



EARTH-SHELTERED PASSIVE HOME		
Reference:	01	
Name:	Earth-sheltered Passive Home	
Climates:	Dry Climates Humid Middle Latitude Climates Continental Climates Cold Climates	
Occupants:		
Living area:	1587.72 ft2 147.50 m2	

Description:

Some have it that in the future, our resources will run so scarce that water will become the most valuable produce on the planet. Earth, on the other hand, is still one of the most abundant materials on the planet. Thus, water collection, treatment and conservation, together with the fine insulating properties of earth, provide the principles on which this ultimately passive solar design is founded.

Earth-sheltered buildings are best protected against extreme temperature variations, storms, earthquakes, noise and sadly, even military air strikes. With this in mind, as well as the passive design principles of internal heat zoning and compact planning (double-storey structure), was this EcoHouse designed. The living room, the kitchen, the dining room and the bedrooms all face maximum sunlight, whereas the secondary spaces spread along the part of the house which is fully sheltered by earth. Special emphasis has been put on the utility room to accommodate heating installations, but which can also be modified to serve as garage, storage, or a guest room accordingly.

The house could be ideally embedded into the sloping ground of a mountainous region, but can also be built on level ground of valleys and plains, since excavated earth could easily be bermed to cover the building on three sides. The windows oriented towards the sun attract maximum solar radiation during the cold season, but are also provided with external reflecting surfaces rigid insulating boards that are operated manually, which means that you can regulate the amount of sun needed throughout the day/year yourself, or shut them completely in the night, to store the solar heat collected during the day, thus acting like shutters.

The entire roof area can be used for planting vegetables or making a roof garden, thereby providing an independent food source to the occupants. Apart from that, an insulated vertical wind shaft, ending in a skylight, provides natural cross-ventilation and lighting of the living room and the bedroom above. At the foot of the skylight there is a food-chain pond, over which the airflow freshens up. The windcatch can be oriented to face the prevailing winds in your area.

The pond is envisaged to provide an additional home-made food source for the household: it is used for breeding algae, crayfish, and catfish. The softwater algae feed on crayfish excrement. The catfish eat the algae, and the occupants of the house, in turn, may eat the crayfish. Please bear in mind, that if you are a vegetarian, or would not readily support such a food chain under your own roof, you can always use the pond as an internal fountain, or an aquarium instead!

Masonry walls and foundations are made of recycled concrete blocks with recycled paper fillings. Recycled glass is used for floor insulation, as well. An insulating entry air lock has been provided, together with sliding doors with tempered, insulated glass. All windows are sliding, double-glazed, with the possibilities of the beadwall system inclusion.

Water-saving toilet seats and other water-saving sanitary equipment has been used throughout the project. All installations between the lower and upper floors run through a vertical service duct, which is also fully accessible for inspection and maintenance.

Areas:

Lower Floor Plan			ft2	m2	Upper Floor Plan			ft2	m2
Living			210	19.50963	Master Bedroom		200	18.5806	
Kitchen & Dining			122.5	11.3806175	Bedroom		122.5	11.38062	
Utility			200	18.5806	Bedroom		210	19.50963	
Entry			21.58333	2.005156417	Bathroom		55.55555	5.161277	
Store			31.33333	2.910960667	Master Bathroom		33.29167	3.092896	
Restroom			32.44444	3.014186203	Hall		38.19444	3.548378	
Laundry			33.29167	3.092895708	Windcatch/Lighting Shaft		24	2.229672	
Hall			75.52083	7.016111979	Service Duct		12.16667	1.13032	
Wardrobe			29.16666	2.709669749	Corridor		49.99995	4.645145	
Corridor			49.99995	4.645145355					
Pond			24	2.229672					
Service Duct			12.16667	1.130319833					
Total:			842.0069	78.22496541	Total:			745.7083	69.27854

FURNITURE AND EQUIPMENT

LOWER FLOOR				UPPER FLOOR			
ID	ITEM	DESCRIPTION	QTY.	ID	ITEM	DESCRIPTION	QTY.
C1	CBS3636	crnr base cab	1	FX1	60W32D	60"L Showertub	1
C2	BDR2436	base cab	1	FX2	30W30D	Handicap Toilet	1
C3	CW2430	crnr wall cab	1	FX3	18W18D	Elec. Water Heater	1
C4	WR2430	wall cab	5	FX4	36W36D	Corner 36x36" Shower	1
C5	WR2430	wall cab	1	FX5	17W26D	Bidet	1
C6	WR2430	wall cab	1	FX6	18W18D	Elec. Water Heater	1
C7	WR2430	wall cab	1	FX7	32W19D	Oval Free Standing	1
C8	WR2430	wall cab	1	FX8	48W5D	4' Bathroom Mirror	1
C9	WR1830	wall cab	1	FX9	32W19D	Oval Free Standing	1
FX1	30W30D	Handicap Toilet	1	FU1	60W13D	Curio Cabinet	1

FX2	17W26D	Bidet	1	FU3	24W12D	Clothes Hamper	1
FX3	33W33D	Corner Kit. Sink	1	FU4	80W84D	King Bed Contemp.	1
FX4	32W19D	Oval Free Standing	1	FU5	20W18D	2 Drawer	1
A1	19W24D	18" Elec. Furnace	1	FU6	20W18D	2 Drawer	1
A2	26W27D	Washer/ Dryer Combo	1	FU7	60W14D	16x60 Large Hutch	1
A3	25W26D	24" Elec. Range	1	FU8	30W19D	19" TV On Cart	1
A4	21W24D	Dishwasher	1	FU9	48W18D	48" Dressing Table	1
A5	11W24D	Trash Compactor	1	FU10	36W26D	48x32 Desk	1
A6	30W29D	30"L Ref/ Freezer	1	FU11	18W18D	Dressing Table Chair	1
A7	19W24D	18" Elec. Furnace	1	FU12	26W26D	Executive Chair	1
FU4	19W19D	Showcase Cabinet	1	FU13	36W20D	4-Drawer Chest	1
FU5	40W14D	14x40 Altar Table	1	FU14	36W36D	Yucca	1
FU6	34W34D	Corner	1	FU17	42W88D	Contemp. Long Twin	1
FU7	34W34D	Center Section	1	FU18	36W20D	2-Drawer Chest	1
FU8	34W34D	Center Section	1	FU19	47W24D	48x24 Desk	1
FU9	34W34D	Corner	1	FU20	26W26D	Swivel Chair	1
FU10	34W34D	Left End	1	FU21	36W20D	2-Drawer Chest	1
FU11	36W20D	Cabinet Wardrobe	1	FU23	47W24D	48x24 Desk	1
FU13	20W20D	20x20 End Table	1	FU24	7W3D	Wall Phone	1
FU14	20W20D	20x20 End Table	1	FU25	26W26D	Swivel Chair	1
FU15	7W3D	Wall Phone	1	FU26	38W44D	Fern	1
FU16	42W20D	Sitting Chair	1	FU27	42W88D	Contemp. Long Twin	1
FU17	19W19D	Bar Stool	1	FU28	20W18D	2 Drawer	1
FU18	36W17D	Swinger Floor Lamp	1	FU29	60W21D	Ent. Center Offset	1
FU19	24W24D	Corner Cupboard	1	FU30	48W18D	48" Dressing Table	1
FU21	36W22D	27" TV On Cart	1	FU31	18W18D	Dressing Table Chair	1
FU22	36W36D	36x36 Contemporary	1	FU32	26W64D	Chaise Lounge	1
FU23	21W40D	Rocking Chair	1	FU33	36W20D	Cabinet Wardrobe	1
FU24	24W10D	Wall Shelf	1	FU34	36W20D	Cabinet Wardrobe	1
FU25	23W20D	Components Cabinet	1	FU36	24W10D	Wall Shelf	1
FU26	12W12D	Cd Tower	1	FU37	48W17D	Ent. Center 15" TV	1
FU27	10W17D	Mailbox	1	FU38	36W20D	Cabinet Wardrobe	1
FU28	48W12D	4' Bookcase	1	FU40	36W36D	Yucca	1
FU29	22W2D	Desert	1	LS1	11 Small Flower	Begonia	1
FU30	36W36D	Yucca	1	LS2	11 Small Flower	Begonia	1
H1		cab door handle	9	LS3	12 Small Flower	Begonia	1
H2		cab drawer handle	1	LS4	13 Small Flower	Begonia	1
LS1	5' Large Flower	Dracan	2	LS5	5' Large Flower	Sansev	1
LS2	4'2 Large Flower	Spathin	1	LS6	5' Large Flower	Spathin	1
LS3	4'11 Large Flower	Spathin	1	LS7	5' Large Flower	Dracan	1
LS4	3' Small Shrub	Burnbsh	4				
LS5	3' Small Shrub	Rosemary	2				
LS6	3' Small Shrub	Polybal	4				
LS7	2'11 Small Shrub	Polybal	7				

Working Drawings Contents:

Type of Drawing:	Number of Sheets per Drawing:
Site Plan	1
Foundation Plan	1
Floor Plans	2
Upper Floor Construction Plan	1
Roof Plan	1
Section	1
Exterior Elevations	1
Vertical Circulation Details	1
Joinery details	3
Rainwater treatment details	1
Structural calculation	4
Specifications of Eco-building materials and products	Complete set
Materials List	Complete set
Roofing details	1
Wall details	1
Internal finishes details	1
Water Supply and Drainage details	1
Surface Water Drainage details	1
Landscaping details	1
Download Price (USD): \$ 460.00	
Complete set of printed plans + CAD files on business-card CD (USD):\$ 505.70	



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