

MONTAGUE URBAN HOMESTEAD

OWNERS - DESIGNERS:
BUILDER:

DOUG STEPHENS - TINA CLARKE
BICK CORSA

ZERO ENERGY CHALLENGE - MASSACHUSETTS 2009
FIRST PLACE



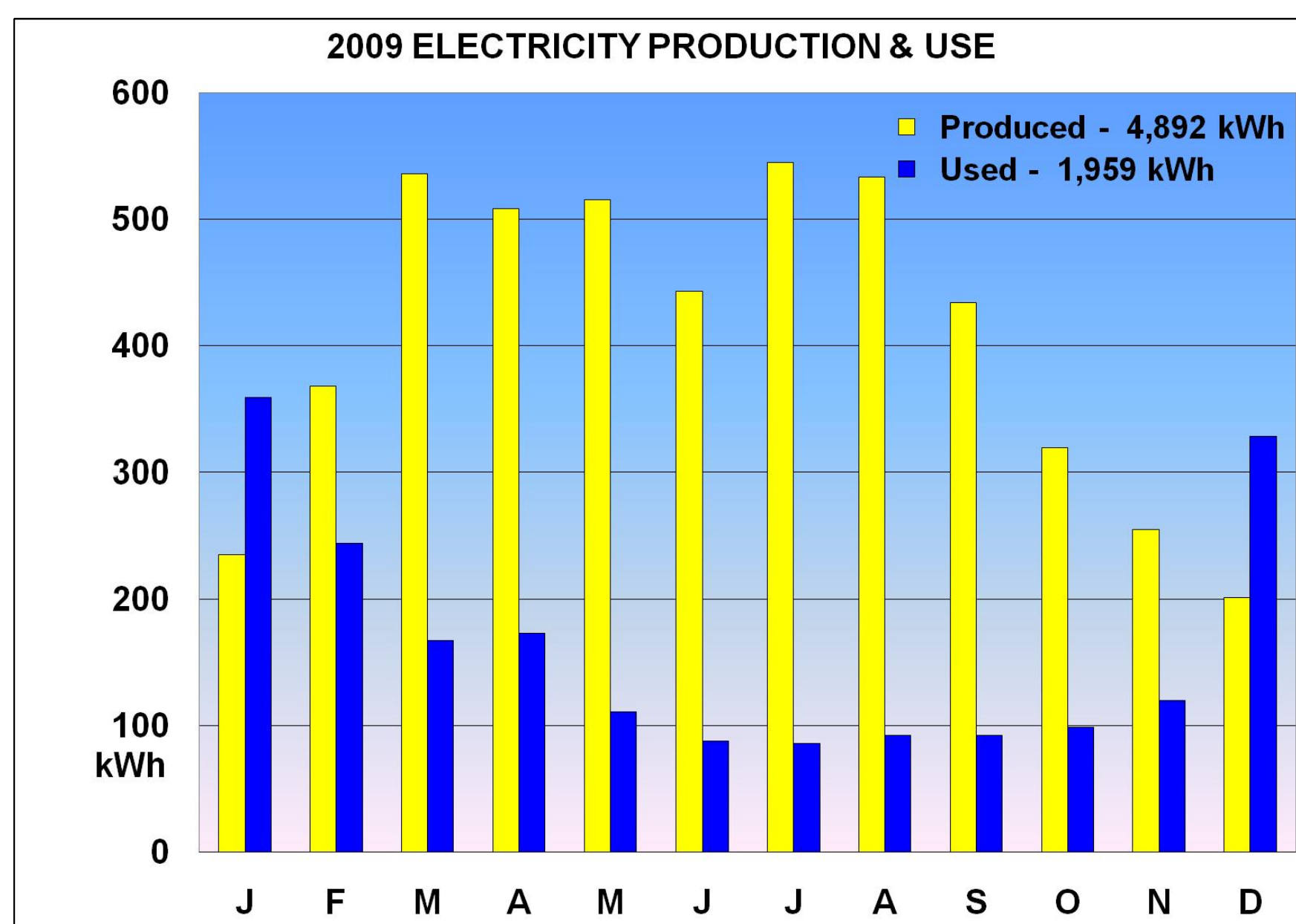
THIS IS AN ALL-ELECTRIC HOUSE,
POWERED COMPLETELY BY THE SUN!!



COMPREHENSIVE PASSIVE SOLAR DESIGN:

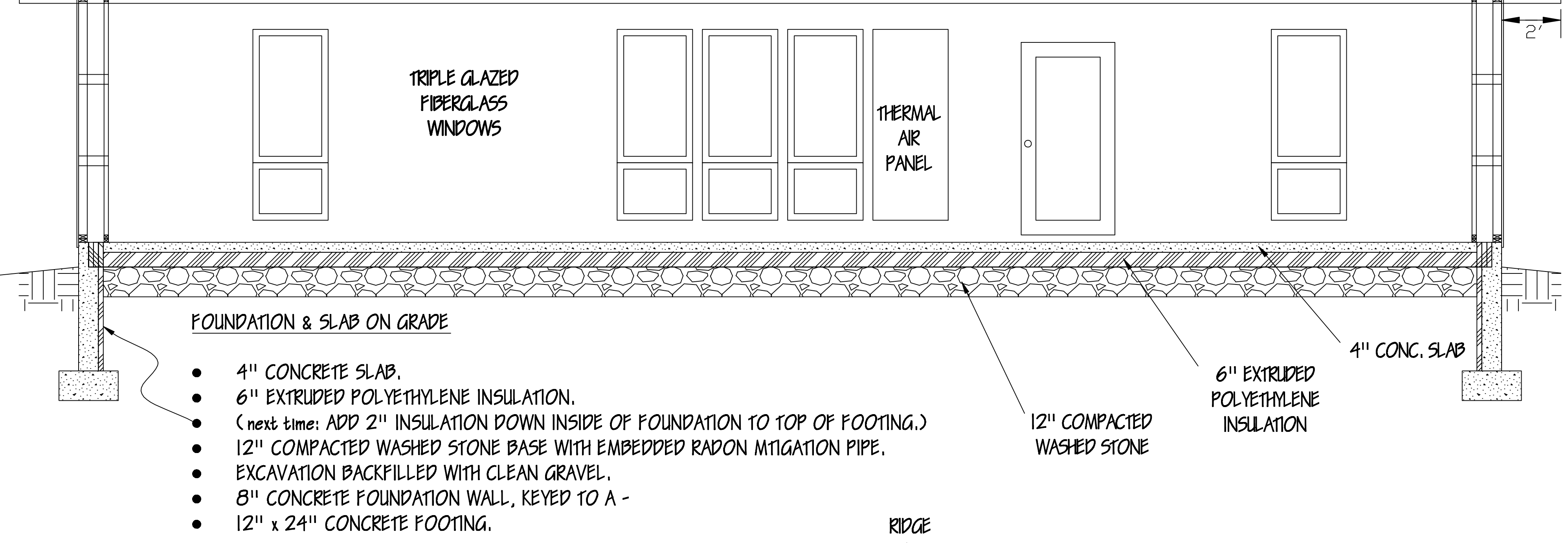
- SOUTH FACING WINDOWS
- SUPER-INSULATED, TIGHTLY SEALED
- CONCRETE FLOORS FOR THERMAL MASS

OUR "FURNACE"
A 9000 BTU/h AIR SOURCE
MINI-SPLIT HEAT PUMP



RENEWABLE ENERGY SYSTEMS:

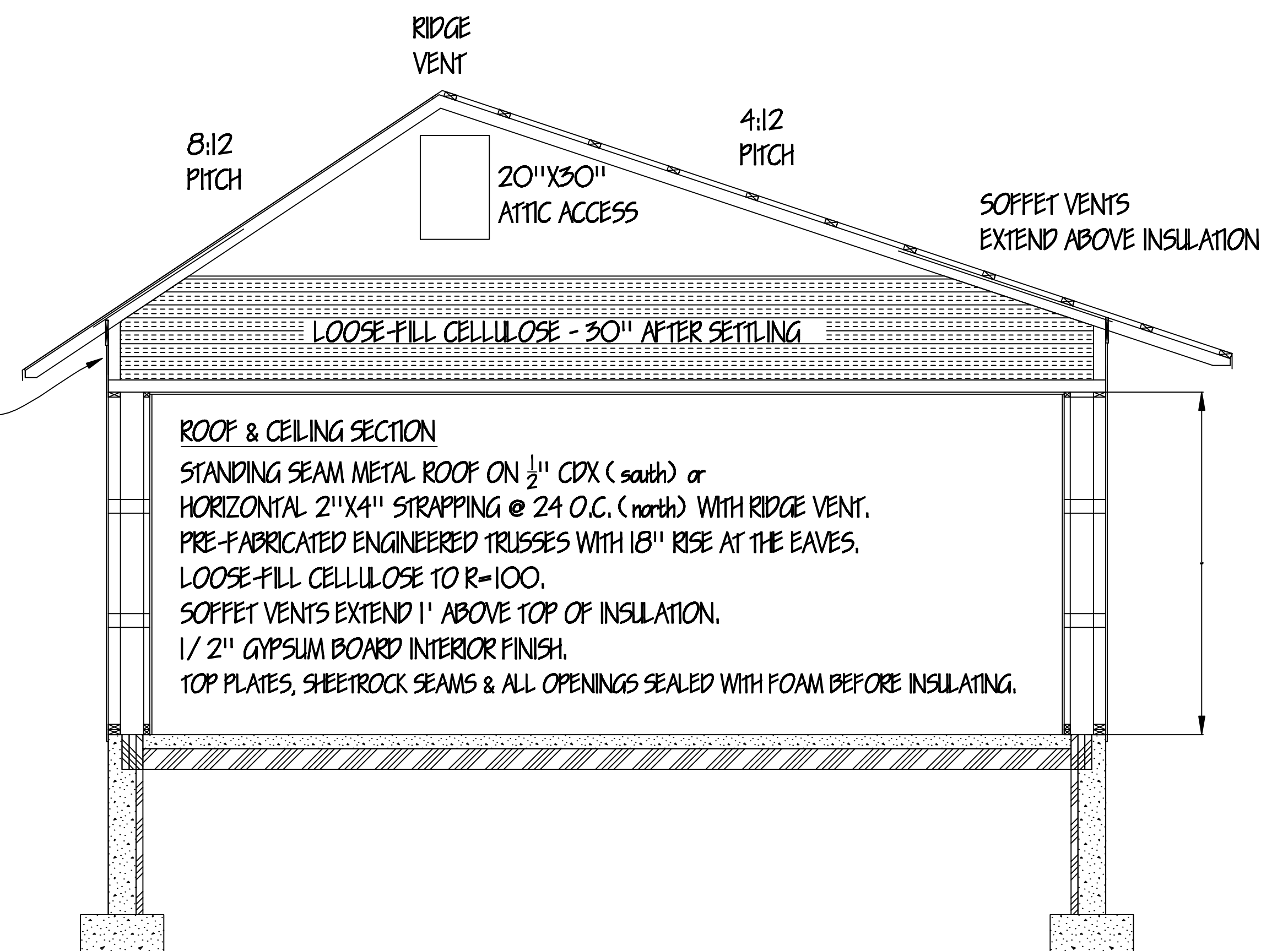
- ROOF-MOUNTED 4.94 kW GRID-TIED PHOTOVOLTAIC SYSTEM.
- TWO ROOF-MOUNTED 4'X8' SOLAR HOT WATER PANELS + 80 GALLON STORAGE TANK.
- FLAT-PLATE THERMAL AIR PANEL.



12" DOUBLE STUD WALLS

WALL SECTION

- FSC CEDAR SHINGLES DIPPED IN FILTERED, BOILED LINSEED OIL.
- TYVEK HOUSE WRAP WITH ALL SEAMS TAPED.
- 1/2" CDX PLYWOOD SHEATHING, ALL SEAMS AND PENETRATIONS CAULKED.
- 2"x4" STUDS/FRAMING @ 24" O.C.
- 4"x12" PLYWOOD GUSSETS CONNECTING EXTERIOR TO INTERIOR WALL.
- 2"x2" INTERIOR WALL @ 24" O.C. CREATING A TOTAL WALL WIDTH OF 12".
- 12" DENSE-PACKED BLOWN CELLULOSE (R-45).
- 1/2" GYPSUM BOARD INTERIOR FINISH.
- 2"x4" SILLS ARE PRESSURE TREATED.
- CLOSED-CELL FOAM SILL SEALER ON A 14" WIDE COPPER TERMITE FLASHING THAT IS GLUED TO THE FOUNDATION.



MECHANICAL SYSTEMS:

- VENTILATION: LIFE BREATH 155 ECM HEAT RECOVERY VENTILATOR; 4 ACH-66 CFM CONTINUOUS, 1 ACH-155 CFM MAX.
- FRESH AIR FLOWS TO EACH BEDROOM IN 6" DUCTS (40 CFM EACH) AND TO THE LIVING ROOM (30 CFM).
- STALE EXHAUST AIR IS COLLECTED ENTIRELY FROM THE BATHROOM.
- HEAT IS GENERATED BY A FUJITSU 9RLQ MINI-SPLIT AIR-SOURCE HEAT PUMP, SEER 21, HSPF 11.
- HOT WATER PRE-HEAT: 2X STIEBEL-ELTRON 4'X8' FLAT PLATE COLLECTORS WITH GLYCOL CIRCULATED TO A HEAT EXCHANGER IN AN 80 GALLON STORAGE TANK.
- HOT WATER IS RAISED TO 118 F WITH A STIEBEL-ELTRON TEMpra 24 ELECTRIC ON-DEMAND WATER HEATER.
- COMBINED MICROWAVE OVEN & VENTING STOVE HOOD.
- ALL LIGHTS ARE COMPACT FLOURESCENT WITH 60% PIN-BASED.

RE-USED MATERIALS:

- ALL INTERIOR DOORS AND DOOR TRIM.
- KITCHEN SINK, FAUCET, COUNTERS (TILE) AND ISLAND (BUTCHER BLOCK).
- BATHROOM TUB, SINK, FAUCET AND COUNTER.
- FSC-CERTIFIED WOOD USED FOR FRAMING LUMBER, CEDAR SHINGLES AND KITCHEN CLIPBOARDS.



SLAB IS FULLY INSULATED



COMPACT CENTRALIZED UTILITY ROOM



ON-DEMAND WATER HEATER



SOLAR H2O PUMP STATION

