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Container Modifications and Going Green: Why and What to Do



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Sustain.ATL Introduction

- Who we are
Collaborative, Community, Education

- Why we do what we do

Charrette Style Method of Work :

Charrette Oriented Focus: in fields of design such as [architecture](#), [landscape architecture](#), [industrial design](#), [interior design](#), or [graphic design](#), the term *charrette* may refer to an intense period of work by one person or a group of people prior to a deadline.

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Charrette Focus = Integrative Design Process

- Comprehensive
- Reduce Risk
- Improves Performance
- Saves Time, Money and Energy
- Sustainability + Social Responsibility

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Social Responsibility:

What is it?? and Why??

Definition:

An ethical or ideological theory that an entity whether it is a government, corporation, organization or individual has a responsibility to society. (by Wikipedia)

Scenario Quote from Wikipedia: For instance if a company is proactive and follows the United States Environmental Protection Agency guidelines for admissions on dangerous pollutants and even goes an extra step to get involved in the community and address those concerns that the public might have; they would be less likely to have the EPA investigate them for environmental concerns.

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Shipping Container Modification for Usage as Buildings : WHY??

Uniquely creative (Adam Kalkin) but also:

- transportable
- durable
- multiusage applications
- ultimate repurpose

Ecological Modifications of Shipping Containers For Usage as Buildings: WHY??

- Stewardship: saves money, energy, time
- Ethical
- Supports Better Health - Personal and Global
- Just Makes Sense









Green Building



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LEED



The background of the slide features a large, faint, light gray circular logo with a stylized 'G' shape inside, representing the LEED (Leadership in Energy and Environmental Design) certification. The word 'LEED' is written in a bold, black, sans-serif font across the top of the logo.

LEED

Program Admin: US Green Building Council

- Established Aug. 1998
- voluntary, consensus-based, market-driven building rating system
- evaluates environmental performance from a whole building perspective over a building's life cycle.

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Portable Storage & LEED



- Must be a Permanent Building
- Must be a 1000 sqft

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Green Building



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Green Building



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Green Building



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?

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Typical Building Assembly



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Typical Building Assembly



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Typical Building Assembly



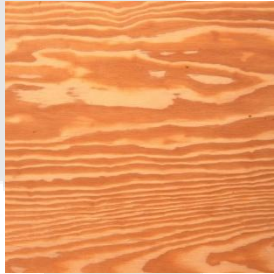
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Typical Building Assembly

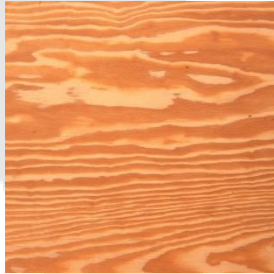


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Typical Building Assembly

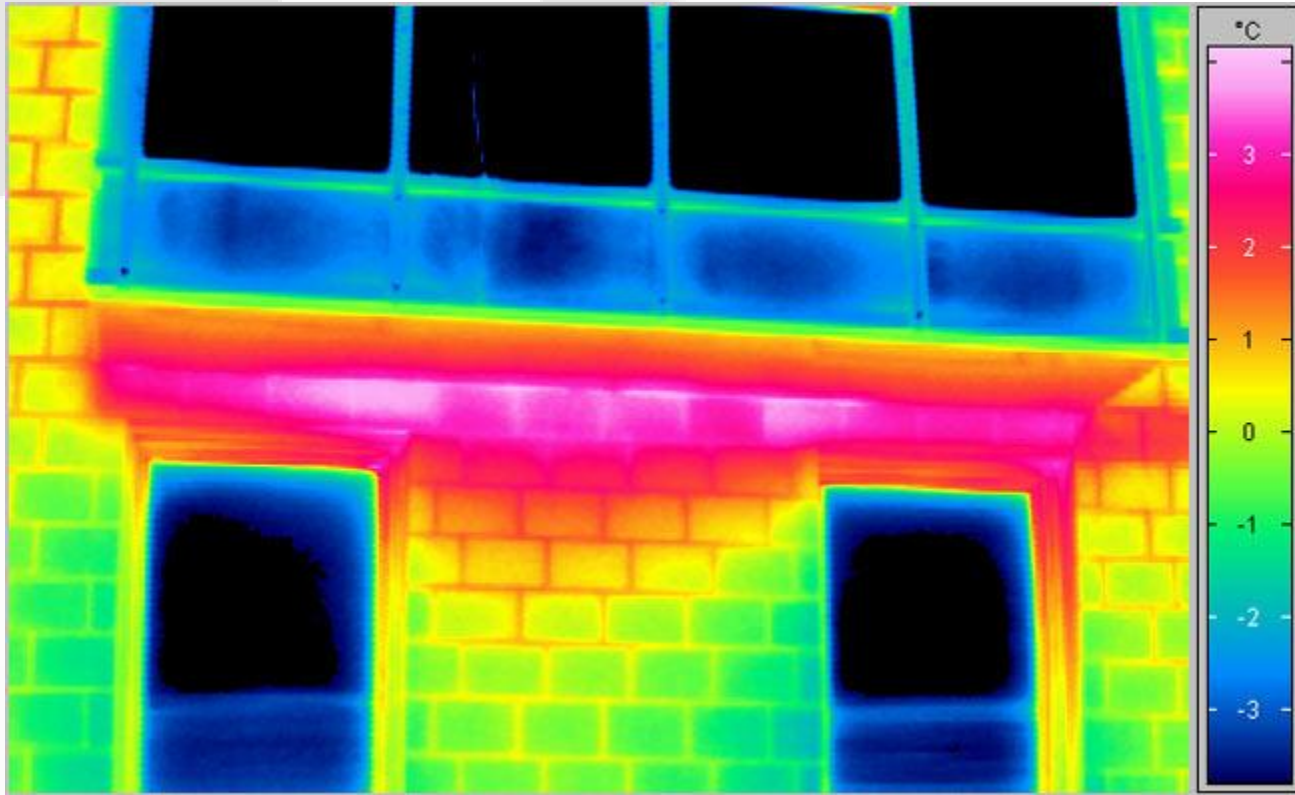


Typical Building Assembly



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Thermal Bridge



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Thermal Bridge

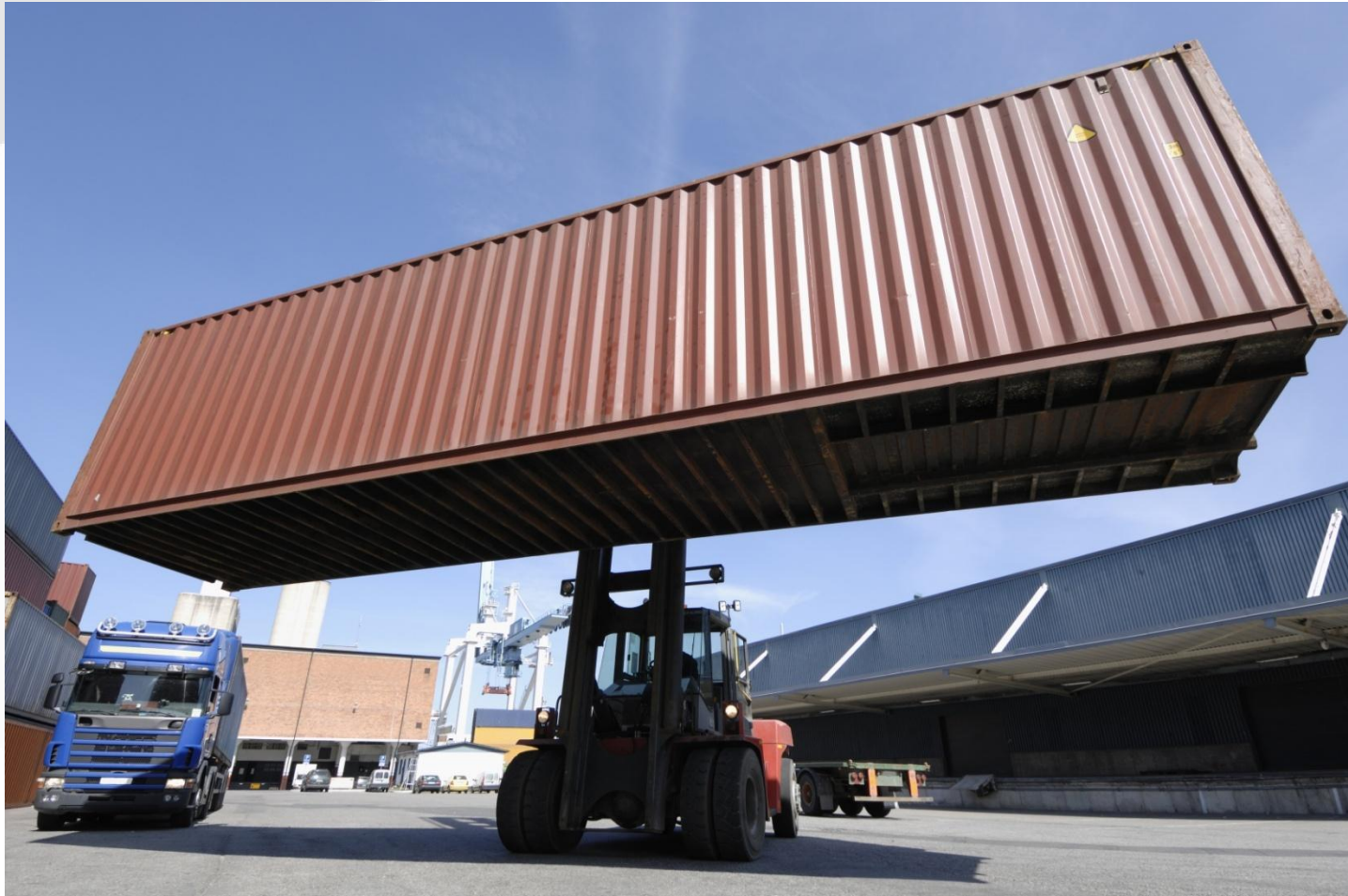
Or a **cold bridge**, is created when materials that are poor thermal insulators come into contact with materials that have better insulating properties, allowing heat to flow through the path created.



What is the Worst Thermal Insulator?

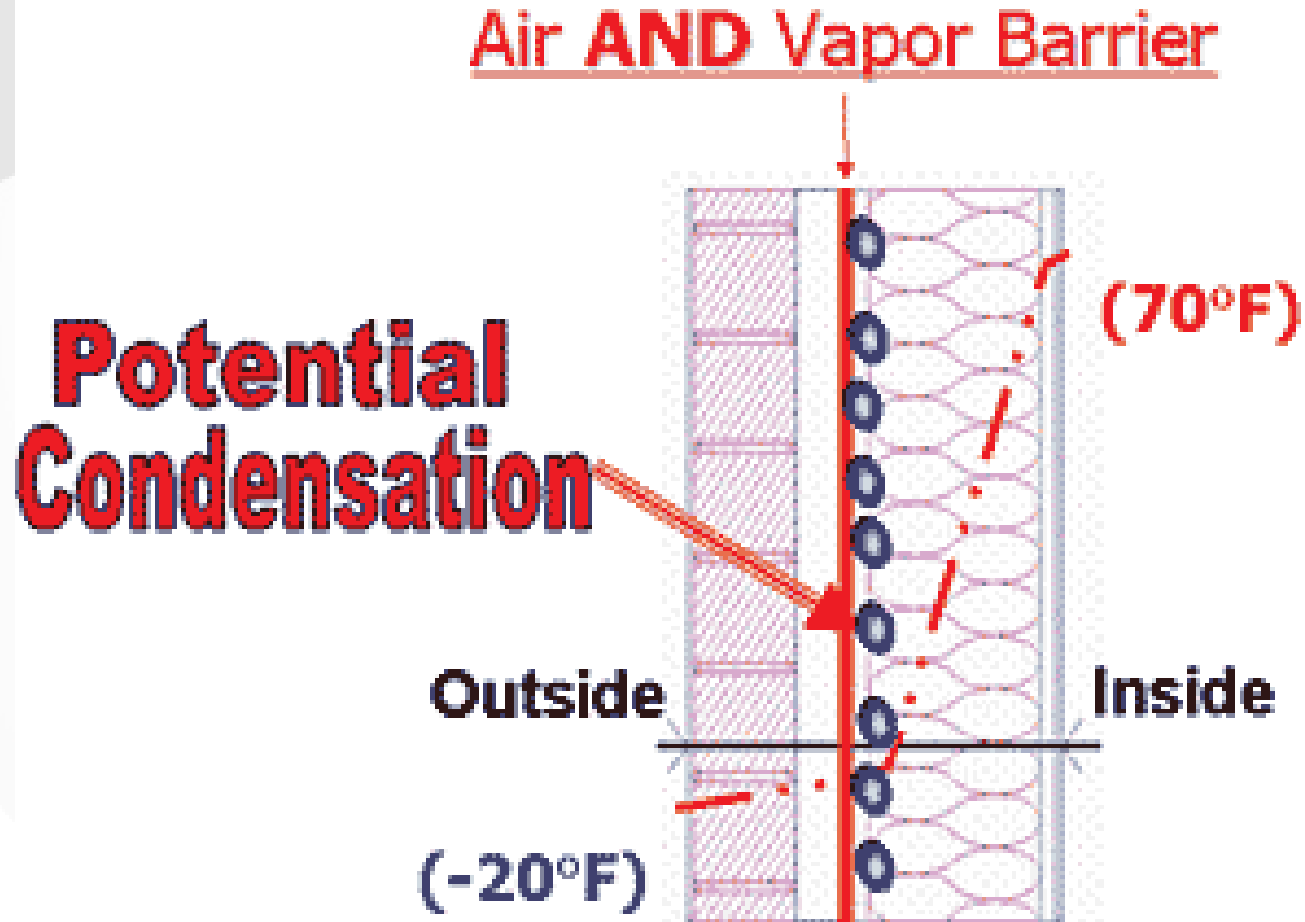
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What is the Worst Thermal Insulator?



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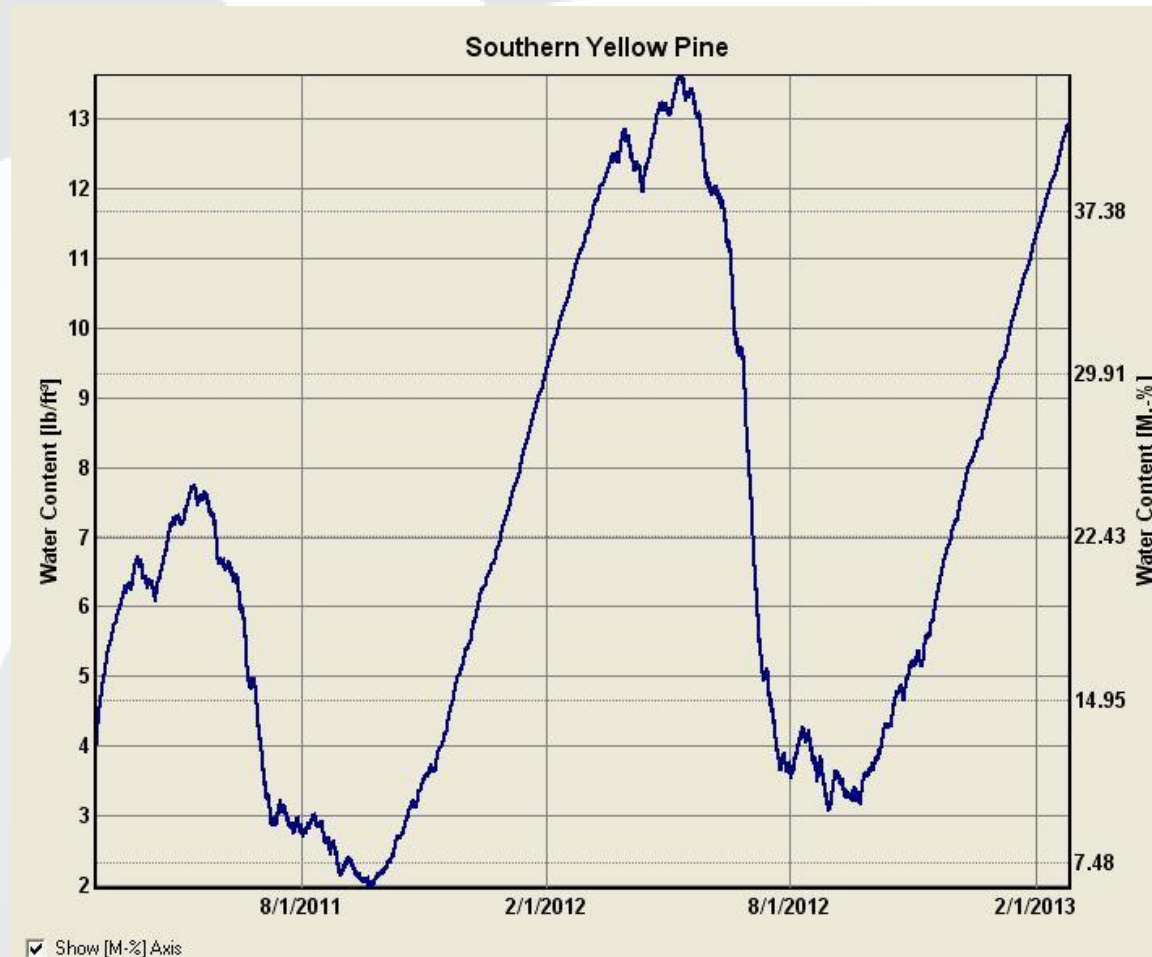
Why Is this a Problem?



Case Study



Wood Moisture Content, Spray Foam, 5 perm paint, With A.C. Feb 2010 – Feb 2012



Wood Moisture Content, Spray Foam, 5 perm paint, With A.C. Feb 2010 – Feb 2012

Water Content [lb/ft³]

Layer/Material	Start of Calc.	End of Calc.	Min.	Max.
vapor retarder (0.1perm)	0,00	0,00	0,00	0,00
Southern Yellow Pine	3,88	12,96	1,96	13,63
Sprayed Polyurethane Foam; open cell	0,01	0,01	0,01	0,06
Plywood (USA)	4,02	2,65	2,59	9,00
Total Water Content [lb/ft ²]	0,33	0,65	0,2	0,73

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Wood Moisture Content, Cellulose, 5 perm paint, With A.C. Feb 2010 – Feb 2012



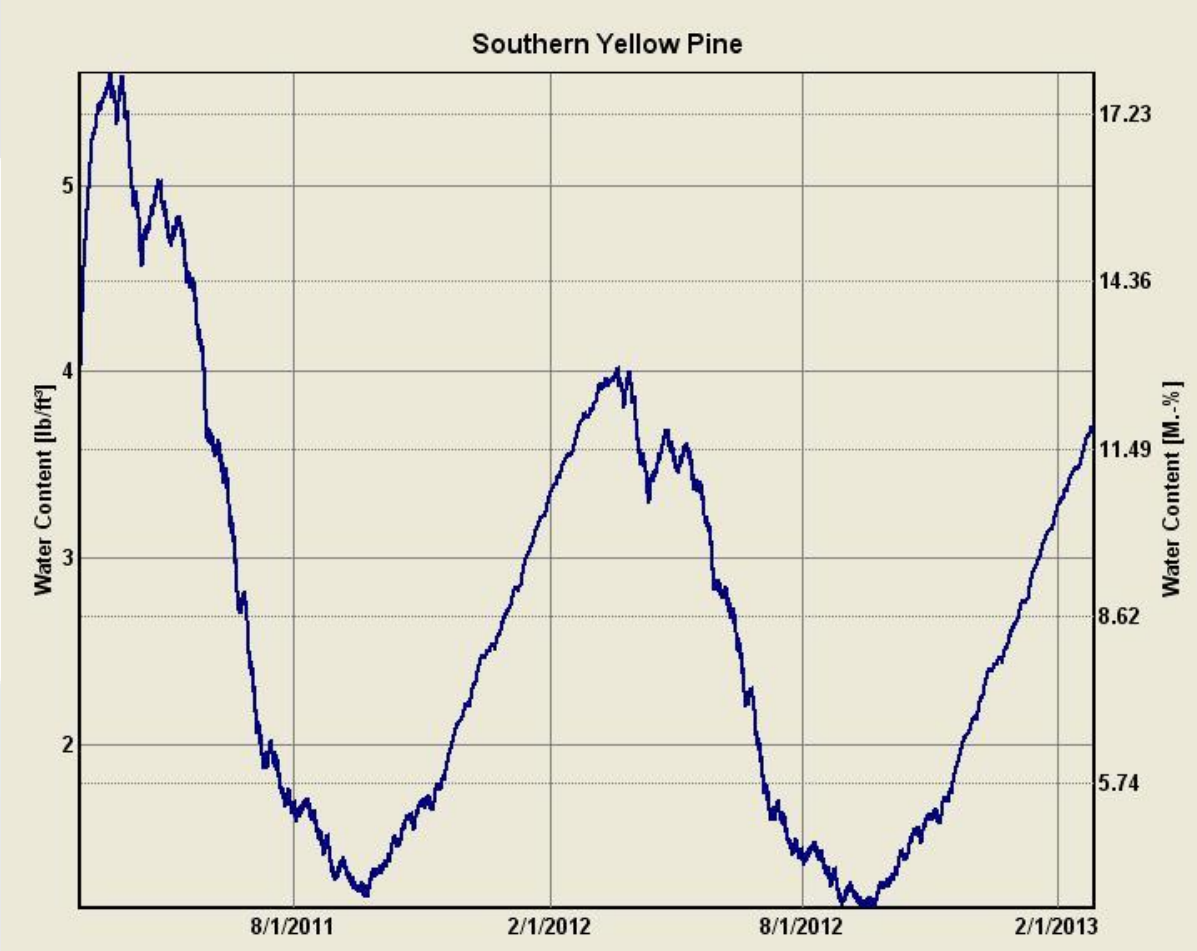
ATL

Wood Moisture Content, Cellulose, 5 perm paint, With A.C. Feb 2010 – Feb 2012

Water Content [lb/ft²]

Layer/Material	Start of Calc.	End of Calc.	Min.	Max.
vapor retarder (0.1perm)	0,00	0,00	0,00	0,00
Southern Yellow Pine	3,88	11,86	2,33	11,88
Cellulose Fibre Insulation	0,33	0,71	0,18	1,28
Plywood (USA)	4,02	2,60	2,56	5,10
Total Water Content [lb/ft ²]	0,43	0,81	0,28	0,83

Wood Moisture Content, Spray Foam, 5 perm paint, With A.C. & Extra Dehumidification Feb 2010 – Feb 2012



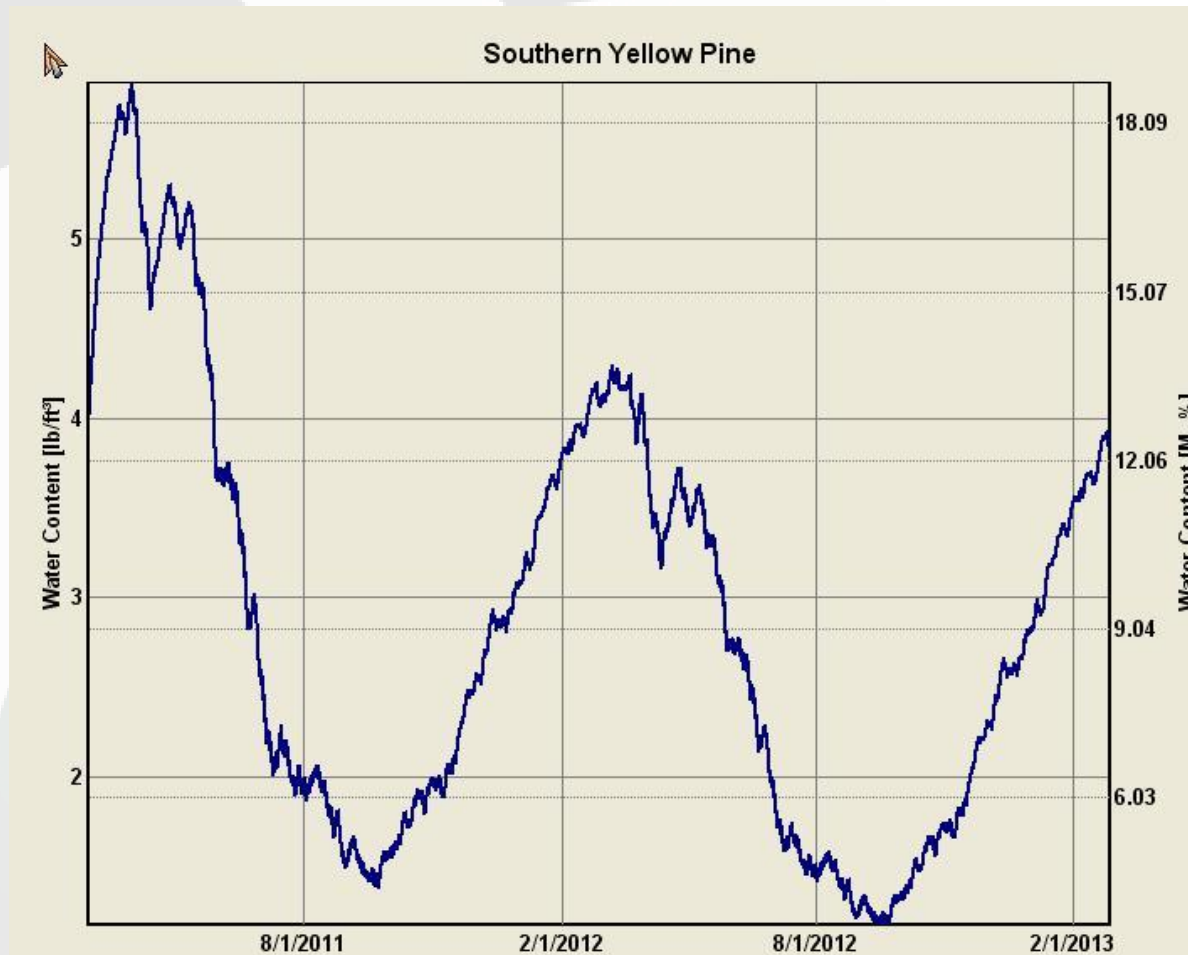
Wood Moisture Content, Spray Foam, 5 perm paint, With A.C. &
Extra Dehumidification
Feb 2010 – Feb 2012

Water Content [lb/ft³]

Layer/Material	Start of Calc.	End of Calc.	Min.	Max.
vapor retarder (0.1perm)	0,00	0,00	0,00	0,00
Southern Yellow Pine	3,88	3,69	1,12	5,60
Sprayed Polyurethane Foam; open cell	0,01	0,00	0,00	0,02
Plywood (USA)	4,02	1,73	1,68	4,02
Total Water Content [lb/ft ²]	0,33	0,23	0,15	0,33

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Wood Moisture Content, Cellulose, 5 perm paint, With A.C. & Extra Dehumidification Feb 2010 – Feb 2012



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Wood Moisture Content, Cellulose, 5 perm paint, With A.C. &
Extra Dehumidification
Feb 2010 – Feb 2012

Water Content [lb/ft³]

Layer/Material	Start of Calc.	End of Calc.	Min.	Max.
vapor retarder (0.1 perm)	0,00	0,00	0,00	0,00
Southern Yellow Pine	3,88	3,83	1,17	5,88
Cellulose Fibre Insulation	0,33	0,10	0,08	0,37
Plywood (USA)	4,02	1,71	1,68	4,02
Total Water Content [lb/ft ²]	0,43	0,26	0,18	0,43

Why Does This Matter?

- What are the 2 main reasons why one does not want moisture in your wall assembly?

Why Does This Matter? Wood Rot



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Why Does This Matter?

Mold



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Conclusion

- Social Responsibility to your clients

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Conclusion

- Social Responsibility to your clients
- Social Responsibility to your business

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Conclusion

- Social Responsibility to your clients
- Social Responsibility to your business
- Social Responsibility to your industry

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Continued Process for Modification: Interiors

INDOOR AIR QUALITY :

“the nature of air and its affect on the health of those occupants of built environments...IAQ signifies the impact interior contaminants have on the air we breath indoors.”

The **AIR** that we **BREATH** in our homes, schools and work environments can put us at **RISK** for **HEALTH** issues...

CONCERN over the connect of **INDOOR** air quality seems more prevalent than ever before...in building, in renovation, in existing buildings...yet **OUTWARD** focus of the the exterior air quality receives much **ATTENTION** as well...

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Why Focus on Indoor Air Quality??

- What are you breathing? Ask yourself...
- There is risk everywhere we go- in our cars, outside in urban environments, outdoors but also inside built environments
- There are varying degrees of risk, some unavoidable but indoor air environment and choices we make to support this environment do have influence for health
- Gather knowledge of pollutants, impact for health in built environments to insure a design that will support personal to global health



Make the connect of health to
pollutants and be thoughtful of this in
modification and design...

Why?? it is healthy,
positive and socially responsible...

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Quick Facts to Support Better Indoor Air Quality

- According to the **American Lung Association**, elements within our home and workplaces have been increasingly recognized as threats to our **respiratory health**.
- The **Environmental Protection Agency** lists poor indoor air quality as the fourth largest environmental threat to our country.
- There are an estimated **42.6 million Americans** living with **hay fever** and/or **asthma**.
- Learning how to manage the built environment to reduce allergen levels is important for managing allergies and asthma. Individuals who suffer from asthma, or have other respiratory illness may potentially be at a greater risk for health complications associated with poor air quality in buildings.

Quote from the American Lung Association:

“In the built environment, poor indoor air quality can result in structural rot within the walls and attic and around window framing from excess moisture.

Common pollutants can enter our houses through air leaks in the structure. Common housing problems or failures that occur in our homes include: musty odors and mold growth, window condensation, structural rot, peeling paint, backdrafting appliances, damp basements and high utility costs.”

Quick Facts for Healthy Buildings:

TYPICAL COMPONENTS OF A HEALTHY BUILDINGS:

- Foundation waterproofing and moisture control
- Advanced framing techniques
- Air sealing and advanced insulation techniques
- Energy efficient, high performance windows
- Energy efficient and sealed combustion appliances
- High efficiency air filtration
- Whole house ventilation
- Humidity control
- Thorough knowledge of pollutants that could affect indoor air quality
- Carefully selected and reviewed interior finishes

Known Pollutants for IAQ: (according to EPA)

- Asbestos
- Biological Pollutants: mold, mildew, pests
- Carbon Monoxide
- Formaldehyde Pressed Wood Products
- Radon
- Pesticides
- VOC's-Volatile Organic Compound

Emmitting
products (paints, aerosol products, varnishes,
cleaning supplies

Where to Start?

- Gathered Information from Trusted Resources
- Consider Collective/Collaborative Approach
- Don't Be Afraid to Share Information to Better Serve

“We must consider that our living doesn't just encompass where we physically reside or work...we all have a responsibility collectively to consider how we conduct ourselves on a planet that we all call home...this matters...personal to global” ~ Anonymous