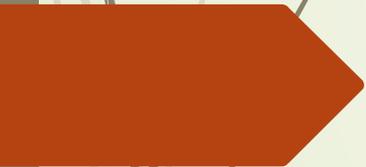


Customer First- Let's Remember The Family Is #1 When Making Construction Decisions



Energy Design
Conference &
Expo

February 20, 2018

Duluth, Minnesota

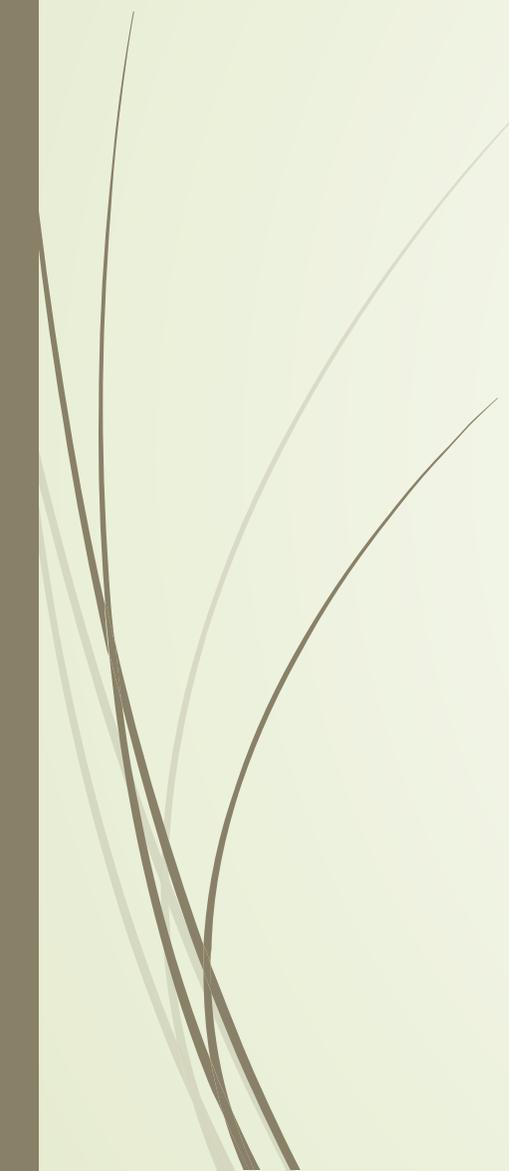
In accordance with the Department of Labor and Industry's statute 326.0981, Subd. 11,

"This educational offering is recognized by the Minnesota Department of Labor and Industry as satisfying **1.5 hours** of credit toward **Building Officials and Residential Contractors code /1 hour energy** continuing education requirements."

For additional continuing education approvals, please see your credit tracking card.



We Are Building A HOME For Families

- A Home is where a family lives and thrives.
 - A Home is built by individuals who care..it's a craft, not a job.
 - A Home is where generations celebrate life.
 - A Home is healthy, comfortable, safe, and affordable to live in...less stress
- 



Initial Conversation -Hard Questions!

- It's not just materials and techniques, it's owner and builder involvement.
- What's driving this urge for a new home?
- Do you want a different neighborhood or do you like where you are now?
- What is our financial status? Must be discussed!
- Family health or special needs topics.
- Can your marriage handle the stress? (Guys this is where you practice saying "Yes dear")



Remember—You, The Customer, Are The Boss!

- Learn the “lingo” to ask educated questions.
- Research everywhere to get ideas and opinions.
- Compile all of your ideas into a file or catalogue.
- Network to find who is the best “fit” to complete you project.
- Are there any future changes in mind?
- Your financial capability and timeline must fit the scope of work.



Patina Or Style?

I Like The One On The Left





Your Requirements Stand Your Ground!!!

- Meets all applicable codes and standards
- Universal Design
- Meets your quality standards
- Comfortable
- Durable low maintenance construction
- Energy efficient – net zero ready?
- Controlled indoor air quality
- Safe

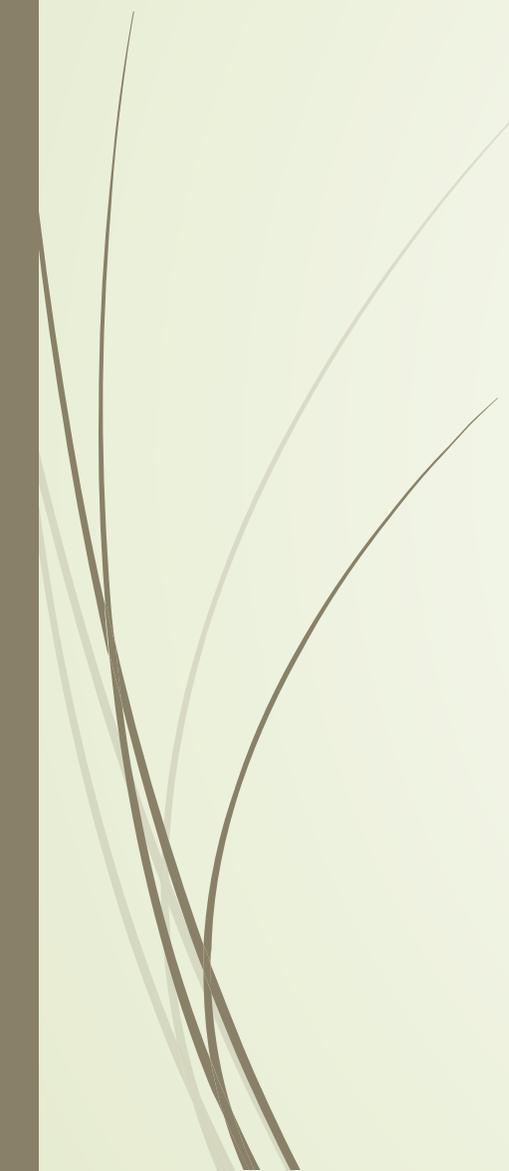


Safety – Comfort – Ongoing Costs

- Town or Rural
- Covenants or freedom
- Services – Who provides what?
 - Water, sewer, gas, electric, propane
 - Road maintenance, dues
 - Garbage, internet etc.
- School system
- Fire and law enforcement
- Neighbors, noise, dust, odors, Scared?

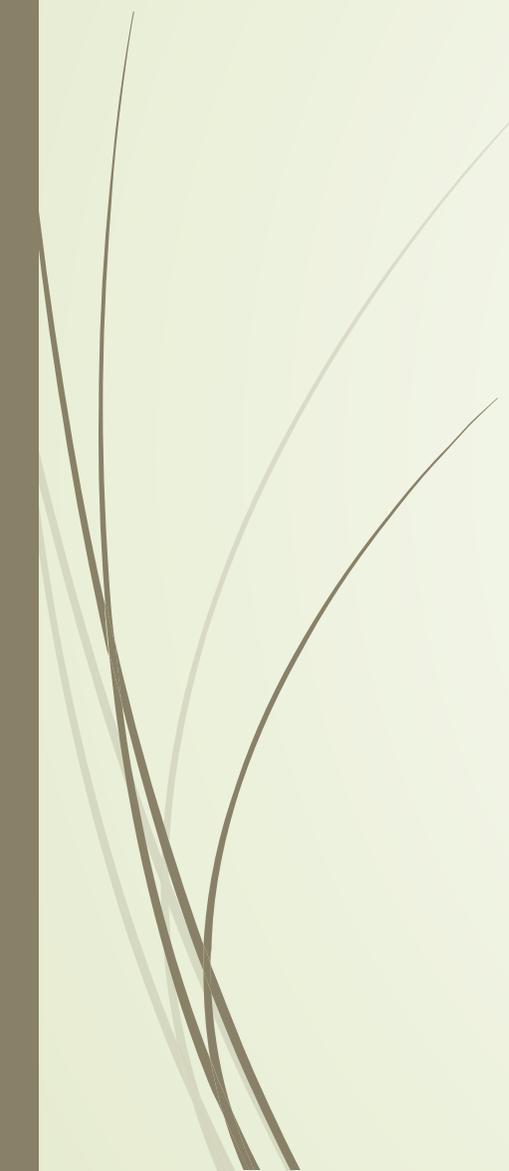


Customer Requirements

- You get the rebates and tax incentives
 - Radon system installed – Why?
 - Low VOC paints and finishes
 - Reduced outside noise
 - SAFE and CLEAN worksite
 - Civility clause
- 



Absolutely Required

- Owners manual with all product sheets and warranties
 - Dates
 - Photos
 - Conversations
 - All paperwork
 - Educational final walk through to discuss owner involvement in ongoing performance
 - Multi-page checklist and initials
- 



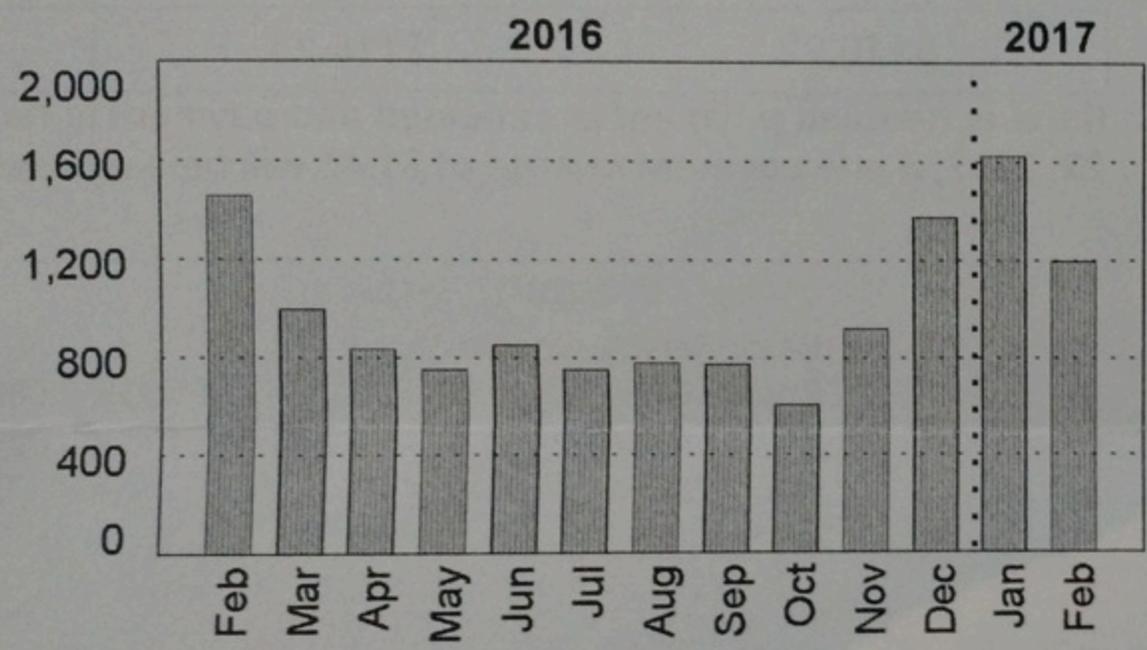








ENERGIC USAGE (kWh) COMPARISON



Month	Days	Usage	Avg Use/Day	Avg Cost/Day	Avg Temp
02/17	29	1,198	41.31	\$3.33	34
01/17	33	1,626	49.27	\$3.49	24
12/16	30	1,375	45.83	\$3.42	22
11/16	33	919	27.85	\$2.43	47
10/16	29	610	21.03	\$1.93	56
09/16	32	776	24.25	\$2.78	68
08/16	29	779	26.86	\$3.07	72
07/16	30	754	25.13	\$2.89	72
06/16	32	851	26.59	\$3.02	72
05/16	29	755	26.03	\$2.29	57
04/16	28	837	29.89	\$2.60	49
03/16	29	997	34.38	\$2.91	42
02/16	33	1,461	44.27	\$3.14	27



Performance

- 4,000 plus square foot living area
 - HERS 36
 - 32.61 kWh per day
 - 11,903 kWh per year
 - \$2.98 cost per day billed
 - 4 years old
- 

Geo Performance

- 9.06 kWh per day average
- \$0.78 cost per day average
- Average percentage geo to total usage – 24.5%
- Percentage of monthly total home usage ranges:
 - Up to 44% - Heating months
 - 10-19% - Cooling months
 - 5-6% - Shoulder months

Pre-Construction Meeting

- Owners..Don't forget who has to live with the completed project!!
- Architect/Designer/Contractor/Builder
- HERS rater if desired
- HVAC contractor
- Electrical contractor
- Plumbing contractor
- Other subs if possible





What To Ask Your Potential Builders Or Contractors Before You Decide To Hire

- What is your experience with projects such as this?
- Are you licensed and insured?
- What continuing education have you recently completed?
- We need 5 references. Thanks
- What type of warranty do you apply to your work and to the project.
- Do you follow the 2012 IRC and the 2012 International Energy Conservation Code? What is your last project that followed the code?
- Who is the day to day contact?
- Who is the on-site supervisor?

Discussion Topics

- Temporary power
- Easements/
Setbacks-could affect PV placement
- Logistics/Storage soil compaction over root structure
- Storm water management
- Protection of existing landscaping





Topics To Stress

- Homeowner safety
 - Energy saving measures – ALL involved have an impact on the final product
 - Better indoor air quality
 - Better comfort
 - Combustion safety
 - Moisture control – starting day 1
 - Maintain structural integrity – educational opportunity
- 





Topics



- Code compliance and inspection schedule
- Local utility requirements
- Net Zero Ready – Keep Repeating!
- Documentation – daily journals and important steps
- Owner's Manual – Who keeps track?



Owner's Manual Topics

- Use of attic areas – not for storage
- Proper storage of chemicals etc.
- Correct filters for system design
- Maintenance schedules
- Contact information – “My Heats Off!!”
- Warranty data
- All product manuals
- Dos and don'ts – extend supply run to garage



Documentation

- Face to Face conversations
 - E-mails
 - Phone conversations and messages
 - Texts
 - Old Timer Mail
 - All materials from shop drawings to warranties
 - Photos of EVERYTHING! with dates and location
 - Visitors log
 - Safety requirements and insurance
- 

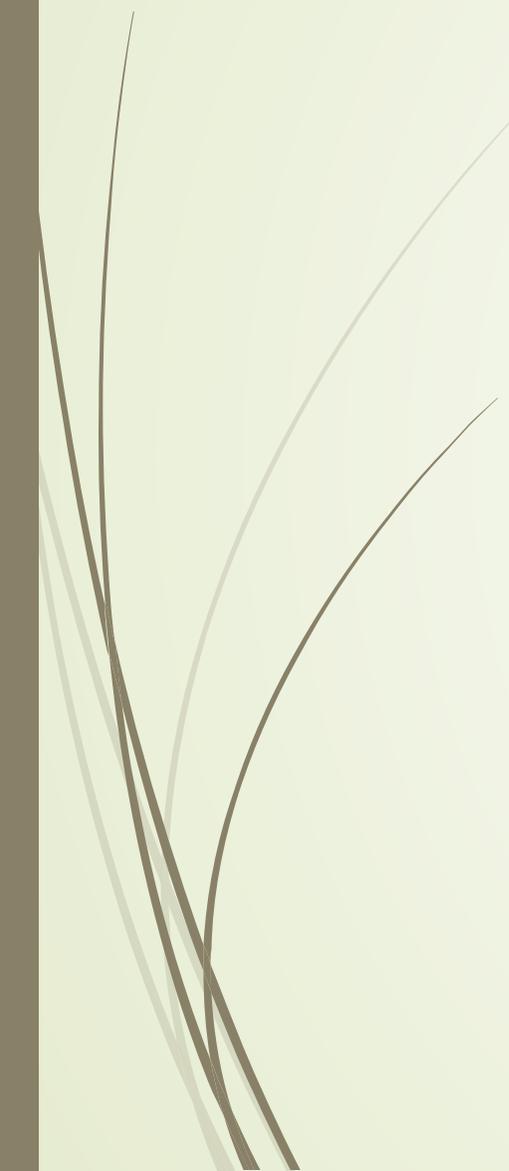
Topics For Pre-Construction

- Review questions from contractor interviews
- Review your expectations
- Show them the code books
- Hand out your furniture layout
- Hand out contact numbers for everyone
- Decide who will handle results from the required blower door test.
- Remember-Manual J and S are required before start.





Plans Overview Examples

- Window selection – Operation
 - Advanced framing - 6 house rule
 - Furniture placement – windows and supplies
 - Floor joist layout – work with me, please!
 - Newel post attachment – not a shift stick
 - Chaseways – when did we forget them
 - 9 foot foundations/flat pans
 - Universal design – zero step entry
 - Roof design
- 



Planning

- Streamline the process
 - Complete set of plans and specifications – Code requirement
 - Establish communication tree
 - Documentation – Repeat again can't say it enough!
 - 3rd party visits - schedule
 - Rebate and Energy Star paperwork before excavation
- 



Recognize The Owners

- We work for them and everyone after them who live in the home.
 - Make them part of the process - they are responsible to operate the home as designed.
 - Everyone involved should know who they are.
 - Individual needs and requirements.
 - Future considerations – basement use, conduits under concrete for expansion, shops, Christmas lights, etc.
- 



Time To Stress Air Sealing To The Parties Involved

- Saves on heating and cooling
 - Controls moisture vapor movement by slowing or stopping air
 - Stops uncomfortable drafts
 - Helps to prevent frozen water lines
 - Keeps the tub floor warmer
 - What about controlled “designed” ventilation?
- 



It's All In The Details!!!!

- Assessment
 - Pre-test
 - Research Proper Methods & Materials
 - Building Science
 - Wholehouse Concept
 - READ THE DIRECTIONS
 - Hire competent Craftsman
 - Post-test
- 



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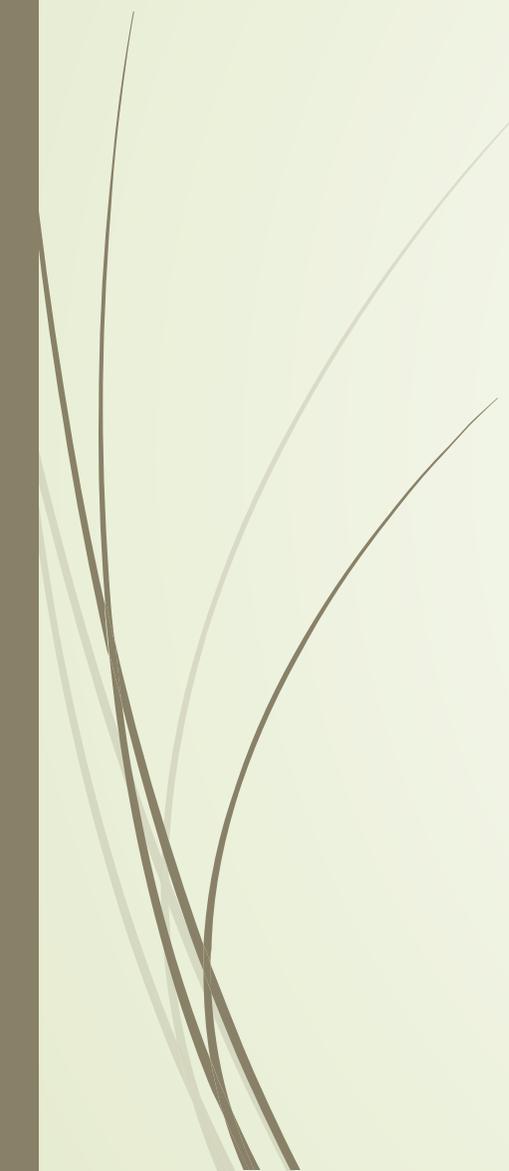
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PROPERTY OF



It's In The Paperwork

- Truss uplift – in the truss packet
 - Insulation installation – on every bag
 - Attic insulation documentation - on the bag
 - Air sealing requirements – in the code book
 - Window installation – supplier, Google
 - Housewrap - supplier and common sense
- 





Time Worn Education





U.S. DEPARTMENT OF
ENERGY

Energy Efficiency &
Renewable Energy

BUILDING TECHNOLOGIES PROGRAM

Air Leakage GUIDE



DuPont™
Tyvek

DuPont™

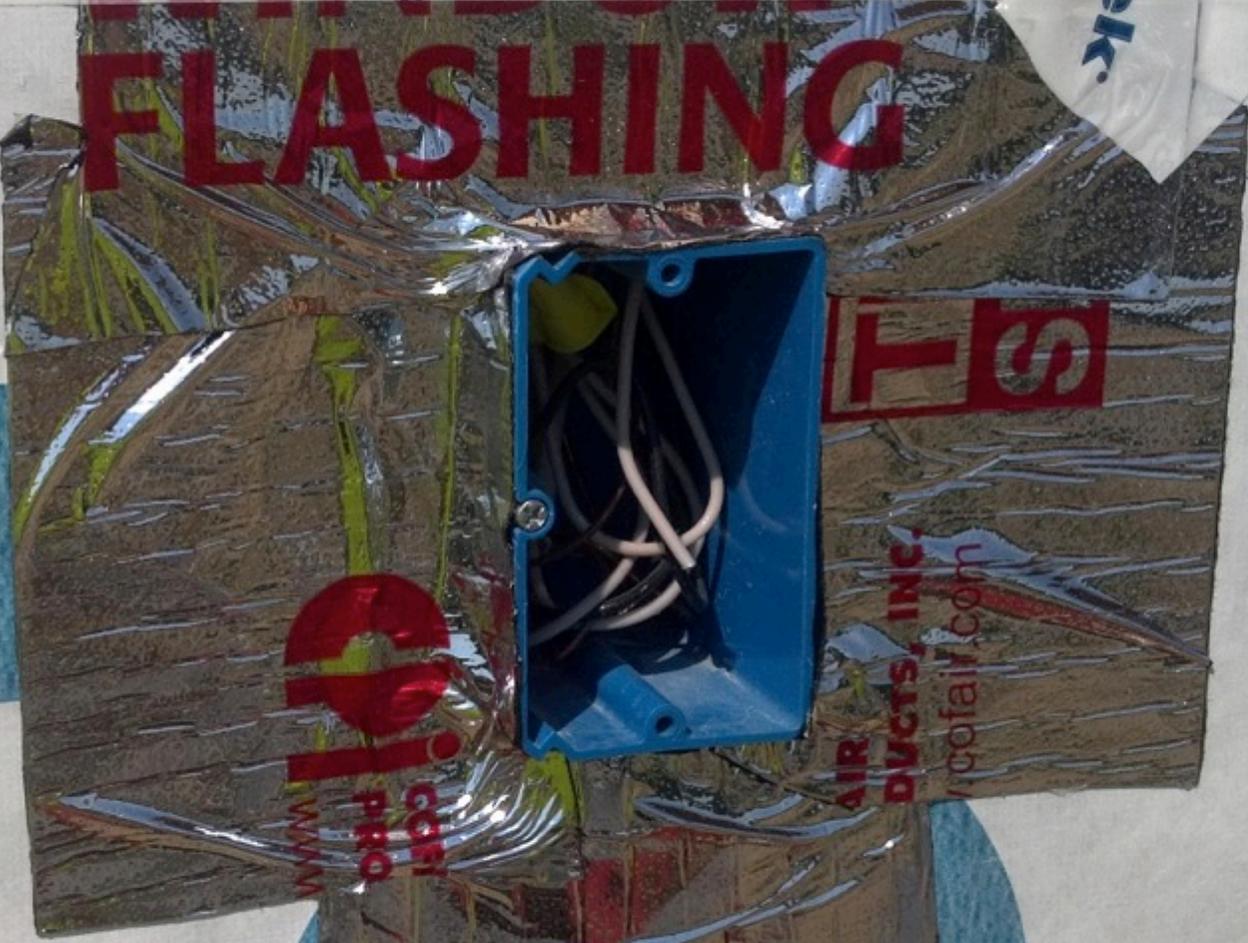
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- Walk-out frost protection



Footings & Foundations

- Proper Sizing For Load
 - Soil Load Bearing Capacity
 - Capillary Break
 - Thermal Break
 - Waterproofing
 - Backfilling
- 

Capillary Action







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Hydrocide® 600

Waterproofing & Damp Proofing

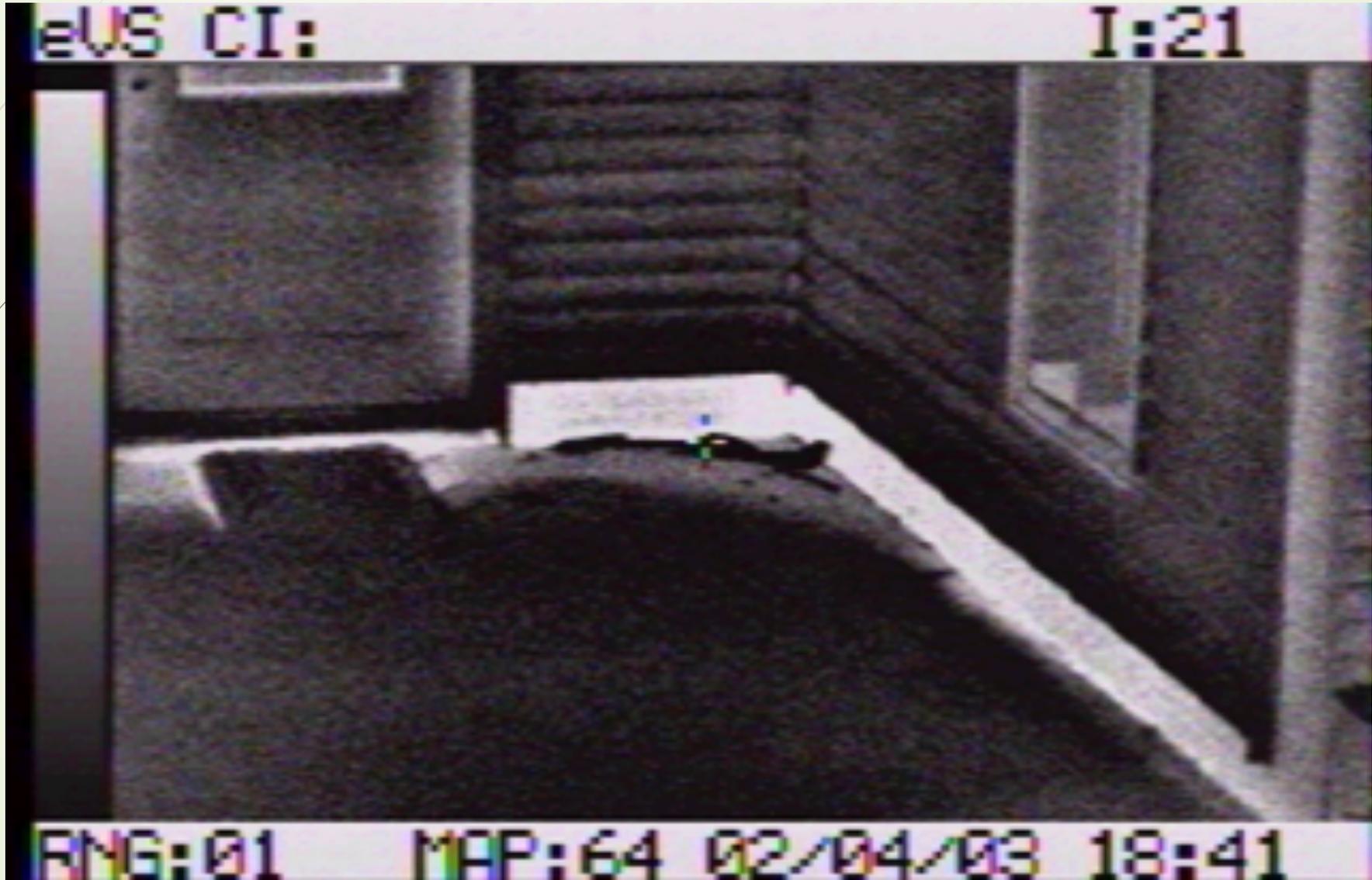
Surface Applied Asphalt Waterproofing Compound



Scanscan



Father-In-Law – Really Ticked Off Now!

















RESISTANCE TO HEAT FLOW. THE HIGHER THE
POWER TO GET





11/19/2007





