

Principles of Environmentally Sustainable Design

Fall Course - Class 3

Climate Level Considerations

Planning for the Worst, Preparing for
the Best

Climate Level Planning

- Regional Weather Patterns
- Seasonal Norms vs. “Extreme Conditions”
- 1 year / 10 year / 100 year flood planning
- “Following the flow” - Where are you in the river?
- Recovery Response - Supply Chain coordination / mediation
- Human Considerations

Regional Weather Patterns

- **Gulf Stream / Arctic Winds**
- **Rainfall vs. Drought**
- **Sunny Weather**
- **Seasonal Distortions – Hail, Snow fall, Tornado warnings**
- **Floods, Fires, Famine**

Seasonal Norms / Extreme Conditions

- **30” inches of Rainfall annually vs. 10” inches in one day**
- **Average temperature of 82 degrees vs. Record high of 110 degrees**
- **Good air quality except when Volcano releases toxic gases in stiff north wind!**
- **Hot sunny weather rots the landfill faster – Eeeew!**

Flood Planning

- **Where is the water expected to go?**
- **What makes the water rise?**
- **How can a rise in water levels be prevented?**
- **When are rising water levels inevitable?**
- **Where do we direct rising water levels?**
- **What is the difference between 1 year / 100 year flood levels?**

Where are you in the River?

FOLLOWING THE FLOW

Water

- Identify available Water resources
- Is rain catchment possible / is it 1st source?
- Well-water & backup systems
- How does your design respond to flood / draught conditions?
- Storage supply vs. capture ability
- Filtration & Purification

Heat

- Is heating system “flood-proof”?
- Is there a backup system?
- Identification of Supplier
- Location of Maintenance / Fuel Resources
- Are Alternatives available outside the flood plain?
- How secure is plan to keep residents / operations warm?

Roof

- Security – Can victims / residents be safely transported from roof?
- Is roof a viable temporary shelter?
- Does roof have safety / rescue features
- Is roof durable / weatherized

Disaster & Continuity Planning

SUPPLY CHAIN COORDINATION

Resources

- Food / Water / Fuel – How available are these resources – before / during / after events?
- Maintenance & Repairs – Where are perceived weaknesses? What can be done to address immediately these weaknesses? What outside resources are required?
- Management & Operations – How is traffic directed during crisis? What is plan for managing crisis? What is re-instatement plan?

After the waters recede

- How quickly can clean up be achieved?
- What is waste removal plan?
- What is Repair & Renovation plan?
- How will materials & supplies be coordinated?
- What is expected “down-time” vs. “up-time” projection for 100-year flood
- What is “Last Resort” plan?

Response to Climate Events

- Protection
- Prevention
- Adaptability
- Isolation
- Upstream Perception
- Refuge Location
- Key Point for Supply Transfer

Chaos & Calm

HUMAN CONSIDERATIONS

The “KISS” Theory

- The “KISS” Theory relies upon the principle that people can only focus on one thing at one time – hence – Keep it Simple
- How does Design affect the KISS Theory?
- How does Climate Events affect the KISS Theory?
- What preventative measures have been put in place to further strengthen the KISS Theory?

Path of Resistance

- In the event of disaster, human beings will naturally tend to seek “shelter” or “safer” conditions – how does your design lead them effectively to safety or better protection?
- What measures of resistance have you placed in your design to prevent human calamity?

Bio-Mimicry

- What are the natural patterns to habitat in disaster?
- What preventative measures have been put into place to absorb “extreme conditions” without overwhelming the surrounding terraform?
- How are living species directed by the natural environment during disaster?

After the Storm

- What is the measure of response to “Post-Event” Sustainability?
- How will your building adapt to the after-effects of “extreme conditions”
- What should be the expected timeline for a return to normalcy?
- How should human beings react to these adverse conditions?

Psychological Insurance

- Does your design support Climate Level Response?
- What feelings do you want your design to provide?
- How will environmental considerations influence feelings in your design?
- What are the visible advantages in your design to secure “post event” success?