

Blower Door Test Concept Card



NORTHWEST
EcoBuilding
Guild

Concept – Build a tight envelope and ventilate right. Stack effect, wind and pressure differences cause air to move constantly in and out of a home. Don't seal without checking combustion safety and proper mechanical ventilation if needed.

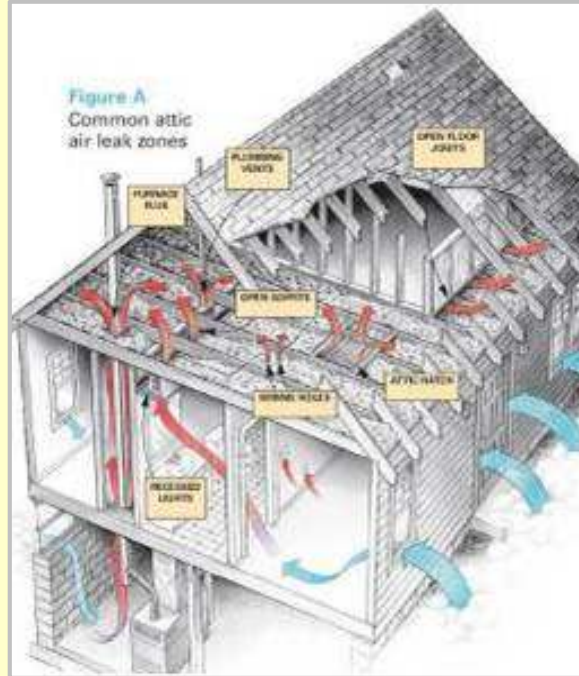
Attention – Design; Framer; Insulator; Drywall

Action – Use a whole house strategy to reduce hidden air leakage from hidden chases and openings from interior walls to attics, crawl spaces, garages, and exterior wall cavities. Use non toxic / HCFC/HFC free foams and caulks Use fire stop or fire rated materials where required.

Links

http://www.energysavers.gov/your_home/energy_audits/index.cfm/mytopic=11190

Video <http://www.youtube.com/watch?v=IHjl2Tf5Xg>

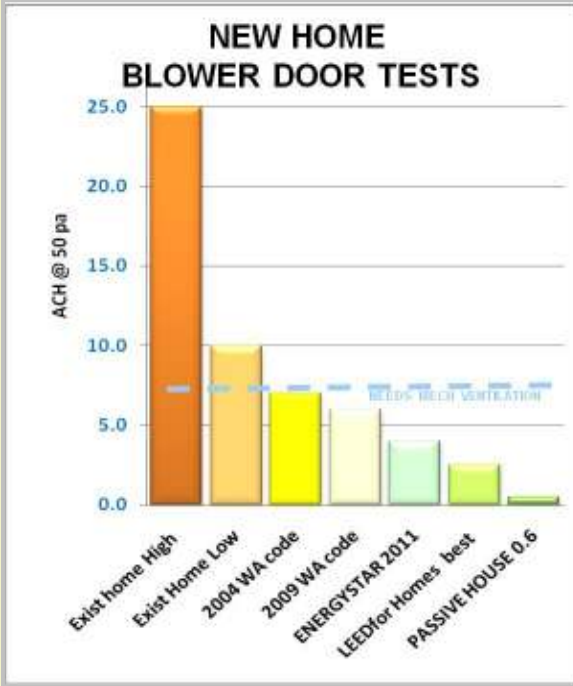


Design

Foundation

Framing

Mechanical



Insulation / Wall



Finish

Landscape

Expert knowledge from:



- Air Auditor
- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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AIR SEAL: DRYWALL at INTERIOR PARTITION WALL



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Concept – In multi-level homes the stack effect creates pressure differences, and thus air flow into the attic from many cracks and holes. Seal the partition top plates to make the whole ceiling act like a continuous air barrier. This reduces heat loss, moisture in the attic, and the “draw” of air from the crawl space or garage.

Attention – Drywall or Punch list crew following drywall – after lids but before walls

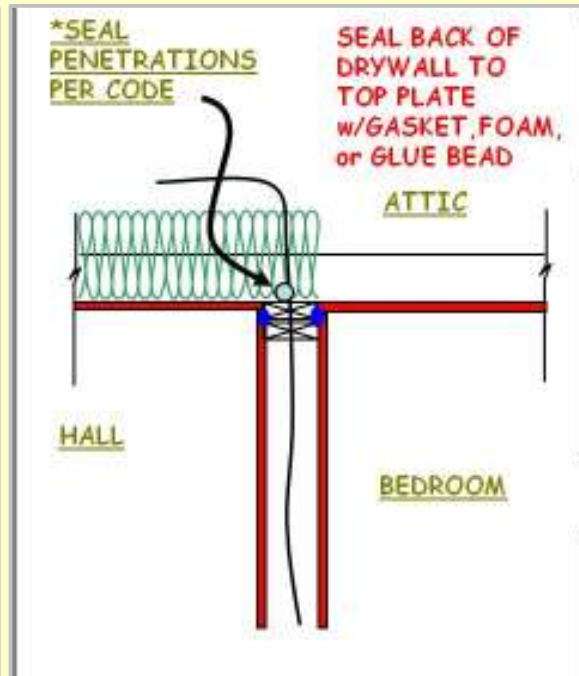
Action – reduce hidden air pathways along plates and uneven wood joints.

Seal top plates on both sides to drywall with continuous bead of glue, caulk, foam, or gasket at all partition walls

CAD Detail file: [link tbd](#)

Video link [link tbd](#)

Resource:



Design

Foundation

Framing

Mechanical



Insulation / Wall

Finish

Landscape

Expert knowledge from:



- Assessment
- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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SOFFIT AT CEILING/WALL



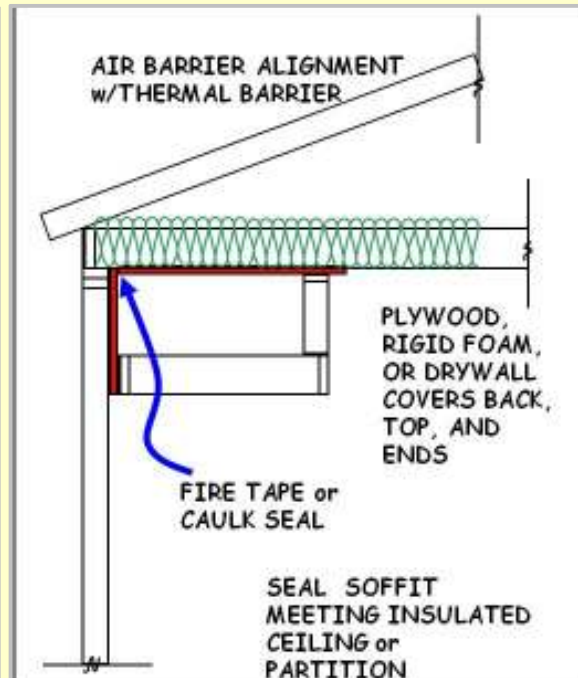
NORTHWEST
EcoBuilding
Guild

Concept – warmer indoor air in winter rises with the “stack effect” and escapes into attics. Create a continuous air barrier at the insulated ceiling plane

Attention - Framing or Punch list

Schedule - Pre Insulation

Action - reduce hidden air leakage from hidden chases and openings from interior walls to attics. Pre-rock before building soffits or use plywood., or rigid foam board, carefully sealed at edges. Seal soffit ends if they meet exterior
Use non toxic foams and caulks. Use Fire rated caulks and sheet metal at flues/chimneys
Use foam with no CFC or HFC propellants



Design

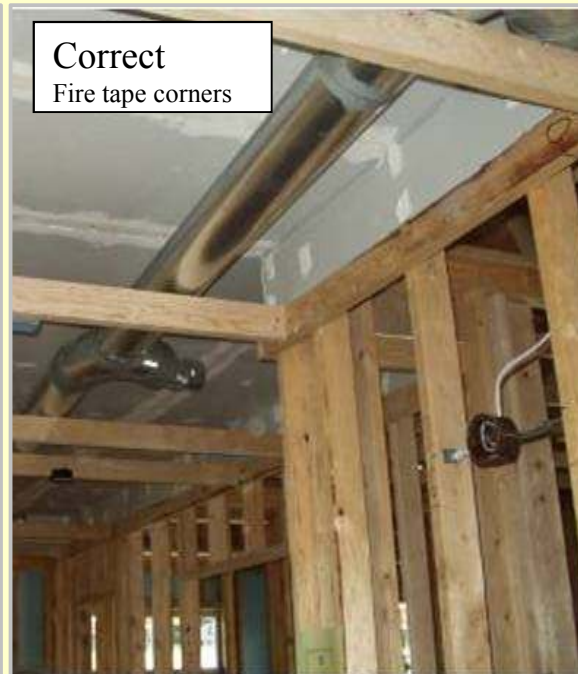
Foundation

Framing

Mechanical



Incorrect
Soffit open to cavities



Correct
Fire tape corners

Insulation / Wall

Finish

Landscape

Expert knowledge from:

Conservation
Services Group

- Assessment
- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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JOIST BAYS AT VENTED FLAT ROOF



NORTHWEST
EcoBuilding
Guild

Concept – Vented flat roof is open to outside and needs to be sealed from joist space between heated floors. Visualize the Envelope as continuous

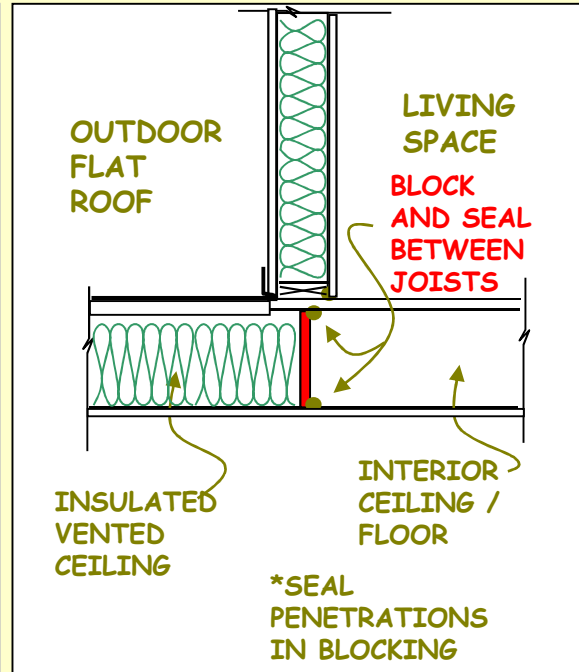
Attention - Framing / Punch list- Pre Insulation

Action - Stop air leakage from hidden chases and openings by sealing joist bays with blocking and foam

Seal large openings with rigid foam board, drywall, or plywood, carefully sealed at edges

Use non toxic foams and caulks. Use fire rated materials

If no wall below, Gasket or Glue blocking line to drywall for continuous air barrier

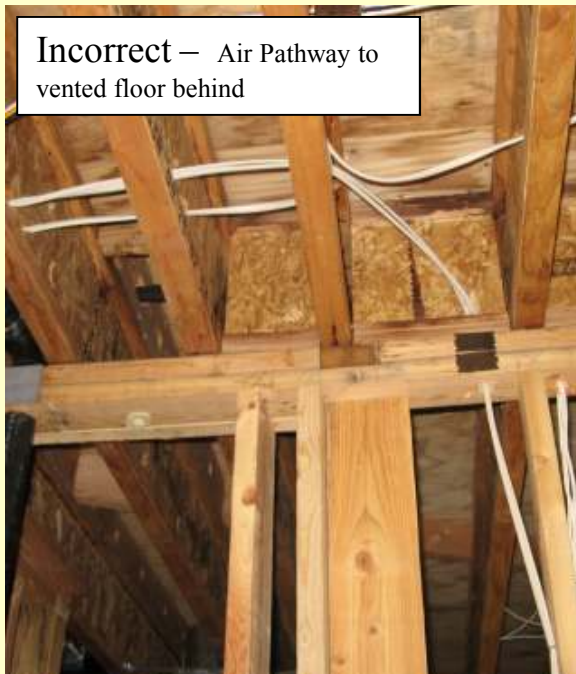


Design

Foundation

Framing

Mechanical



Insulation / Wall

Finish

Landscape

Expert knowledge from:



- Assessment
- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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SEAL GARAGE JOISTS AT COMMON WALL



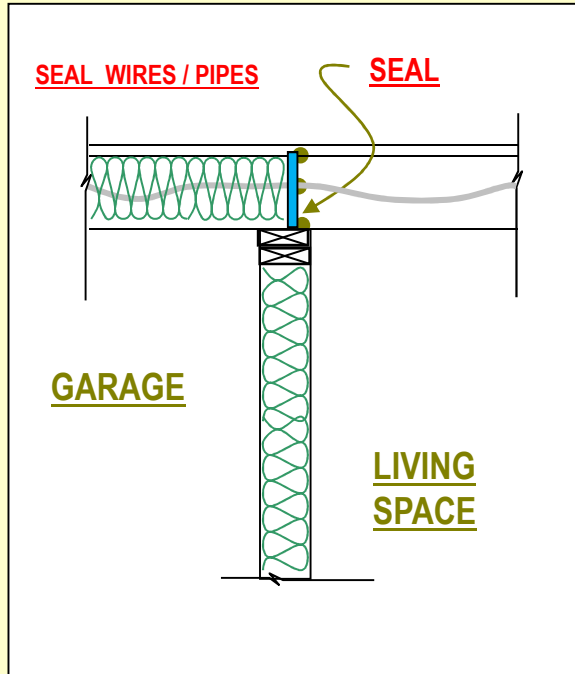
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EcoBuilding
Guild

Concept – In 2 story homes the stack effect, can pull a constant airflow from the garage into the living space. Garage air can carry pollutants and dust into the home

Attention - Framing or Punch list - Pre Insulation

Action - reduce hidden air pathways from garage to house. Seal between joists over garage common wall with wood or drywall blocking and caulk or foam; I-joist blocking needs small filler pieces, or blocks w/notched corners; Seal large openings with foam board, drywall, or plywood. Carefully seal all edges and joints.

Install a small exhaust fan, wired to the opener with a 60 minute timer, to clear the garage after parking

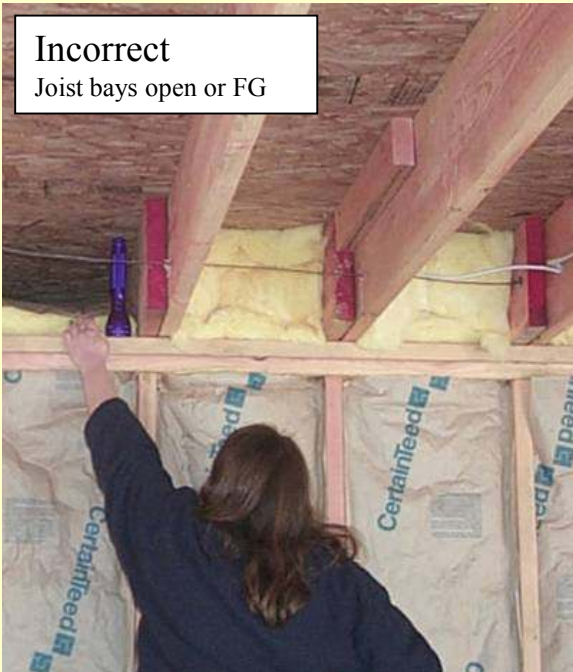


Design

Foundation

Framing

Mechanical



Incorrect
Joist bays open or FG



Correct
Sealed air barrier

Insulation / Wall

Finish

Landscape

Expert knowledge from:

Conservation
Services Group

- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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COVED CEILINGS at PARTITION WALL

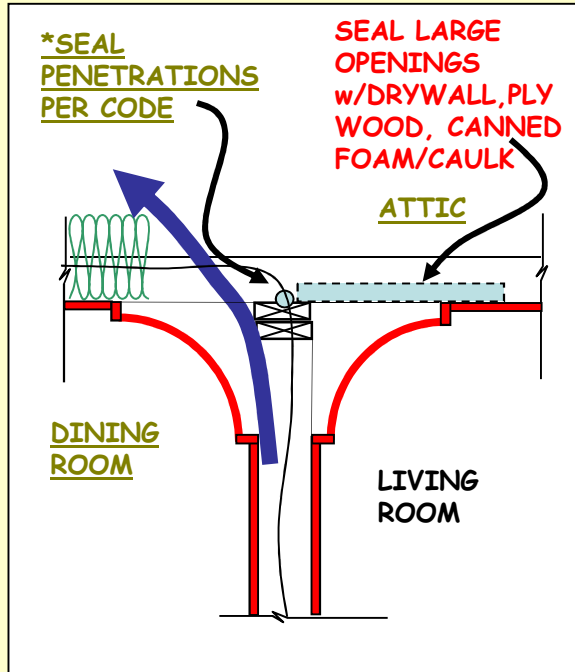


NORTHWEST
EcoBuilding
Guild

Concept – During the heating season there is a constant flow of air and moisture through hidden leaks to the attic. If you have coved ceilings in an older home, there are big openings from the wall cavities to the attic.

Attention – Drywall or Punch list crew following drywall – after lids but before walls; air sealing crew

Action – If insulating exterior walls, blow full first from attic through cove openings. Seal all cove openings at ceiling plane with blocks of plywood, wood or drywall. These materials also provide fire stop. Place between joists and seal well with caulk/foam.



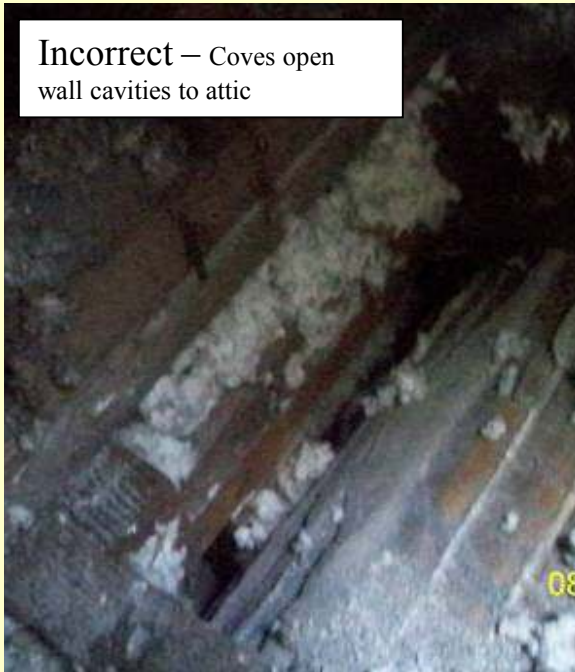
Design

Foundation

Framing

Mechanical

Incorrect – Coves open wall cavities to attic



Correct
Seal all coves at attic / ceiling plane
Use fire stop material



Insulation / Wall

Finish

Landscape

Expert knowledge from:



- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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SEAL TONGUE & GROOVE CEILING



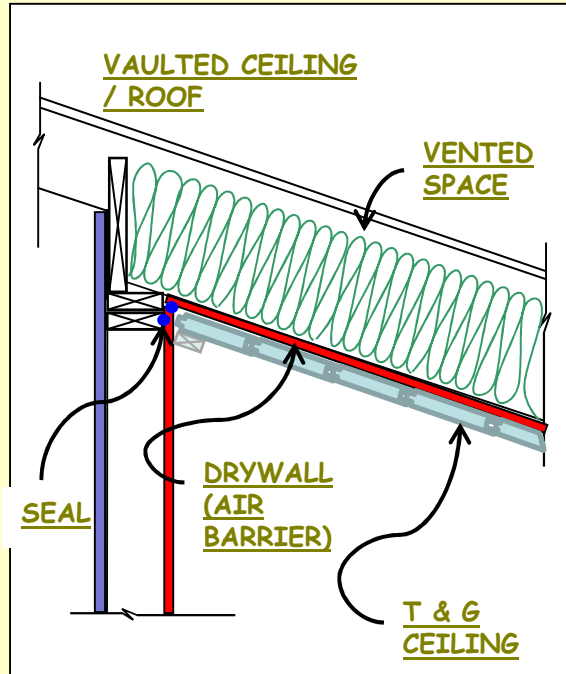
NORTHWEST
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Guild

Concept – T & G ceilings look good but in most cases do not form a good air barrier. The “Chimney effect” makes higher pressure at the ceiling of a heated house, forcing moisture laden warm air into the attic. In the worst cases water marks from condensation running down beams or walls can be seen. This also applies to walls on upper floors.

Attention – Architect; Project Manager; Insulator; Drywall; Finish Carpenter

Action – T & G ceilings must have an air barrier. Best practice is to drywall and fire tape first, then install boards

Retrofit – Best practice is to take the boards down and re install with air barrier. If not practical all joints should be caulked with water based latex caulk, wiped in with damp cloth. May alter the look of the ceiling.



Design

Foundation

Framing

Mechanical

Incorrect - shows high leakage under negative pressure test



Correct - shows no air leakage with drywall behind



Insulation / Wall

Finish

Landscape

Infrared photos - with a blower door running - tell the story

Expert knowledge from:

CSG
Conservation
Services Group

- Green Certification & Consulting
- Energy Audits, Modeling, & Performance Testing
- Training and Education
- Program Management and Design

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