF	1			8.5%	.383	1.375	5
Mahogany	1	and a second second Second second		8.5%	.383	1.373	4
Cedar	1			8.5%	.383	1.373	4

# Month: March & April

Week: 5th.

Appendix E - 11

Date: Marc	h 27th.				al more than the second s	na na wana na	na na seconda de la competición de la competició
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	gan (p. 1977)			9%	.383	1.373	5
Poplar		1.133		9%	.382	1.373	5
White Pine	.4 C	60.5%	44%	9%	.383	1.373	5
MDF		n de Sager a ser a s Ser a ser		9%	.383	1.375	5
Mahogany				9%	.383	1.374	5
Cedar		an an tha an Tha an tha an t	an a	9%	.383	1.374	5
Date: Marc	h 28th.				ingen er en		
Oak				8.5%	.383	1.372	4
Poplar				8.5%	.382	1.372	4
White Pine	3.9 C	45%	43%	8.5%	.382	1.372	4
MDF				8.5%	.383	1.375	5
Mahogany	e Frankski star			8.5%	.383	1.373	4
Cedar				8.5%	.383	1.373	4
Date: Marc	h 29th			0.0 /0	<u></u>		New Alter Street
Oak			And the second sec	8.5%	.383	1.371	4
Poplar			na far an trainn an t	8.5%	.382	1.372	4
White Pine	9 C	59%	42%	8.5%	.382	1.372	4
MDF				8.5%	.383	1.375	5
Mahogany			An and provide the second s	8.5%	383	1 373	4
Cedar				8.5%	383	1 373	4
Date: Marc	1 h 30th	a and the second se	n and a second				Constanting of the second second
Oak	li Jourses			8.5%	383	I 1 371	<u> </u>
Poplar				8.5%	382	1.371	<u> </u>
White Dine	-6 C	50 5%	A1%	8.5%	382	1.372	<u> </u>
MDE		50.5%	T1 70	8 5%	383	1.372	
Mahogany				8.5%	383	1.373	<u> </u>
Cedar				8.5%	383	1.373	4
Date Mara	h Alst			0.5 %	.505	<u> </u>	
Oak				8.5%	1 383	1 371	4
Poplar		anna an saoch an sao 1914 - Anna an saoch a 1914 - Anna an saoch	al agriculture A constantion A constantion	8.5%	382	1 372	4
White Pine	-4 C	15%	40%	8.5%	382	1.372	4
MDE		<b></b> ,	-1076	8.5%	383	1.372	5
Mahogany				8.5%	383	1.373	
Cedar				8.5%	383	1 373	4
Date: April	<u> </u>  .st				1	<u> </u>	
Oak				8.5%	383	1.371	4
Poplar		Grand States		8.5%	382	1.372	4
White Pine	1 -17C	60%	41%	8.5%	.382	1.372	4
MDF		0070		8.5%	383	1.375	5
Mahogany		1		8.5%	383	1.373	4
Cedar	in and set		an a	8.5%	383	1 373	4
Date: Antil	2nd	l No deserve	Contraction of the second s		I		L
Oak				8 5%	383	1 371	4
Poplar		rie Basel de Creme Marie	i and and	8.5%	387	1 372	4
White Dipe		72 50%	120%	8 50%	382	1 372	4
MDE		12.570	<i>U</i> , CT	850	382	1 375	5
Mahogany			an a	8 5 %	383	1 373	4
Coder	la a serie de la composition d		engenge State Statege	8 50%		1 373	<u> </u>
Cedar	with a state with the	- Contraction		0.370		1.575	L

Week: 1st.

Appendix E - 12

Date: Apri	l 3rd.	e carrier and		a and a second a second and a second a	and Star Star Star		tion (1997)
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak		.X.,	\$4.	8%	.382	1.369	4
Poplar			·	8%	.382	1.370	4
White Pine	2.5C	84%	45%	8%	.382	1.371	4
MDF	ta ita Artenia			8%	.383	1.375	5
Mahogany				8%	.382	1.372	4
Cedar				8%	.382	1.372	4
Date: Apri	I 4th.				1		
Oak				8%	.382	1.369	4
Poplar			e . A secondaria	8%	382	1 370	4
White Pine	-6.9C	64%	64%	8%	382	1.370	4
MDF		0170	0170	8%	383	1 375	5
Mahogany			a taliati in t	8%	382	1.373	<u> </u>
Cedar		Jan San	ang shi ng sa ng sa ng	80%	382	1.372	<u>+</u>
Data: Apri	1 5th	le contraction de la contracti	and the second	0 /0	.302	1.374	•••
Date. April	<u> </u>	in the second	• <u>• • • • •</u>	007	200		1
Danlar				0%	.382	1.309	4
Poplar White Direc	0.00	100	4107	8%	.382	1.370	4
White Pine	-9.8C	48%	41%	8%	.382	1.3/1	4
MDF				8%	.383	1.3/5	
Manogany		с 		8%	.382	1.372	4
Cedar				8%	.382	1.372	4
Date: Apri	l 6th.		a dia angle ang				
Oak		At a second s		8%	.382	1.369	4
Poplar				8%	.382	1.370	4
White Pine	-6.1C	74.5%	43%	8%	.382	1.371	4
MDF				8%	.383	1.375	5
Mahogany	·			8%	.382	1.372	4
Cedar				8%	.382	1.372	4
Date: Apri	l 7th. 307	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	a salatina A salatina A salatina		and a second and a s I and a second		1944 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 - 1947 -
Oak	- X.			7.5%	.382	1.368	3
Poplar			a sharan ta	7.5%	.381	1.369	4
White Pine	-5.4C	67.5%	42%	7.5%	.381	1.370	4
MDF	, í			7.5%	.383	1.375	5
Mahogany				7.5%	.382	1.371	4
Cedar		the second	24. <sup>10</sup>	7.5%	.382	1.371	4
Date: Apri	il 8th.	a nar Ayr	and the second		an an a the second		and the second se
Oak				7.5%	.382	1.368	3
Poplar				7.5%	.381	1.369	4
White Pine	9C	67%	42%	7.5%	.381	1.370	4
MDF				7.5%	.383	1.375	5
Mahogany		andre in 1918 De Britter		7.5%	.382	1.371	4
Cedar				7.5%	.382	1.371	4
Date: Apri	l 9th.		New Content	h,		•	50
Oak		and the second	ng mangang sa	7.5%	.381	1.368	3
Poplar		an an an Arabana. Taona an Arabana	and Barry	7 5%	381	1.369	
White Pine	-4 2C	54 5%	40%	7 5%	381	1 370	4
MDF				7 5%	383	1 375	<del>'</del> -
Mahogany				7.5%	382	1 371	<u> </u>
Cedar	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	с. 1. ат	enter Secondo de la composición de la composi Composición de la composición de la comp	7 5%	382	1 371	<u> </u>
Journ	· ·	5 g	$F = F_{1} F_{2} F_{2} F_{2} F_{2}$		· · · · · ·	1.5/1	-

## Week: 2nd.

Appendix E - 13

Date: April	10th.			and the second second	te to sugar to sugar	and the second sec	
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				7.5%	.381	1.368	3
Poplar			en de la seconda de la sec Nota de la seconda de la se	7.5%	.381	1.369	4
White Pine	-4.2C	54.5%	40%	7.5%	.381	1.370	4
MDF				7.5%	.383	1.375	5
Mahogany				7.5%	.382	1.371	4
Cedar				7.5%	.382	1.371	4
Date: April	11th.		TO AND				
Oak				7.5%	.381	1.368	3
Poplar				7.5%	.381	1.369	4
White Pine	4.3C	35%	36%	7.5%	.381	1.370	4
MDF		and a second and a s		7.5%	.383	1.375	5
Mahogany				7.5%	382	1 371	3
Cedar		n ganta ganta Secondaria		7.5%	382	1 371	4
Date: April	12th						
Oak				7 5%	381	1 368	3
Poplar				7.5%	381	1 369	
White Pine	5 8C	73 5%	40%	7.5%	381	1 370	<u> </u>
MDF			10 / 0	$-\frac{7.5 \%}{7.5 \%}$	383	1 375	5
Mahogany				7.5%	382	1.375	<u>_</u>
Cedar				7.5%	382	1 371	<u>_</u>
Date April	13th	le se		1.370	<u>.504</u>	1	
Oak			2. 2.	7500	381	1 368	2 <sup>Stall</sup>
Poplar				7.5%	381	1.300	
White Dine	2.20	71 50%	30%	7.5%	381	1.309	4 
MDE	2.20	11.370	5970	7.5%	.301	1.370	<u> </u>
Mahogany			алан Жас	7.5%	.383	1.373	<u>J</u>
Wallogally Codor				7.5%	.302		4
Date: April	<u> </u>	area.	ne obligani 1991 - Inden State 1996 - Alexandro Maria	1.570		1.371	4
Date. April	1 <b></b>			70%	201	1 267	2
Danlar				70	.301	1.307	
Poplai White Dine	00	10.507	* วิติ <i>ต</i>	70	.301	1.300	4
White Phie	.00	49.5%	51%	1%	.301	1.309	
Maharan					.303	1.373	3
Mailogally_		e a su de la composición de la	a s A D	1%	.302	1.370	4
Dotat April	1545			170	.302	1.370	<b>4</b>
Date: April	1. <b>7611.</b> - 387	a and a second sec	and the second sec	70%	380		<b>a</b>
Doplar				70/2	281	1.300	
Poplai White Dine	00	26 50%	250%	70	381	1.307	<u>J</u>
MDE	.00	30.370	3,370	70		1.309	
Mohogony						1.375	<u>J</u>
Manogany				770	.302	1.370	
Deterrit	1644-	an a	and the second	1 1/0	.384	<u> </u>	<b>4</b>
Date: April	1011.	And the second s	an ga	70	200	1.200	2
		a series and		/%	.380	1.300	<u> </u>
Poplar		100	Arm	1%	.381	1.30/	<u> </u>
White Pine	.6C	48%	36%		.381	1.309	4
MDF				1%	.383	1.575	<u> </u>
Mahogany			n an	1%	.382	1.370	4
Cedar		hard a start of the second star Second start of the second start	in the	7%	.382	1.370	4

Week: 3rd.

Appendix E - 14

Date: April	17th.	್ರಾ. ಕ್ರಾ.ಕ್ರಿ. ಕ್ರಾ. ಸ್ವಾನ್ - ಸ್ವಾನ್	safa	-	Safe - Safe	*	
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				7%	.380	1.366	3
Poplar			11. 11. 11. 11. 11. 11. 11. 11. 11. 11.	7%	.381	1.367	3
White Pine	5C	57.5%	37%	7%	.381	1.369	4
MDF				7%	.383	1.375	5
Mahogany				7%	.382	1.370	4
Cedar		4 (A)		7%	.382	1.370	4
Date: April	18th.	1.4375 1975 - 1.53	24 - 17, - 1	e e sp	i an internet in the second	ในปี	and second and an
Oak				6.5%	.380	1.365	2
Poplar				6.5%	.381	1.366	3
White Pine	2.6C	57%	38%	6.5%	.381	1.368	3
MDF				6.5%	.383	1.375	5
Mahogany		i sa si		6.5%	.382	1.369	3
Cedar				6.5%	.382	1.369	3
Date: April	19th.		ang sa		L Carrier Control Cont	2 No. 20 - 20 C - 20 C - 20 - 20 C -	
Oak	de ést		la se al companya de la companya de	6.5%	.380	1.364	2
Poplar	1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	in the second	an a	6.5%	.380	1.366	3
White Pine	3.5C	78.5%	40%	6.5%	.381	1.367	3
MDF				6.5%	.383	1.375	5
Mahogany	a ti			6.5%	.381	1.369	3
Cedar	1 at 1 1 1			6.5%	.381	1.369	3
Date: April	20th.	<u> </u>	la de la companya de	•		an and an	and the second sec
Oak				6.5%	.379	1.364	2
Poplar				6.5%	.380	1.366	3
White Pine	3.2C	58%	39%	6.5%	.381	1.367	3
MDF	1	an a tha ann an t-		6.5%	.383	1.375	5
Mahogany			e sel din s Santa e compositiones de la compositiones de la compositiones de la compositiones de la composition	6.5%	.381	1.369	3
Cedar				6.5%	.381	1.369	3
Date: April	21st.	and the second sec	ryvov A versta Artista Artista	and the second			······································
Oak				7%	.379	1.364	2
Poplar			т.,	7%	.381	1.366	3
White Pine	2.3C	70%	41%	7%	.381	1.367	3
MDF		н.н. Г		7%	.383	1.375	5
Mahogany			na 1997 - Saferra 1997 - Saferra	7%	.381	1.369	3
Cedar	рана (1997) 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 — 1997 —			7%	.381	1.369	3
Date: April	22nd.		ali e calata an in e			and the second sec	1995
Oak			• • • •	7%	.379	1.365	2
Poplar				7%	.381	1.367	3
White Pine	2.3C	71.5%	41%	7%	.381	1.369	3
MDF	Į	n an an an an An Abhairte	attern i	7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar		L		7%	.381	1.370	3
Date: April	23rd.		*		27		
Oak				<u> </u>	.379	1.365	2
Poplar				7%	.381	1.367	3
White Pine	-1.6C	60.5%	39%	7%	.381	1.369	3
MDF	• • • • •	2014) - 2014 2014) - 2014 2014) - 2014		7%	.383	1.375	5
Mahogany		lan an a		7%	.381	1.370	3
Cedar				7%	.381	1.370	3

## Week: 4th.

Appendix E - 15

Date: April	24th.			, . <del>.</del> 1 en 13 mart a 1990 - 1 e 1990 - 1 1 e 1991 - 1991 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990 - 1990		ter the second	
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Type	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				7%	.379	1.366	2
Poplar				7%	.381	1.367	3
White Pine	2.3C	58%	38%	7%	.381	1.369	3
MDF		n the second		7%	.383	1.375	5
Mahogany			fig. i	7%	381	$\frac{1.379}{1.370}$	3
Cedar			en en el	7%	381	1.370	3
Date April	05th		A start and a start s				
Oak	2.Jui.			70	380	1 366	<u>΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄ ΄</u>
Doplar			10 10	7%	281	1.300	2
White Dine	2.20	70 50	100%	70	201	1.307	
MDE	J.2C	19.570	40%	70	.301	1.309	5
MDF				7%	.383	1.373	3
Manogany			andre start Starten Aleren	1%	.381	1.370	3
Cedar				1%	.381	1.370	3
Date: April	26th.	10000 T. 1007	1980) A.				
Oak				1%	.380	1.366	2
Poplar					.381	1.367	3
White Pine	] 3.5C	69%	39%	7%	.381	1.369	3
MDF		en de la companya de La companya de la comp	n an	7%	.383	1.375	5
Mahogany		e de la composición d		7%	.381	1.370	3
Cedar		n in de la companya d Norma de la companya d Norma de la companya d		7%	.381	1.370	3
Date: April	27th.					and a state of the	
Oak		en en George		7%	.380	1.366	2
Poplar		an digina a	<ul> <li>Andreas State Sta</li></ul>	7%	.381	1.367	3
White Pine	2.2C	86%	41%	7%	.381	1.369	3
MDF		er - Stange		7%	.383	1.375	5
Mahogany		. (jrantsrut stratis		7%	381	1.370	3
Cedar				7%	381	1 370	3
Date: April	28th	 ****			<u>  .501</u>	1.578	
Oak		ki daga sa sa 1996. Ki sa		7%	380	1 366	2
Poplar	1	n de la companya de l Norma de la companya d		7%	381	1.367	
White Dine	310	81.50%	100	70/0-	381	1.307	3
MDE	<i>₽</i> .+C	04.370		707-	.301	1.309	5
Mahagan		en ang di san ang di s Ang di san ang		<u>- 170</u>	201	1.373	2
Cadar		and a second second	ni i se	1%	.301	1.370	
Deter	2011			/%	186.	<u> </u>	<u>&gt;</u>
Pate: April	29th.			70	200		
Oak				1%	.380	1.300	2
Poplar		01 77		1%	.381	1.30/	3
White Pine	4.5C	81.5%	41%	1%	.381	1.369	5
MDF				1%	.383	1.375	<u> </u>
Mahogany	é	and the second sec		7%	.381	1.370	3
Cedar	SK	n and a start of the second		7%	.381	1.370	<u> </u>
Date: April	'30th.	provide and the second	Mar Me Source		a the second second		
Oak	a series and a series of the s		and an and a second	7%	.380	1.366	2
Poplar		1 al contrata de la c	and and a second se	7%	.381	1.367	3
White Pine	6.7C	71.5%	40%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar				7%	381	1.370	3
Couar		1	v = 433		L	1.070	<u> </u>

Week: 1st.

Date: May	1st.	dies Martine die die die die die die die die die di	50 <sup>-7</sup>	÷		1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1. 1	1997 - 19
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Type	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	$\int 1 L_{10} - 10H I$
Oak				7%	.380	1,366	2
Poplar				7%	381	1 367	
White Pine	8 5 C	61 5%	39%	-7%	381	1 369	
MDF	0.00	01.570	5770	7%	383	1 375	5
Mahogany		1 1 1 A.		7%	381	1.375	3
Cedar			1.1.1	7%	381	1.370	
Date: May	2nd			170		1.570	
Oak Oak			45	7%	380	1 366	<u> </u>
Poplar	· · ·			700-	381	1.300	
White Dine	00	10.5%	380%	70/2	381	1.307	
MDE		40.J //	3070	70	.301	1.309	5
Mahagany		and the second sec		70	.305	1.373	
Wallogally				1%0 70	.301	1.370	<u> </u>
Cedar Detay Mar	2	<u> </u>	e de la composición de	1%	.381	1.370	3
Date: May	sra.	· · · · · · · · · · · · · · · · · · ·					
Оак				1%	.380	1.366	2
Poplar	10.00		0.7.01	1%	.381	1.367	3
White Pine	10.3C	44%	31%	1%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany		a ti an an		7%	.381	1.370	3
Cedar	. <u> </u>				.381	1.370	3
Date: May	4th.	- 19 2 1 -	22.42 22.42	· · · ·	n an an an Arthur an Arthur an Arthur an Ar	and a state of the second s	
Oak		9 - E. A.	• • • • •	7%	.380	1.366	2
Poplar		the second s		7%	.381	1.367	3
White Pine	11.1C	48.5%	37%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany		12.11		7%	.381	1.370	3
Cedar		a faire and a second		7%	.381	1.370	3
Date: May	5th.		• 282.9	terstand Terstand	inceres ar i	artinetti artista. Artinetti artista	an an grad
Oak				7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	7.9C	72.5%	39%	7%	.381	1.369	3
MDF		<b>i</b> 2011 - 11		7%	.383	1.375	5
Mahogany		· · · · · · · · · · · · · · · · · · ·		7%	.381	1.370	3
Cedar	1		•	7%	.381	1.370	3
Date: May	6th.	antes					8. 
Oak	[		1	7%	.380	1.366	2
Poplar	1		на на С	7%	.381	1.367	3
White Pine	6.9C	46%	38%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar	1			7%	.381	1.370	3
Date: May	7th.		5.11 9.11	1872		1	
Oak		1		7%	.380	1.366	2
Poplar				7%	.381	1.367	
White Pine	5.80	37%	36%	7%	381	1 369	
MDF			5070	7%	383	1 375	5
Mahogany			an a	70%	3.81	1.375	
Cedar	a de la companya de la		<b>I</b>	70%	301	1.370	2
Ceual	l	1 - 15 - 200 - 1	<u> </u>	170	105.	1.370	3

Week: 2nd.

Appendix E - 17

Date: Mav	8th. 354	and a second	r i i i i i i i i i i i i i i i i i i i	Variante - Alton	an a	197 1977 - 1960	i i i i i i i i i i i i i i i i i i i
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak			*	7%	.380	1.366	2
Poplar	-			7%	.381	1.367	3
White Pine	7.6C	37%	36%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany	·			7%	.381	1.370	3
Cedar			· · ·	7%	.381	1.370	3
Date: May	9th.	1.20°	n an	*	in the second	an a	27. B. 1. 1.
Oak			· · · · ·	7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	10.1C	56%	37%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany	- 100		• •	7%	381	1 370	3
Cedar				7%	381	1 370	
Date: May	10th.	· · · · · · · · · · · · · · · · · · ·	in a state of the				
Oak				7%	.380	1.366	2.
Poplar	÷.,			7%	.381	1.367	3
White Pine	8.8C	87.5%	39%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahoganv		an an ann an Anna. Ta an Anna		7%	.381	1.370	3
Cedar				7%	381	1.370	
Date: May	11th.	L ()	n an				
Oak				7%	.380	1.366	2.
Poplar				7%	.381	1.367	3
White Pine	9.5C	84.5%	38%	7%	.381	1.369	3
MDF		/0	2970	7%	383	1.375	
Mahogany				7%	.381	1.370	
Cedar				7%	.381	1.370	3
Date: May	12th.		an i California California				
Öak				7%	.380	1.366	2
Poplar				7%	.381	1.367	
White Pine	13.9C	61.5%	37%	7%	.381	1.369	3
MDF			2.10	7%	.383	1.375	5
Mahogany			89 1 1.	7%	381	1 370	3
Cedar	· · · · · · ·			7%	.381	1.370	3
Date: May	13th.	La de la companya de	ي وي جميع مراجع				
Oak			<u>**</u>	7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	16.1C	53%	36%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar				7%	.381	1.370	3
Date: May	14th.						
Oak	 		nt an <u>-</u> La a an an-	7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	11.1 <b>C</b>	77%	38%	7%	.381	1.369	
MDF			2070 80 <sup>10</sup>	. 7%	383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar				7%	381	1.370	3
Couu			ř., · _	170	.501	1.570	5

## Week: 3rd.

Date: May	15th.						
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	11.7C	58.5%	37%	7%	.381	1.369	3
MDF				7%	.383	1.375	
Mahogany			1. 1. A.	7%	381	1 370	3
Cedar				$\frac{7\%}{7\%}$	381	1.370	3
Date: May	16th.						5
Oak				7%	380	1.366	2
Poplar				7%	381	1 367	
White Pine	8C	68%	38%	$-\frac{7\%}{7\%}$	381	1 369	3
MDF			2070	$-\frac{7\%}{7\%}$	383	1 375	5
Mahogany			÷	7%	381	1.370	
Cedar				7%	381	1.370	
Date: May	17th			170		1.570	
Oak	1700.			70	380 -	1 366	<u> </u>
Poplar				70	201	1.300	2
White Dine	10 /C	68 507-	200/	70	201	1.307	
MDE	10.40	00.370	3070	<u> </u>	.301	1.309	5
Mahagany					.303	1.373	
Manogany				1%	.381	1.370	3
Cedar	1041			1%	.381	1.370	3
Date: May	18th.	r		<u></u>	000	. 10//	
Dak				1%	.380	1.366	2
Poplar	10.10	ECO	070	1%	.381	1.367	3
White Pine	10.4C	50%	31%	1%	.381	1.369	3
MDF				1%	.383	1.375	
Mahogany				1%	.381	1.370	
Cedar	10/1				.381	1.370	3
Date: May	19th.	i.				1.0//	
Oak				1%	.380	1.366	2
Poplar				1%	.381	1.367	3
White Pine	8C	64%	38%	1%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar				7%	.381	1.370	3
Date: May	20th.						
Oak				7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	11.1C	63%	37%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar				7%	.381	1.370	3
Date: May	21st.						
Oak				7%	.380	1.366	2
Poplar				7%	.381	1.367	3
White Pine	8.2C	72.5%	39%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar	1			7%	.381	1.370	3

## Week: 4th. [ Information not availabledix E - 19

Date: May	22nd.	and the second	Seattle St.			an a far a sur	nan na Kaganilina (1930) na kanalin Kagi wa tao kanalina kanalina kanalina kanalina kanalina kanalina kanalina
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Type	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	a di saligi di sali di	- da - Salay.	an a		÷	L	
Poplar	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	and the second sec	<ul> <li>Strand Academic Science</li> </ul>			· · · -	
White Pine	an a		44) <u>11</u> 2 1.				
MDF						· · · · · · · · · · · · · · · · · · ·	
Mahogany							
Cedar							
Date: May	23rd.		14.5 T. 14.55				
Oak					state in the second	And a state of the second s	<u> </u>
Poplar		1177 - 1179 - 11					·
White Pine							
MDF							
Mahogany	n ng karangan sa karang sa kar						
Cedar		n an					
Date: Max	24th	New York				in the second	land and the second
Date. May				:		<u> ARCHI ARABAN</u>	l
Poplar					·		
White Pine		an a					
MDE				· ·			
Mahogany		an a					·
Cedar							
Data: Max	25th	and the second sec	A STAN	Sale -	· · · · · · · · · · · · · · · · · · ·	and the second	l
Date. Wiay				[	1	i diante di internetta di i I	1 - <u>1998</u> - 1997 - 198
Doplar			an a		· · · · ·		
White Dine		2			· · · · · · · · · · · · · · · · · · ·		··
MDE					· · · · · · · · · · · · · · · · · · ·		·
Mahagany	a. Constant	27.5% 19	n aller and			·	
Codor			india an		· · · · · ·		
Data: Max	1 7-96th	<u> </u>	and the second se		Lander i Transferration	l Alla (+ Wyst Alland)	
Date. May		and strattic to an	<u>i de la compañía de</u>	<u> </u>			articut <u>Fattari San</u> g
Poplar	<b>{</b>			<u>├</u> ──- ·──-			
White Dine			an a	-			
MDE			184.577 1994				
Mahogany	ł						
Cedar	n fan Arrenne Stranger Sterrenne Stranger Sterre		an a		<u>                                      </u>		
Date: Mar	/ / 27th	And a second sec	Antonio				I a strange and a second
Oak		and the second	n mar mar an	V Presidential States	<u>- 346-2 *</u>	<u> </u>	<u>an a seconda a s</u>
Poplar					<u> </u>		· · ·
White Dine	4		n an	<u> </u>			
MDE					<u> </u>		
Mahogany				<u> </u>	<u> </u>		
Cedar					┼────		
Dofo: Mox	78th		<u> </u>	l Start Starter			
Date. IVId		tin <u>an an</u> an		Collingentitier "	** 2		in the second
Donlor		and the second sec			<del>                                      </del>		
		and the second s	And States		<u> </u>	<b>├</b>	·
white Pine			Particular and the second s		<u> </u>	<u> </u>	
				<b>├</b> ───	<u> </u>		
Mahogany		1002 (* 1202) 1997 - 1997 (* 1997) 1997 - 1997 (* 1997)			<b>├</b> ────	<u>                                     </u>	<u> </u>
Cedar	1		and the second sec		<u> </u>		<u> </u>

# Month: May & June

Week: 5th.

Appendix E - 20

Date: May	29th.	1924 - 1924 - 1935 1977 - 1978 - 1979 - 19700 - 1970 - 1970 - 1970 - 1970 - 19700 -		1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1		1. ¥ 90 11 5 4	2000
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Type	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				7%	.380	1.366	2
Poplar				7%	.381	1.367	
White Pine	12.4C	80%	39%	7%	.381	1.369	3
MDF				7%	383	1 375	5
Mahogany				7%	381	1.370	3
Cedar			ξ <sup>1</sup>	7%	381	1.370	3
Date: May	30th	 \$	internet int				
Oak				7%	380	1 366	2
Poplar		•• · · ·		7%	381	1.367	
White Pine	17 9C	57%	3700	7%	381	1.367	3
MDE	17.90	5170	5170	70/2	383	1.309	
Mahogany				70	201	1.373	
Codor		n na star a starta		70	.301	1.370	
Deter	21	<u> </u>	· · · · · ·	1 1 10	.301	1.370	3
Date: Wiay	JISL		· · ·	70	200	1.2 <i>Č</i>	
Darler		e 1 e - 2 e		1%	.380	1.300	2
Poplar		<b>F1</b> 01	070	<u> </u>	.381	1.367	3
White Pine	20.5C	51%	31%	1%	.381	1.369	3
MDF	d d		N.	1%	.383	1.375	5
Mahogany		18. L		1%	.381	1.370	3
Cedar				/%	.381	1.370	3
Date: June	e 1st. 👘		410.1 °		an Starts The Starts		1
Oak					.380	1.366	2
Poplar		n ng sa		7%	.381	1.367	3
White Pine	19.4C	54%	38%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany		ara a tal	94 - 14 14	7%	.381	1.370	3
Cedar				7%	.381	1.370	3
Date: June	e 2nd.	· · · · · · · · · · · · · · · · · · ·	ал - Т			· · · · · · · · · · · · · · · · · · ·	4.24 4.24 5.11
Oak		17g		7%	.380	1.366	2
Poplar		- 20 <sup>11</sup>		7%	.381	1.367	3
White Pine	19.7C	56.5%	40%	7%	.381	1.369	3
MDF		- 100 - 100 - 100 - 100	a a tha	7%	.383	1.375	5
Mahogany		1997) 1997 - 1997	• • • • •	7%	.381	1.370	3
Cedar		ي. مەنىيە ھەر	a di Sana Angela	7%	.381	1.370	3
Date: June	3rd.		9.8 <b>9</b> 99		· · · · ·	s policies de la constante de	
Oak				7%	.380	1.366	2
Poplar	1			7%	.381	1.367	3
White Pine	16.4C	41%	44%	7%	.381	1.369	3
MDF		an a		7%	.383	1.375	5
Mahogany				7%	.381	1.370	3
Cedar		n a star a s	1	7%	.381	1.370	3
Date: Inne	4th.		n <u>i serie si s</u> erie se serie ser	na in an			. "#s ^
Oak			· · · · · · · · ·	7%	380	1.366	2.
Poplar			· ·	7%	381	1 367	
White Dine	160	45 50%	A702	7%	381	1 360	3
MDE	100	+J.J70	+//0	70%	383	1.307	5
Mahagany			2	70/2		1.375	3
Codor				170 70/-	.301	1.370	2
Cedar			and the second second	170	.301	1.370	3

## Month: June

Week: 1st.

Date: June	e 5th.		5		Regional Contractor Regional Contractor Regional Contractor	ingen gegengen som en ander Trev som en ander	ν. 
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak				7%	.380	1.366	2
Poplar			and a second	7%	.381	1.367	3
White Pine	19.4C	57.5%	50%	7%	.381	1.369	3
MDF				7%	.383	1.375	5
Mahogany			-	7%	.381	1.370	3
Cedar				7%	.381	1.370	3
Date: June	e 6th.		a starige			and the second sec	and the same of the second s
Oak			land and the second	7%	.380	1.366	2
Poplar		1		7%	.381	1.367	3
White Pine	20.1C	55.5%	52%	7%	.381	1.369	3
MDF			· · · · · · · · · · · · · · · · · · ·	7%	.383	1.375	5
Mahogany			1 N	7%	.381	1.370	3
Cedar		•		7%	381	1 370	3
Date: June	. 7th.	and the second sec	n in the second se				
Oak			ar suite a	7.5%	379	1 367	2
Poplar	See y			7.5%	380	1 368	3
White Pine	9.80	72 5%	54%	7.5%	381	1.300	3
MDE	2.00	12.5 10	5470	7.5%	383	1.375	
Mahogany				7.5%	381	1.373	3
Cedar				7.5%	381	$\frac{1.371}{1.371}$	
Data Juna	s Sth		6.2 6.2	1.570			
Date: June	5 Otu.			75%	281	1 368	3 <sup>1</sup> · · · · · · · · · · · · · · · · · · ·
Poplar		an a		7.5%	381	1.360	3
White Dipe	0.30	10 50%	5100	7.5%	381	1.309	3
MDE	9.50	49.370	J4 //	7.5%	383	1.370	5
Mahagany				7.5%	382	1.373	
Ivialiogaliy	•			7.5%	.302	1.371	
Data	0th			1.370		1.571	
Date: June	: 9tm. <u></u>	• • • • • • • • • • • • • • • • • • •	in	750	201	1 269	<u> </u>
Damlar		a second		7.5%	.301	1.300	2
Popial White Dime	10.2	<i>6</i> 1 <i>0</i> 7	550	7.5%	.301	1.309	3
While Pine	12.5	01%	55%	7.5%	.301	1.370	5
MDF			and the second	7.5%	.383	1.373	
Codor		· · · · · ·		7.5%	.382	1.371	2
Deter	10+h		i e ele li internette ele ele ele ele ele ele ele ele ele	1.370	.301	1.371	
Date: Jun				7507-	201	1.362	<b>)</b>
Dak	<sup>201</sup>			7 507	.301	1.300	2
Toplar White Dire	11.00	7101	5601-	7 501-	201	1.309	3
White Pine	11.9C	/4%	30%	7.5%	.301	1.370	5
MDF				1.3%	.303	1.3/3	<u> </u>
Manogany	1	l · · · · ·		1.3%	.382	1.3/1	3
Cedar	-	<u> </u>		1.5%		1.3/1	J
Date: Jun	e 11th.		9898)				
Oak				1.5%	.381	1.368	<u>2</u>
Poplar				1.5%	.381	1.369	3
White Pine	11.7C	80%	57%	7.5%	.381	1.370	3
MDF				7.5%	.383	1.375	5
Mahogany				7.5%	.382	1.371	3
Cedar				7.5%	.381	1.371	3

# Month: June

## Week: 2nd.

Date: June	2 12th.	1.4%	and the second second	N. C.		aller in Lind	
Wood	Outside	Outside	Inside	Moisture	Main Groove	Distance Between	Effort to Remove
Туре	Temp.	Humidity	Humidity	Content	Size [inches]	Grooves [inches]	[1 L 10H.]
Oak	and the put			7.5%	.381	1.368	2
Poplar		ana ang ang ang ang ang ang ang ang ang		7.5%	.381	1.369	3
White Pine	13.7C	60%	56%	7.5%	.381	1.370	3
MDF	n de la composición d La composición de la c	1 ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) ( ) (	ang sa	7.5%	.383	1.375	5
Mahogany				7.5%	.382	1.371	3
Cedar				7.5%	.381	1.371	3
Date: June	13th.	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	· · · · · · · · · · · · · · · · · · ·	an ten ten ten ten ten ten ten ten ten te	۲	i i i i i i i i i i i i i i i i i i i	
Oak				8%	.382	1.369	4
Poplar					.382	1.370	4
White Pine	15.1C	67.5%	57%	8%	.382	1.371	4
MDF				8%	.383	1.375	5
Mahogany				- 8%	.382	1.372	5
Cedar	мана 1910 г. ж. м.			8%	.381	1.372	5
Date: June	14th.	Strate State		and the second s			
Oak		Salar da se		8%		1.369	4
Poplar			5 A.	8%	.382	1.370	4
White Pine	14.1C	46%	56%	8%	.382	1.371	4
MDF		94		8%	.383	1.375	5
Mahogany		and the second second		8%	382	1.372	5
Cedar				8%	.381	1.372	5
Date: June	15th.	en e	10 A.L. 11 11	The second se	.~~ .		
Oak				8%	.383	1.369	4
Poplar			an a	8%	.382	1.370	4
White Pine	16.9C	40%	55%	8%	382	1.371	4
MDF			<b>22 1 1</b>		383	1 375	5
Mahogany					382	1.372	5
Cedar				8%	381	1.372	
Date: June	- 16th.						
Oak				8%	382	1.369	<u>4</u>
Poplar	25	$\psi_{\mu_{\mu}}^{*}\psi_{\mu}$		8%	382	1.370	4
White Pine	20.2C	54%	56%	8%	382	1.371	4
MDF	20.20	e and			383	1.375	5
Mahogany				- 8%	382	1.372	5
Cedar					381	1.372	
Date:		Via Vianagiana via Vianagiana via					The second se
Oak		· · · · · · · · · · · · · · · · · · ·			• • • • • •		<sup>−</sup> <sup>−</sup> <sup>−</sup> w <sup>−</sup> <sup>−</sup> <sub>ν</sub> → <sup>−</sup>
Poplar		and a second s					
White Pine							r
MDF							
Mahogany						<u> </u>	
Cedar		(21) - 212 			 		
Date		10 C	and the second sec	in the second	l		
Oak					^		
Doplar	in the second	an an					
White Dine							
MDE							
Mahagany		l.k.	a ser Anal ser				
	.¥n i f	l de la stat	en este de la				
Ceual	1	1	1		1		

Roon	n -	В	[			De	escriptio	n -				_	Living Boom	
Window	Job-	Room-	Piece-	Inside M	leasu	rement	Beveal	Width	of Trim	Length	of Trir	<u></u>	Identification	Window
1	J-	B-	T-	Width	40	3/8	1/4	2	3/4	46.375	46	3/8	B-I-T-1	1
1	J-	B-	B-	Width	40	3/8	1/4	2	3/4	46.375	46	3/8	B-J-B-1	
1	J-	B-	L-	Height	65	7/16	1/4	2	3/4	71.438	71	7/16	B-J-L-1	
1	J-	B-	R-	Height	65	7/16	1/4	2	3/4	71.438	71	7/16	B-J-R-1	<u> </u>
2	J-	B-	Т-	Width	40	3/8	1/4	2	3/4	46.375	46	3/8	B-J-T-2	2
2	J-	B-	B-	Width	40	3/8	1/4	2	3/4	46.375	46	3/8	B-J-B-2	
2	J-	B-	L-	Height	65	7/16	1/4	2	3/4	71.438	71	7/16	B-J-L-2	
2	_J-	<u>B-</u>	R-	Height	65	7/16	1/4	2	3/4	71.438	71	7/16	B-J-R-2	
3	J-	B	T-	Width	22	5/16	1/4	2	3/4	28.313	28	5/16	B-J-T-3	3
3	J-	<u>B-</u>	B	Width	22	5/16	1/4	2	3/4	28.313	28	5/16	B-J-B-3	
3	_J-	<u>B-</u>	L	Height	65	3/8	1/4	2	3/4	71.375	71	3/8	B-J-L-3	
3	J-	B-	R-	Height	65	3/8	1/4	2	3/4	71.375	<u>71</u>	3/8	B-J-R-3	
4	J-	<u>B-</u>	<u> </u>	Width	22	5/16	1/4	2	3/4	28.313	28	<u>5/16</u>	B-J-T-4	4
4	<u>J-</u>	<u>B-</u>	<u>B-</u>	Width	22	_5/16	1/4	2	3/4	28.313	28	5/16	B-J-B-4	
4	J-	<u>B-</u>	<u> </u>	Height	65	3/8	1/4	2	3/4	71.375	71	3/8	B-J-L-4	
4	<u> </u>	<u>B-</u>	<u> </u>	Height	65	3/8	1/4	2	_3/4	71.375	71	3/8	B-J-R-4	
5			T-	Width									<u>T-5</u>	5
5			B-	VViatn									<u>B-5</u>	<u> </u>
5			L	Height				-					L-5	
<u> </u>			<u> </u>	Midth									<u>H-5</u>	-
<u> </u>				Width									<u> </u>	6
6				Hoight									<u> </u>	
6			 	Height			<u> </u>						L-0	<u> </u>
7		<u>                                     </u>	<u>т</u>	Width	+		<u> </u>						<u> </u>	7
7			 	Width									B-7	· · · ·
7			<u> </u>	Height									<u> </u>	·
7	<u>  ``</u>	<u> </u>	 B-	Height									B-7	
8		<u> </u>	T-	Width									T-8	8
8			B-	Width	†							_	B-8	<u> </u>
8			L-	Height							-		L-8	
8			R-	Height									R-8	
														1
Door	Job	Room	Piece	Inside N	leasu	ement	Reveal	Width o	of Trim	Length	of Trin	n	Identification	Door
1	J-	B-	T-	Width	60	1/16	1/4	2	3/4	66.063	66	1/16	B-J-T-1	1 outside
	J-	B-	L-	Height	92	3/4	1/4	2	3/4	95.750	95	3/4	B-J-L-1	1
1	.]-	B-	B.	Height	92	3/4	1/4	2	3/4	95.750	95	3/4	B-J-R-1	
1	U U	-					414	0	0/4	00.000	66	1/16	B-J-T-1	1 inside
1 1 1	J-	B-	T-	Width	60	1/16	1/4	2	3/4	66.063				
1 1 1 1	J- J-	B- B-	T- L-	Width Height	60 92	1/16 3/4	1/4	2	3/4	95.750	95	3/4	B-J-L-1	
1 1 1 1 1	J- J- J-	B- B- B-	T- L- R-	Width Height Height	60 92 92	1/16 3/4 3/4	1/4 1/4 1/4	2	3/4 3/4 3/4	95.750 95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1	
1 1 1 1 2	J- J- J-	B- B-	T- L- R- T-	Width Height Height Width	60 92 92	1/16 3/4 3/4	1/4 1/4 1/4	2	3/4 3/4 3/4	95.750 95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2	2
1 1 1 1 2 2	J- J- J-	B- B-	T- L- R- T- L-	Width Height Height Width Height	60 92 92	1/16 3/4 3/4	<u>1/4</u> <u>1/4</u> <u>1/4</u>	2	3/4 3/4 3/4	<u>95.750</u> 95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2	2
1 1 1 1 2 2 2	J- J- J-	B- B-	T- L- R- T- L- R-	Width Height Height Width Height Height	60 92 92	1/16 3/4 3/4	1/4 1/4 1/4	2 2	3/4 3/4 3/4	<u>95.750</u> 95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2	2
1 1 1 1 2 2 2 3 -	J- J- J-	B- B-	T- L- T- L- R- R- T- R- T-	Width Height Height Width Height Height	60 92 92	1/16 3/4 3/4	1/4 1/4 1/4	2 2 2	3/4 3/4 3/4	95.750 95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3	2
1 1 1 1 2 2 2 3 3 2	J- J- J-	B- B-	T- L- T- L- R- T- L- T-	Width Height Height Width Height Width Height	60 92 92	1/16 3/4 3/4	1/4 1/4 1/4	2 2 2	3/4 3/4 3/4	<u>95.750</u> 95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3	2
1       1       1       2       2       2       3       3	J- J- J-	B- B- B-	T- L- R- T- L- R- T- L- R- T- - R- T-	Width Height Height Width Height Width Height Height	60 92 92	1/16 3/4 3/4		2 2 2	3/4 3/4 3/4	95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3	2
1       1       1       1       2       2       2       3       3       4		B- B- B-	T- L- R- L- R- T- L- R- T- L- R- T-	Width Height Width Height Height Width Height Height Width	60 92 92	1/16 3/4 3/4		2 2 2	3/4 3/4 3/4	95.750	95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4	2
1       1       1       1       2       2       2       3       3       4       4		B- B- 	T- L- R- L- R- T- L- R- T- L- R- R- T- L-	Width Height Width Height Height Width Height Height Width Height	60 92 92	1/16 3/4 3/4			3/4 3/4 3/4	95.750	95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4 L-4	2
1       1       1       1       2       2       3       3       3       4       4		B- B- 	T- L- R- L- R- T- L- R- T- L- R- T- L- R- R- R- R- R- R- R- R- R- R	Width Height Width Height Height Width Height Height Height Height	60 92 92	1/16 3/4 3/4			3/4 3/4 3/4	95.750	95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4 L-4 R-4	2 3 4
1       1       1       1       2       2       3       3       3       4       4		B- B- 	T- L- R T- L- R T- L- R T- L- R T- L- R	Width Height Height Width Height Width Height Height Height Height		1/16 3/4 3/4			3/4 3/4 3/4	95.750	95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4 L-4 R-4	2
1 1 1 1 2 2 3 3 3 4 4 4 4 PI	J- J- J-	B- B-	T- L- R- L- R- T- L- R- T- L- R- R- R- - Windo	Width Height Height Width Height Width Height Height Height Height	60 92 92	1/16 3/4 3/4			3/4 3/4 3/4	95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4 L-4 R-4	2
1 1 1 1 2 2 3 3 3 4 4 4 4 PI		B- B-	T- L- R- L- R- T- L- R- T- L- R- R- R- C- Windo	Width Height Height Height Height Width Height Height Height	60 92 92	1/16 3/4 3/4			3/4 3/4 3/4	95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4 L-4 R-4	2
1 1 1 1 2 2 3 3 3 4 4 4 4 PI	J- J- J- astic (	B- B- D- D- Corners Corners	T- L- R- T- L- R- T- L- R- T- L- R- S - Door:	Width Height Height Height Height Width Height Height Height Height	60 92 92 92				3/4 3/4 3/4	95.750	95 95	3/4 3/4	B-J-L-1 B-J-R-1 T-2 L-2 R-2 T-3 L-3 R-3 T-4 L-4 R-4	2



#### BY DON UMPHERSON

For Northern Ontario Business

Bryan Wilson was installing trim around the windows and doors of his Espanola home, about seven years ago, when he decided there had to be a better way.

Fed up with unsightly nail marks, hairline cracks and hammer marks on interior trim, the woodworker and craftsman put his mind to developing an innovative approach to a conventional system.

He has never looked back.

His "Versatrim" product is poised to revolutionize the wood trim industry and become a multi-million-dollar enterprise.

"I like a challenge, and I've never had quite as much of a challenge before in my life," Wilson says.

He says Versatrim is the product of seven years of research, experimenting, refining and marketing. His answer to the headaches involved in installing wood trim is so simple, he was astonished to learn the product was not already on the market.

He recalls thinking, "If it's this good, it must already be out there."

Instead of attaching door and window trim with finishing nails and risking marring the trim, Versatrim uses plastic moulds which fit around the door and windows. Then the actual wood trim fits to the mould through a series of grooves and ridges. Nails and hammers are a thing of the past — the plastic mould screws onto door and window frames. The trim itself is mahogany or pine and can be easily "popped" off the plastic mould for prefinishing or refinishing without ripping nails from the frame.

Wilson says this novel approach was in part inspired by the way trim and moulding are affixed to vehicles by a series of clips which hold the trim from the inside.

He moved from the conceptual design phase to a rough prototype in which he trimmed his kitchen. Satisfied with the result, he set about refining and adapting it.

Then began years of leg work developing and marketing Versatrim, obtaining patents and registering trademarks, hiring lawyers and market researchers and convincing skeptical government agencies to invest. He has paid thousands of dollars to register the Versatrim name and even the Versatrim slugline: "Simply Trimendous."

Wilson's devotion to generating interest in Versatrim has taken him to trade shows across North America and wood trim manufacturers' conventions. He has amassed a book of contacts while networking within the industry.

To his amazement, all the trim displays at the home shows he attended were still being nailed into place the conventional way. And his desire to promote his product eventually led him to the Innovation Centre in Waterloo.

Wilson describes the Waterloo team's response as "mediocre."

"They thought it was going to fall off the wall."

He next appealed to the Industrial Research Assistance Program (IRAP) for some preliminary market research and assessment.

Wilson says IRAP encouraged him to patent Versatrim and in 1992, at a cost of approximately \$40,000, he received patent protection in Britain, the United States and most of Europe through the European Cooperative Treaty.

He was also encouraged by IRAP's prediction that Versatrim could fall within the two per cent of new products that eventually achieve success.

"They felt there was a market there for the



Bryan Wilson of Espanola cuts some lengths of his new product, Versatrim. The probeen patented in North America and Europe and is about to enter a multi-million-dollar

do-it-yourselfer." Wilson says, adding he was disappointed that they were overlooking the value of his produce to building contractors.

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While conceding that Versatrim is slightly more expensive than conventional trim, Wilson says it takes less time to install, hence lower labor costs. And with approximately 200,000 interior doors manufactured every day in North America alone, that translates into big savings.

Wilson was successful in obtaining some financial help from FedNor for equipment, market research and labor costs to fine-tune Versatrim and make it more appealing to the contractor. Some sophisticated wood-working machinery was imported from Europe.

Last year Wilson convinced the administrators at IRAP to send him to Alberta as the Canadian delegate to the Wood Moulding and Millwork Producers' Association.

He also attended the Home Hardware and Home Improvement Show and the Sash and Door Show in Boston, all the while promoting Versatrim, cultivating possible distributors and investors. This summer he plans another trade show in Victoria, B.C of finding demonstrators for his prod-

"I think that'll be a big step," he s Now prepared to introduce V across the continent Wilson says

across the continent, Wilson says hurdle comes in the form of distrib licensing.

He says FedNor has sugge manufacture and distribute Versatri factory in Espanola. His legal advitold him Versatrim is worth over tw dollars in licensing agreemen distributors.

"There's going to be some very decisions very shortly," Wilson says.

He says Versatrim has the potentiinternational market in countries such where Canadian modular homes are and where Canada is respected progressive technology in the housing

"I think on an international scene, . like Versatrim would be well received of Canada's reputation."



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