

**Methodology for the Visual Inspection of Selected Engineered Wood Products and Connector Hardware for Prescriptive Non-Compliance at the Pre-Drywall Stage of Residential Construction**

John Conrad Bouldin, Jr.

Dissertation submitted to the faculty of Virginia Polytechnic Institute and State University  
in partial fulfillment of the requirements for the degree of

**DOCTOR OF PHILOSOPHY**  
**IN**  
**WOOD SCIENCE AND FOREST PRODUCTS**

Joseph R. Loferski, Co-Chair

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Urs K. Buehlmann

June 29, 2011

Blacksburg, Virginia

Keywords: engineered wood products, inspection, methodology, residential  
construction

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## MEMORANDUM

**DATE:** October 18, 2010

**TO:** Joseph Loferski, John Bouldin

**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires June 13, 2011)

**PROTOCOL TITLE:** Methodology for the Visual Inspection of Selected Engineered Wood Components and Hanger Hardware

**IRB NUMBER:** 10-371

Effective October 18, 2010, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the amendment request for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

### PROTOCOL INFORMATION:

Approved as: **Expedited, under 45 CFR 46.110 category(ies) 6, 7**

Protocol Approval Date: **7/21/2010**

Protocol Expiration Date: **7/20/2011**

Continuing Review Due Date\*: **7/6/2011**

\*Date a Continuing Review application is due to the IRB office if human subject activities covered under this protocol, including data analysis, are to continue beyond the Protocol Expiration Date.

### FEDERALLY FUNDED RESEARCH REQUIREMENTS:

Per federal regulations, 45 CFR 46.103(f), the IRB is required to compare all federally funded grant proposals / work statements to the IRB protocol(s) which cover the human research activities included in the proposal / work statement before funds are released. Note that this requirement does not apply to Exempt and Interim IRB protocols, or grants for which VT is not the primary awardee.

The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

Date*	OSP Number	Sponsor	Grant Comparison Conducted?

\*Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office ([irbadmin@vt.edu](mailto:irbadmin@vt.edu)) immediately.

cc: File



## MEMORANDUM

**DATE:** July 21, 2010

**TO:** Joseph Loferski, John Bouldin

**FROM:** Virginia Tech Institutional Review Board (FWA00000572, expires June 13, 2011)

**PROTOCOL TITLE:** Methodology for the Visual Inspection of Selected Engineered Wood Components and Hanger Hardware

**IRB NUMBER:** 10-371

Effective July 21, 2010, the Virginia Tech IRB Chair, Dr. David M. Moore, approved the new protocol for the above-mentioned research protocol.

This approval provides permission to begin the human subject activities outlined in the IRB-approved protocol and supporting documents.

Plans to deviate from the approved protocol and/or supporting documents must be submitted to the IRB as an amendment request and approved by the IRB prior to the implementation of any changes, regardless of how minor, except where necessary to eliminate apparent immediate hazards to the subjects. Report promptly to the IRB any injuries or other unanticipated or adverse events involving risks or harms to human research subjects or others.

All investigators (listed above) are required to comply with the researcher requirements outlined at <http://www.irb.vt.edu/pages/responsibilities.htm> (please review before the commencement of your research).

### PROTOCOL INFORMATION:

Approved as: **Expedited, under 45 CFR 46.110 category(ies) 6, 7**

Protocol Approval Date: **7/21/2010**

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The table on the following page indicates whether grant proposals are related to this IRB protocol, and which of the listed proposals, if any, have been compared to this IRB protocol, if required.

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\*Date this proposal number was compared, assessed as not requiring comparison, or comparison information was revised.

If this IRB protocol is to cover any other grant proposals, please contact the IRB office ([irbadmin@vt.edu](mailto:irbadmin@vt.edu)) immediately.

cc: File

**Draft 09/01/2009**

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

(Please ensure that Javascript is enabled on your browser before using this tool.)

## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 2 - 10. Sawhney, A., Bashford, H., Palaniappan, S., Walsh, K., & Thompson, J. (2005). A Discrete Event Simulation Model to Analyze the Residential Construction Inspection Process. Computing in Civil Engineering, Proceedings of the 2005 International Conference, July 12-15, 2005, Cancun, Mexico. pp. 1415-1425. Retrieved 2010 from Compendex database.

Report generated on: 08-02-2011 at : 12:14:09

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *against fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



Draft 09/01/2009

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

(Please ensure that Javascript is enabled on your browser before using this tool.)

## Virginia Tech ETD Fair Use Analysis Results

*This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.*

Name: John Bouldin

Description of item under review for fair use: Table 2 - 2. Creswell, J.W., and Miller, D.L. (2000). Determining Validity in Qualitative Inquiry. Theory Into Practice, Vol. 39, No. 3.

Report generated on: 08-02-2011 at : 12:09:05

**Based on the information you provided:**

### Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

### Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

### Factor 3

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *against fair use*

### Factor 4

Your consideration of the effect or potential effect on the market after your use of the copyrighted work weighs: *in*

*favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

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# Virginia Tech ETD Fair Use Analysis Results

*This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.*

Name: John Bouldin

Description of item under review for fair use: Figure 4 - 17. BCSI (2008). Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses. Madison, WI: Wood Truss Council of America, and Alexandria, VA: Truss Plate Institute.

Report generated on: 08-02-2011 at : 11:52:49

**Based on the information you provided:**

## Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

## Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *against fair use*

## Factor 3

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

## Factor 4

Your consideration of the effect or potential effect on the market after your use of the copyrighted work weighs: *in favor of fair use*



**Draft 09/01/2009**

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

(Please ensure that Javascript is enabled on your browser before using this tool.)

## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 27: Concentrated construction load on a floor truss. BCSI (2008). Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses. Madison, WI: Wood Truss Council of America, and Alexandria, VA: Truss Plate Institute.

Report generated on: 08-02-2011 at : 13:48:11

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 49: Potential effect of a concentrated load on an I-joist floor system. BCSI (2008). Building Component Safety Information: Guide to Good Practice for Handling, Installing, Restraining & Bracing of Metal Plate Connected Wood Trusses. Madison, WI: Wood Truss Council of America, and Alexandria, VA: Truss Plate Institute.

Report generated on: 08-02-2011 at : 13:52:54

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 69: Hole specifications for rim joists over openings. APA (2004). Technical Topics TT-041B Holes in Rim Board Used in Conventional Construction. Tacoma, WA: APA – The Engineered Wood Association. Retrieved 2009 from <http://www.apawood.org/>.

Report generated on: 08-02-2011 at : 13:55:42

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 70: Fastening detail for rim joist corner. APA (2009). APA Performance rated Rim Boards. Tacoma, WA: APA – The Engineered Wood Association. Retrieved 2010 from <http://www.apawood.org/>.

Report generated on: 08-02-2011 at : 14:01:16

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 71: APA allowable hole sizes and locations for rim joists. APA (2004). Technical Topics TT-041B Holes in Rim Board Used in Conventional Construction. Tacoma, WA: APA – The Engineered Wood Association. Retrieved 2009 from <http://www.apawood.org/>.

Report generated on: 08-02-2011 at : 13:58:06

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 72: Rim joist subfloor and sill plate nailing. APA (2009). APA Performance rated Rim Boards. Tacoma, WA: APA – The Engineered Wood Association. Retrieved 2010 from <http://www.apawood.org/>.

Report generated on: 08-02-2011 at : 14:02:48

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 73: Rim joist toe nailing specifications. APA (2009). APA Performance rated Rim Boards. Tacoma, WA: APA – The Engineered Wood Association. Retrieved 2010 from <http://www.apawood.org/>.

Report generated on: 08-02-2011 at : 14:04:19

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Figure 4 – 74: OSB subfloor installation. Used under fair use guidelines, 2011. Huber (No date given – current as of download date 6-1-2011). AdvanTech Installation Instructions. Charlotte, NC: Huber Engineered Woods. Retrieved June 1, 2011 from <http://www.advantechperforms.com/technical-information/installation-guides.aspx>.

Report generated on: 08-02-2011 at : 13:28:30

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



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## Virginia Tech ETD Fair Use Analysis Results

*This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.*

Name:

Description of item under review for fair use: Appendix G: Boise Cascade Details. Boise Cascade (2009). AllJoist Specifier Guide. Boise, ID: Boise Cascade. Retrieved 2010 from <http://www.bc.com/bmd/product.html>.

Report generated on: 08-02-2011 at : 12:57:24

**Based on the information you provided:**

### Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

### Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

### Factor 3

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

### Factor 4

Your consideration of the effect or potential effect on the market after your use of the copyrighted work weighs: *in*

*favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



Draft 09/01/2009

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

(Please ensure that Javascript is enabled on your browser before using this tool.)

## Virginia Tech ETD Fair Use Analysis Results

*This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.*

Name: John Bouldin

Description of item under review for fair use: Appendix H: Georgia Pacific Details. Georgia Pacific (2008). Wood I-Beam Joists. Atlanta, GA: Georgia-Pacific. Retrieved 2010 from <http://www.gp.com/build/literature.aspx>.

Report generated on: 08-02-2011 at : 13:00:10

**Based on the information you provided:**

### Factor 1

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

### Factor 2

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

### Factor 3

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

### Factor 4

Your consideration of the effect or potential effect on the market after your use of the copyrighted work weighs: *in*

*favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

(Questions? Concerns? Contact Gail McMillan, Director of the Digital Library and Archives at Virginia Tech's University Libraries: [gailmac@vt.edu](mailto:gailmac@vt.edu))

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## **Virginia Tech ETD Fair Use Analysis Results**

***This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.***

Name: John Bouldin

Description of item under review for fair use: Appendix I: iLevel Details. iLevel (2010b). TJ-4000 Specifier's Guide TJI 110, TJI 210, TJI 230, TJI 360, and TJI 560 Joists. Boise ID: Weyerhaeuser NR Company. Retrieved 2010 from <http://www.ilevel.com/literature/TJ-4000.pdf>.

Report generated on: 08-02-2011 at : 13:05:57

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

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# Virginia Tech ETD Fair Use Analysis Results

*This is not a replacement for professional legal advice but an effort to assist you in making a sound decision.*

Name: John Bouldin

Description of item under review for fair use: Appendix J: Jager Details. Jager (No date). JSI User Guide. Calgary, Alberta Canada: Jager Engineered Wood Products. Retrieved 2010 from [http://www.jagerewp.com/pdf/10-0225%20JSI%20User%20Guide\\_LSD.pdf](http://www.jagerewp.com/pdf/10-0225%20JSI%20User%20Guide_LSD.pdf).

Report generated on: 08-02-2011 at : 12:43:16

## **Based on the information you provided:**

### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



**Draft 09/01/2009**

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Name: John Bouldin

Description of item under review for fair use: Appendix K: Louisiana Pacific Details. Louisiana Pacific (2008). LP Solid Start Engineered Wood Products. Nashville, TN: Louisiana-Pacific. Retrieved 2010 from <http://www.lpcorp.com/resources/literature/>.

Report generated on: 08-02-2011 at : 12:45:49

### **Based on the information you provided:**

#### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

#### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

#### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

#### **Factor 4**

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# Virginia Tech ETD Fair Use Analysis Results

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Name: John Bouldin

Description of item under review for fair use: Appendix L: Nordic Details. Nordic (2009). Nordic Joist N-U101. Montreal Quebec Canada: Nordic Engineered Wood. Retrieved 2010 from [http://nordicewp.com/literatures/N-U101\\_Construction\\_Guide\\_Apr\\_2009.pdf](http://nordicewp.com/literatures/N-U101_Construction_Guide_Apr_2009.pdf).

Report generated on: 08-02-2011 at : 12:48:34

## **Based on the information you provided:**

### **Factor 1**

Your consideration of the purpose and character of your use of the copyright work weighs: *in favor of fair use*

### **Factor 2**

Your consideration of the nature of the copyrighted work you used weighs: *in favor of fair use*

### **Factor 3**

Your consideration of the amount and substantiality of your use of the copyrighted work weighs: *in favor of fair use*

### **Factor 4**

Your consideration of the effect or potential effect on the

market after your use of the copyrighted work weighs: *in favor of fair use*

**Based on the information you provided, your use of the copyrighted work weighs: *in favor of fair use***



RE: Permission for the use of copyrighted HomeGauge Software Images.

Partial transcript of an email dated March 14, 2011.

Hi John,

You have my permission to use screen shots, demos of the software and any written content on our site to help you with your dissertation or project.

(Unrelated text deleted here.)

Call me anytime,

Russell Buchanan  
HomeGauge  
877-274-4299