

## MODULE 5 CHEAT SHEET

Key concepts and quick references from Environmental Design.

### PASSIVE SOLAR DESIGN

#### Orient South

Longest walls face south for maximum winter sun exposure.

#### Thermal Mass

Dense materials (concrete, stone) absorb day heat, release it at night.

#### Overhangs

Shade south windows in summer (high sun), admit winter sun (low angle).

#### Minimize West

West glass causes overheating — use small windows or shading.

### GLAZING BY FACADE

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|--------------|---|
| <b>South</b> | Largest windows — consistent sun, easy to shade.  |
| <b>North</b> | Soft even light, no direct sun. Studios, offices. |
| <b>East</b>  | Morning light — welcome and manageable.           |
| <b>West</b>  | Caution — low, hot afternoon sun. Shade needed.   |

### NATURAL VENTILATION

#### Cross Ventilation

Openings on opposite walls pull breeze through the room.

#### Stack Effect

Warm air rises and exits high; cool air enters low.

#### Night Flushing

Open windows at night to cool thermal mass for the next day.

### EARTH & INSULATION

#### Thermal Mass

Stone, concrete, brick store heat and smooth temperature swings.

#### Earth-Sheltering

Building into slopes uses soil as insulation on 3 sides.

#### Foundation Insulation

Rigid foam under slab and along perimeter cuts energy loss.

#### Geothermal

Ground-source heat pumps use stable earth temperature (50–60°F).

### TEXTURE EFFECTS

- ☐ Rough surfaces absorb sound; smooth surfaces reflect it
- ☐ Polished surfaces create glare; textured surfaces diffuse light
- ☐ Stone and tile feel cold underfoot; wood and cork feel warm
- ☐ Acoustic, luminous, and thermal effects are as important as looks

### EXERCISE CHECKLIST

- ☐ Window sketch with sun angles marked
- ☐ Earth-sheltered cross-section drawn
- ☐ Site map: wind, sun, shade, sound
- ☐ Room A vs Room B texture comparison
- ☐ Environmental Response Diagram completed