

Nevada County Community Development Agency



Green Building Basics

Introductions



Craig Griesbach
Director of Building
Community Development Agency
(CDA)

950 Maidu Avenue, 1st Floor

Nevada City

(530) 265-1583

craig.griesbach@co.nevada.ca.us

Other Staff Contacts

Steve DeCamp
Director of CDA
Community Development Agency (CDA)
(530) 265-7158
steven.decamp@co.nevada.ca.us

Jim Swanson
Supervising Building Inspector/Plans
Examiner
Community Development Agency (CDA)
(530) 265-1542
jim.swanson@co.nevada.ca.us

Dan Sciacca
Plans Examiner
Community Development Agency (CDA)
(530) 470-2538
dan.sciacca@co.nevada.ca.us

Richard Bucher
Building Inspector I
Community Development Agency (CDA)
(530) 265-1543
richard.bucher@co.nevada.ca.us

Andreas Theisen
Building Inspector II
Community Development Agency (CDA)
(530) 265-1757
andreas.theisen@co.nevada.ca.us

Rodney McClung
Permit Processing Technician
Community Development Agency (CDA)
(530) 265-7061
rodney.mcclung@co.nevada.ca.us

Monte Gillan
Permit Processing Technician
Community Development Agency (CDA)
(530) 265-1571
monte.gillan@co.nevada.ca.us

Stacy Manning
Permit Processing Assistant II
Community Development Agency (CDA)
(530) 265-1524
stacy.manning@co.nevada.ca.us

Valorie Wilcock
Administrative Analyst II
Community Development Agency (CDA)
(530) 265-1554
valorie.wilcock@co.nevada.ca.us

Please Ask Questions



Your Participation is Important



What does “Green Building” really mean?

*“A holistic approach to design,
construction and demolition that
minimizes the buildings impact on the
environment, the occupants and the
community”*

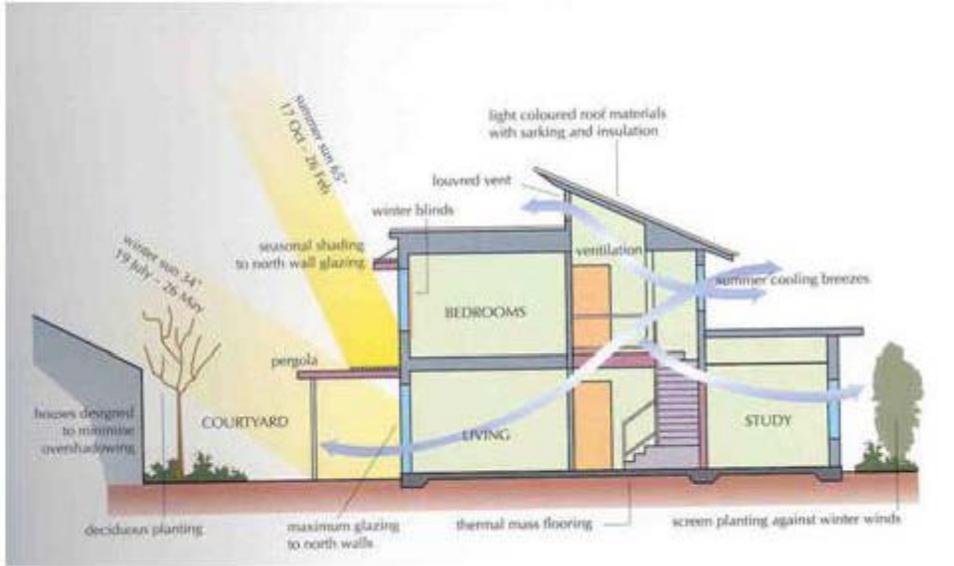
**Does a snowman melt faster
with or without clothing on?**



A Good Design is Essential!!!!

- Material Availability (Location)
- Structure Location
- Orientation
- Short and Long-Term “Vision”
- Utilizing Technology
- Build to Suit Environment

Design Examples



Orientation of Sun Exposure/ Ventilation

Covered Building Walkways/Entries



Design Examples



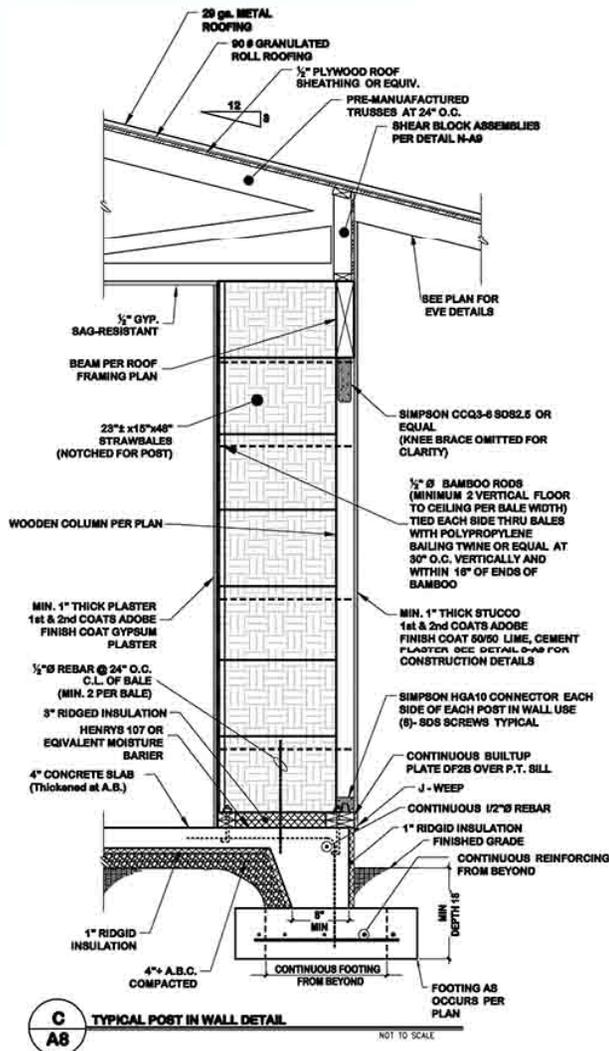
Drought resistant
landscaping

“Smart-Sized”
buildings



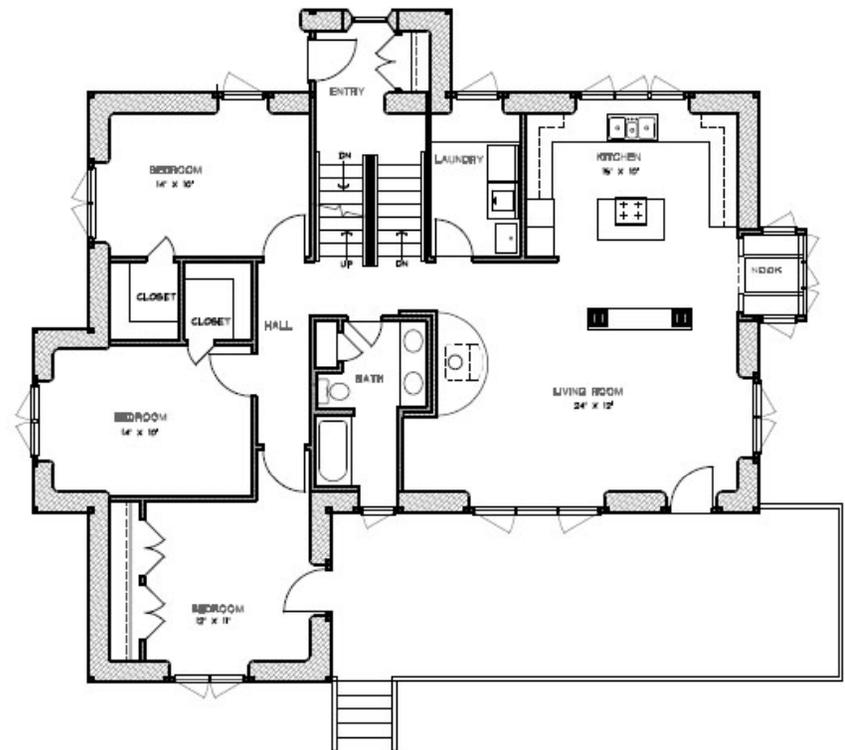
Construction Methods/Materials

Straw Bale Construction



Construction Methods/Materials

Straw Bale Construction



MAIN FLOOR PLAN
AREA: 1,764 SQUARE FEET



ecoville architects

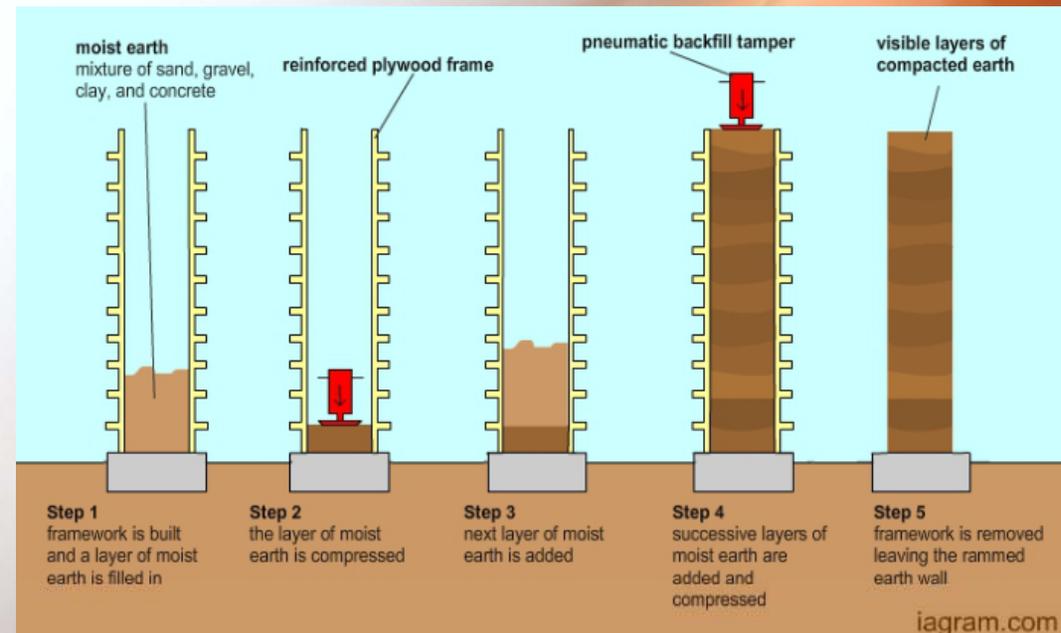
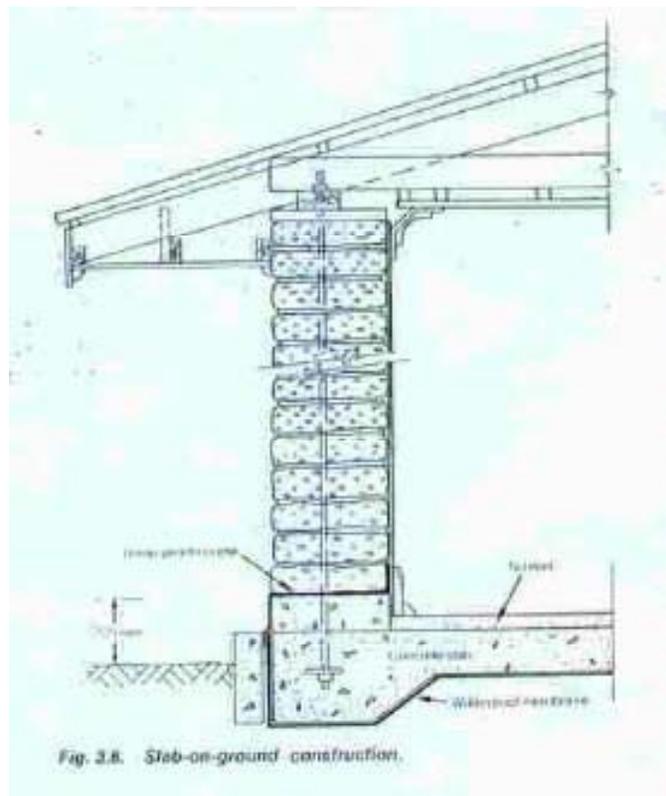
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Construction Methods/Materials

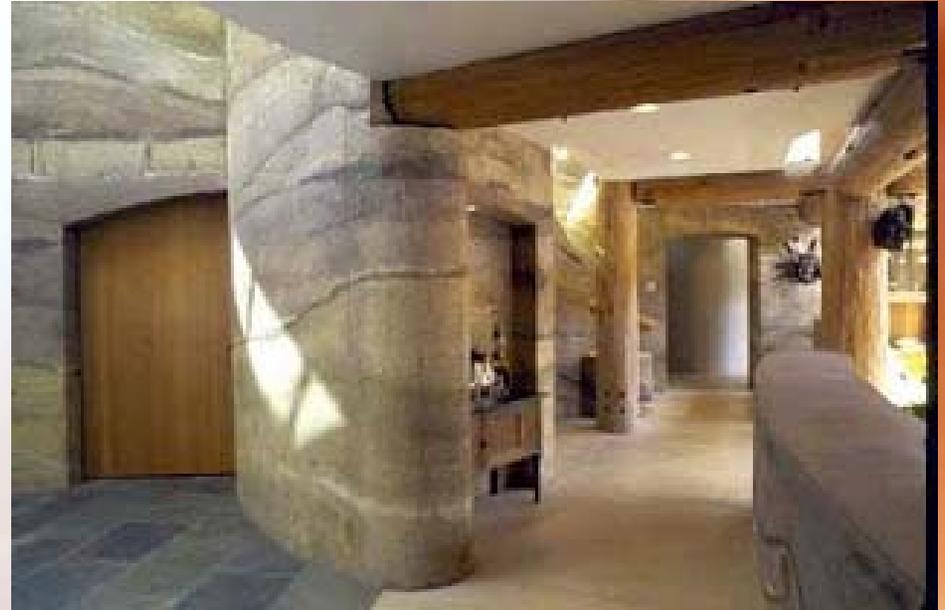
Rammed Earth Construction

Walls made of earth, chalk, lime, gravel, cement additives, etc combined with reinforcement



Construction Methods/Materials

Rammed Earth Construction



Construction Methods/Materials

Cargo Containers



Construction Methods/Materials

Straw Bale, Rammed Earth & Storage
Container Construction Important Points:

- Monitoring material moisture levels and material mixing during construction
- Thoroughly flashing around windows/openings
- Affect on interior layout/environment
- Installing utilities (electrical, plumbing & mechanical)
- Following project/plan engineering

Construction Methods/Materials

Informational Websites:

www.hcd.ca.gov

www.strawbale.com

www.strawbuilding.org

www.balewatch.com

www.sirewall.com

www.rammedearthworks.com

www.astm.org/Standards

www.earthstructuresgroup.com

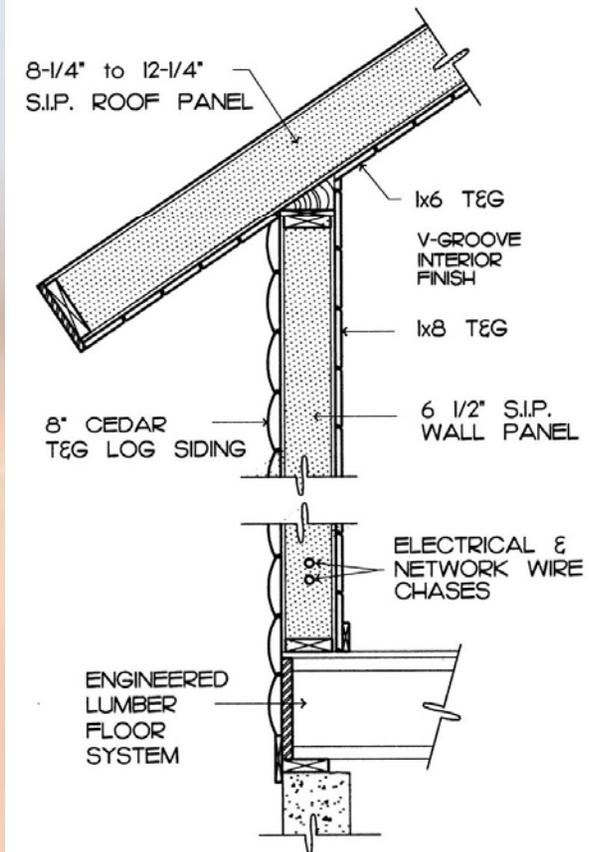
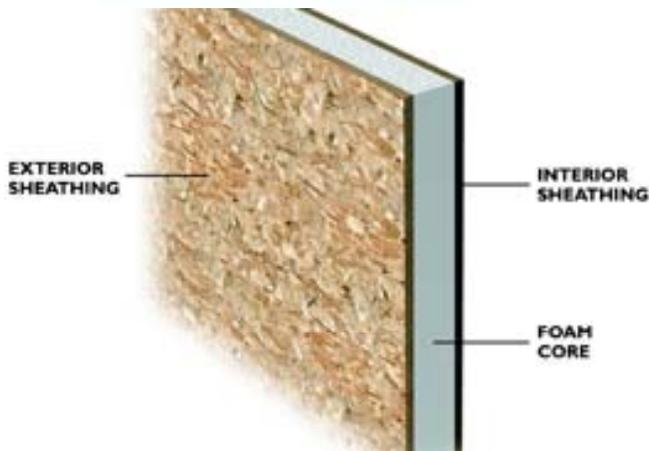
www.structure1.com

www.popularmechanics.com

http://www.mercurynews.com/business/ci_25443614/clay-houses-quake-country-cob-building-gains-bay

Construction Methods/Materials

Structural Insulated Panels (SIP)

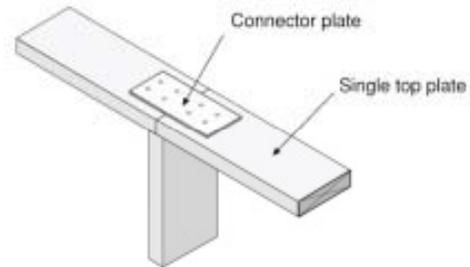


Construction Methods/Materials

Reduction/Reuse of Materials



Top plate splice



Construction Methods/Materials

Gray water/rain catchment systems



Keep in mind specific Local Requirements

Construction Methods/Materials

Renewable Energy Sources



Construction Methods/Materials

Efficient Utilities



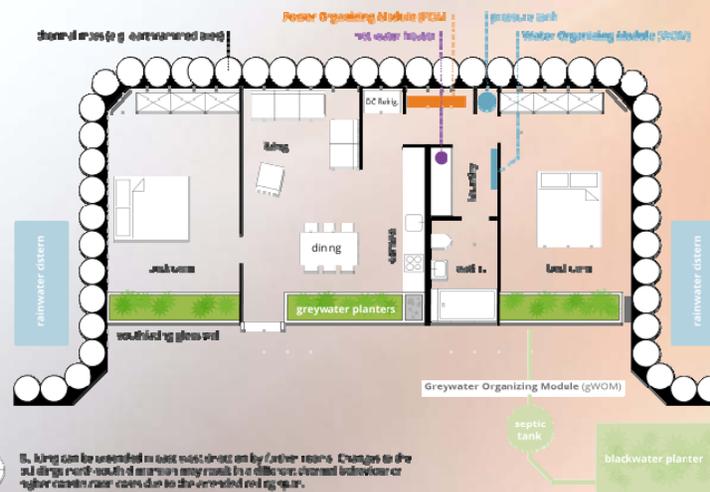
Construction Methods/Materials

“Earthship Model”

- 100% self sufficient
- Can be built in any climate
- Produce their own electricity with solar, wind and battery power
- Reuse sewage in treatment cells for food production & landscaping
- Built with only indigenous materials



Earthship
(with vertically glazed southern wall)



- Use rain catchment/snow melt systems and reuse water 4 times through natural filtration
- Planters hold hundreds of gallons of water for food production
- Utilization of the sun/ building orientation for building heating & water heating

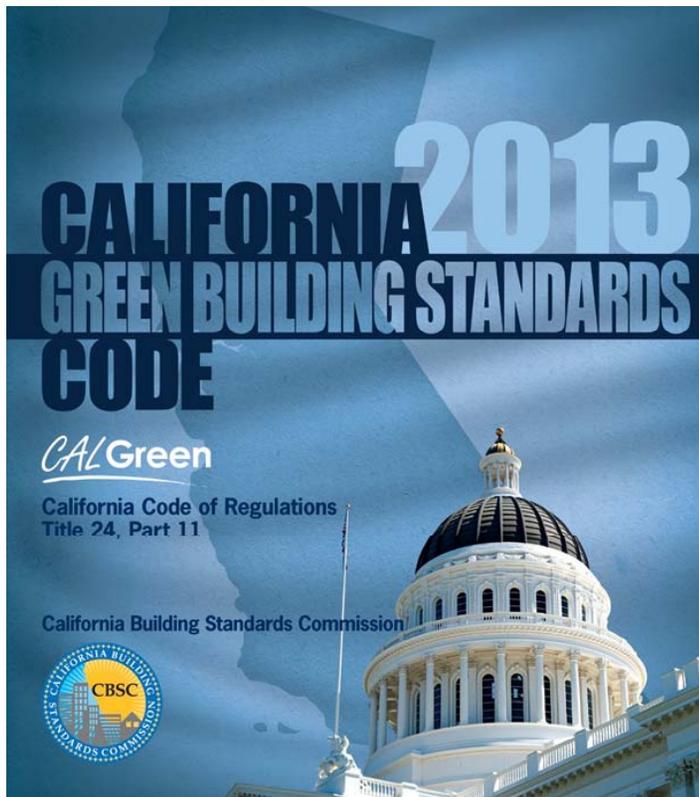
Sustainable Building Challenges

Structures Built in California:

- Seismic & Wind Loading
- Construction per Project Engineering
- Approved Electrical, Plumbing & Mechanical Utilities
- Minimum Room Sizes/Ceiling Heights
- Energy Standards
- Allowed Construction Materials
- Up-Front Cost



2013 California Green Building Standards Code Overview



Code Is Available Online

at www.bsc.ca.gov/codes

and link is also on our website at

www.mynevadacounty.com

2013 California Green Building Standards Code

The California Green Building Standards Code is a code which purpose is to improve public health, safety, and general welfare through the use of building concepts having a negative or positive environmental impact and encouraging sustainable construction practices in the following categories:

- Planning and Design
- Energy Efficiency
- Water Efficiency and Conservation
- Material Conservation and Resource Efficiency
- Environmental Quality

2013 California Green Building Standards Code

The California Green Building Standards Code that applies to:

- New residential & commercial construction
- Residential additions that increase conditioned area and/or volume
- Commercial additions over 1,000sq.ft
- Commercial projects with valuations of over \$200,000

There are green building mandatory measures and more restrictive “Tiers” (Tier 1 and 2) in the code

Nevada County adopted the mandatory measures ONLY and the “Tiers” are optional

Residential Mandatory Measures

Storm Water

A storm water drainage plan shall be utilized for storm water drainage management per local ordinance.

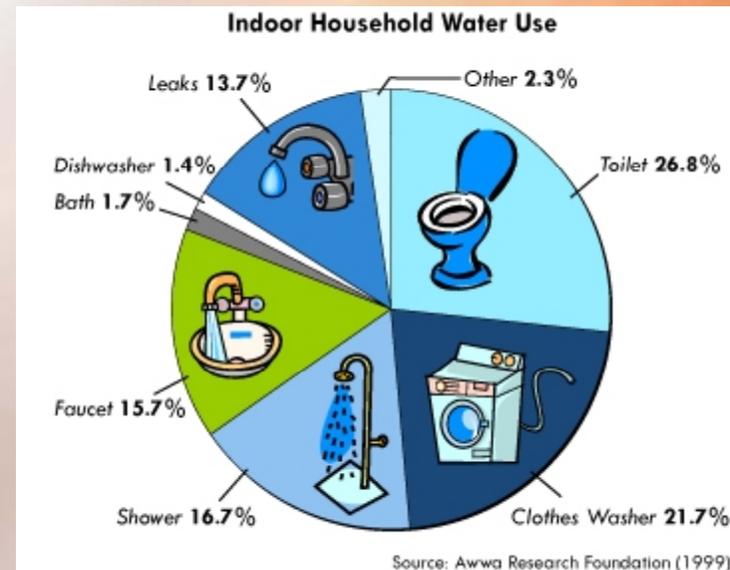


Residential Mandatory Measures

Water Efficiency & Conservation

Indoor water use shall be reduced at least 20% by one of the following methods:

- Water saving fixtures or flow restrictors shall be used.
- A 20% reduction in baseline water use shall be demonstrated.



2013 California Green Building Standards Code

Maximum flow rates for fixtures

- Toilets: 1.28gpf
- Urinals: .5gpf
- Kitchen Faucets: 1.8gal @ 60psi
- Res. Lavatory Faucets: 1.5gal @ 60psi
- Showerheads: 2gpm @ 80psi



Residential Mandatory Measures

Water Efficiency & Conservation

When multiple shower heads serve a single shower compartment they shall have:

- Combined flow rate shall be reduced by 20%

OR

- Only one shower head shall operate at a time



Residential Mandatory Measures

Water Efficiency & Conservation

Automatic irrigation systems installed at the time of final inspection shall have:

- Weather or soil moisture based controllers that automatically adjust irrigation.
- Weather-based controllers without integral rain sensors shall have a separate wired or wireless rain sensor.



Residential Mandatory Measures

Material Conservation

A minimum 50% of construction waste generated at the site shall be diverted to recycle or salvage for reuse.



BOTH COMMERCIAL AND RESIDENTIAL

Residential Mandatory Measures

Building Maintenance & Operation

A building maintenance and operation manual shall be placed in the building including but not limited to:

- Operation and maintenance instructions for:
 - **Equipment**
 - **Appliances**
 - **Site Storm Drainage**
 - **Landscape Irrigation**
 - **Water Reuse Systems**

Residential Mandatory Measures

Building Manual Continued...

- Information about local utility, water waste recovery, and recycling programs.
- Public transportation and carpool information.
- Material on the positive impacts of and interior relative humidity between 30%-60% and how to maintain this level.
- Landscape irrigation information.
- Routine maintenance information.
- State solar energy incentive programs.

Residential Mandatory Measures

Environmental Quality



Fire places shall be direct-vent sealed-combustion type and EPA Phase II rated.

Duct openings shall be covered until final startup.



BOTH COMMERCIAL AND RESIDENTIAL

Residential Mandatory Measures

Pollutant Control

Adhesives, sealants, & caulking shall be compliant with Volatile Organic Compound (VOC) and other toxic limits.

Paints, stains and carpeting systems shall be compliant with VOC limits.

BOTH COMMERCIAL AND RESIDENTIAL

Residential Mandatory Measures

Indoor Air Quality

Bathroom exhaust fans shall be ENERGY STAR compliant AND must be controlled by a humidistat.



Whole house exhaust fan louvers shall have minimum R4.2 insulation.



Non-Residential Mandatory Measures

- Required Short & Long-Term Bicycle Parking Spaces
- Required Clean-Air Vehicle Parking Spaces
- Separate Water Meters for Landscaping Irrigation
- Common Recycling Containers
- Commissioning for Larger Commercial Buildings
- Sound Transmission Ratings for Walls, Roofing Assemblies & Windows
- Light Pollution Reduction

2013 California Energy Code

Low Rise Residential	+25% efficiency
Multi-Family Residential	+14% efficiency
Non-Residential	+30% efficiency

Compared to 2008 Energy Standards

Net Zero for Residential in 2020

Net Zero for Non-Residential in 2030

2013 Energy Code Becomes Effective July 1, 2014



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QUESTIONS???

If you have further questions at a later date please do not hesitate to contact the Nevada County Building Department