case study

PAISANO GREEN COMMUNITY
HOUSING AUTHORITY OF THE CITY OF EL PASO

presented by

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WORKSHOP8 architecture | planning | design

going green. intelligent investments for public housing — 12 April 2011
project design - site context

international border crossing

zoo
coliseum

water treatment facility

Housing Authority of the City of El Paso
project design - existing structures
Boone Avenue

Paisano Drive
project design - canopy wall

Boone Avenue

Paisano Drive
project design - canopy wall
project design - Boone Avenue residences
project design - community building
project design - aerial view
climate

302 days — 3,715 hours — of sunshine per year

sun shines 83% of daylight hours

average rainfall — 8 inches per year

strong winter winds from the West
project design - passive strategies

well insulated building envelope
  • Roof - R-38
  • Wall - R-24

tight building construction
  • NACH < .1/hr

heat recovery systems
  • HRV/ERV
    • Constant filtered fresh air
    • Necessary for extremely airtight home
    • Low maintenance
    • Very low noise
    • Provides extremely high efficiency heating and cooling
    • Reduces Allergens
    • Reduces Toxins
solar orientation
- windows oriented south and north
- limited windows facing east and west
- minimize summer heat gain
- maximize winter solar gain
- proper shading on all east and south glazing
project design - natural ventilation

- deep overhangs provide summer shade for all glass
- high albedo roof surface minimizes radiant heat gain
- exhaust hot air off ceiling of living spaces
- exterior balconies reduce conditioned space
- sunshades with light shelves on tall windows
- shaded outdoor living space
- through ventilation for all units
- high ceilings get summer heat away from living zone
- ceiling fans redistribute heat in winter

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project design - renewable energy

solar photovoltaic
• residential roof mounted panels
  • 640 panels
  • 155 KW
• community building canopy roof
  • 126 panels (expandable to 240)
  • 27 KW (expandable to 50)
wind

- 2 horizontal axis turbines
- 10 KW each
- 12’ radius (blade length)
- 60’ tall (rotor)
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air source heat pump water heater

- new technology
- 2 to 3 times more efficient in creating hot water
- works like a refrigerator in reverse
- takes air out of the interior space and puts it into water - reducing air conditioning loads
LEED for Homes

- Home size adjustment lowers Platinum threshold to 81 points
- Targeting 90 points (without solar)

**Strategies**
- Energy efficiency (23 pts)
- Water efficiency (15 pts)
- Healthy living spaces (10+ pts)

Enterprise Green Communities

- Aligned with LEED Homes
- Prescriptive system
- Targeting 91 points (need 35)

**Strategies**
- LEED Homes Certification (6 pts)
- Utility efficiencies (6 pts)
- Site selection (13 pts)
phase 1 residential:

**base residential costs**  $7.9M  $161/sf
including site improvements

**place sensitive costs**  $1.9M  $39/sf
canopy wall, single loaded structures,
deep south wall, high ceilings

**extend to net zero costs**  $1.1M  $22/sf
solar photovoltaic system, air source heat pump
water heaters

**total cost**  $10.9M  $222/sf
lessons from the field
working with HUD

- HUD commitment and assistance
- Revisions to the NOFA
lessons from the field
design competition

• a vehicle to obtain great design

• multiple design ideas in a short period of time

• engage the experts when assessing talent and ability

National Green Design Competition
For Innovative Designs in Affordable Housing
Two Stage (3 Prizes $25,000 each)
Solicitation No. ARRA 10-R-0301
5 February 2010

The goal of HACEP is to create a spectacular international-quality integrated housing development, showing the latest and highest quality sustainable design practices, and optimizing the environmental impact of our operations. HACEP has launched this architectural competition to design cutting-edge social housing for El Paso. We are seeking the participation of design firms to develop a new exemplary architectural design for affordable family housing.

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lessons from the field

**funding progressive ideas in building**

- TDC/HCC are not tailored for green construction
- Use multiple funding sources
- Capturing the value of renewable energy and putting it to use
lessons from the field

project team

• create a strong team with good synergies

• engage the general contractor with the design team early in the process

• support team communication
lessons from the field

design commitments

as part of the NOFA

• have your design team in place early in the process

• understand design commitments and their appropriateness to your project
lessons from the field

HUD timeframes

- grant time constraints

- GMP contract on partial construction documents

- VE occurs during the design process not after the design process

- electronic access for tight timeframes for procurement
lessons from the field

**partnership with the city/ intergovernmental agencies**

- the city should be your partner

- entitlement and plan review processes are challenging given the tight time constraints

- see the project within the larger urban fabric
lessons from the field
working with public utilities
on green technologies

• net metering for net zero

• rate structures are critical

• coordination must start early

• overcoming disbelief
lessons from the field

community education

• PHA

• residents

• the community at large
lessons from the field

community commitment

• changing the paradigm of building for the community