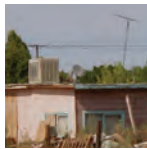


CHAPTER SIX

Building Sustainable Housing in colonia Border Communities



Building sustainable housing results not just from informed and appropriate technical choices in the design of layout, orientation and envelop of buildings, but also from putting contextual, systemic and institutional aspects of housing, such as land tenure, home ownership, finance, infrastructure, services and transportation in place. Even in this era of globalization, where the dominant economic force in communities is the private sector, government at all levels must play a key role in facilitating the access of poor families to finance and land (Smith, 2006). The El Rincon community's aspirations for land rights where they have located proximate to jobs, city amenities and schools, is a universal one expressed by poor families who move to the city for economic opportunity. As Smith point out, markets alone will never satisfactorily house a nation's poorest citizens. Building spontaneous communities such as El Rincon consisting of self-built or informally built homes, Smith argues, is the economically sensible option of the poor, left alone in the marketplace to find housing. And, he notes, it has been this way for over two centuries. If one is to improve the conditions of housing for those living in these settlements government must respond. Policy and regulation must deal with the issue of access to land and finance in ways that are enabling of the poor.

A MEXICAN AND U.S. CHALLENGE

The need for access to affordable, decent, housing and security of tenure, which the tiny El Rincon community has attempted to attain with little success, is a critical issue not only on the Mexican side of the U.S.-Mexico border but on the U.S. side too. In a special issue of *Planning* (December 2006) a magazine of the American Planning Association (APA), dedicated to the theme "Housing Choice and Affordability", Paul Farmer, Executive Director of APA reminds the planning community that the

HOUSING IN COLONIA DESIGNATED COMMUNITIES IN YUMA COUNTY, ARIZONA.



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Building Sustainable Housing on the U.S.-Mexico Border

Hemalata C. Dandekar

HOUSING IN COLONIA DESIGNATED COMMUNITIES OF IMPERIAL COUNTY, CALIFORNIA



NILAND CALIFORNIA



SEELEY CALIFORNIA



BOMBAY BEACH, CALIFORNIA



Figure 53: Pictures of Housing in Yuma County, Arizona and Imperial County, California

Source: Melina Dempsey

Congressional pledge of 1949 to create a decent home for all Americans is still unmet and there is a need for the planning profession to respond with creativity. The special issue describes encouraging efforts across the country. They include architect Teddy Cruz's application of south-of-the-border concepts to U.S. housing in San Ysidro, a lower income district in San Diego close to the border and dominated by immigrant families (Downey, 2006). The two projects by Cruz for family and senior housing have yet to obtain required zoning changes to build at the higher densities and lower parking provision they are designed to provide. But Cruz argues for a higher density that brings people together. He argues against the prevalent low density of the U.S. suburb describing it as helping to build impenetrable walls between people and separating them on income lines. The non-profit advocacy group Casa Familiar partners with Cruz and has suggested an overlay zones for affordable housing as an approach, partly to cope with nonconforming uses and partly to enable construction of new units of affordable housing.

The Census 2000 data on housing stock and income levels in Imperial County, California and Yuma County, Arizona bordering Mexico reveal other aspects of the housing need. In these counties the total Hispanic origin population is 72% and 51% respectively of total population; Population below poverty is 23% and 19%; and Hispanic or Latino population below poverty is 26% and 39%. The counties have a homeownership rate of 58% and 72%. There is thus a bleak reality of poverty and housing need in the northern, U.S. side of the U.S.-Mexico border region as well as to its' south. This fact is reflected in the housing stock to be found in the settlements which have been designated as *colonias* in the two counties. As designated *colonias* they are eligible for federal funding under the *colonia* program. In Arizona this consists of 10% of Community Development Block Grant (CDBG) funds are set aside for *colonias*. However, Arizona has not created a specific program structure through which to allocate funding directly to the *colonias* (Dempsey, 2005)

As a photo documentation and windshield survey (July 2005) reveals housing in *colonia* designated areas of Yuma County, Arizona and Imperial County, California illustrate how housing conditions north of the U.S.-Mexico border are not dissimilar to conditions South of the border in settlements such as El Rincon (Figure 53). Overall the houses are relatively of better stock, consisting of relatively newer manufactured homes and better recycled materials. But these homes are by no means high in comfort, energy efficient or good demonstrations of sustainable construction. The older manufactured homes that are in place have little in the way of passive systems of climate control and are energy consuming for heating and cooling functions. A filtering down process is apparent where recycled construction materials, manufactured homes, heating and cooling equipment move to the U.S. side of the border and then across the border at later stages in their life cycle, when they are even less effective in efficiently providing climate control and shelter.

THE NON-PROFIT SECTOR

The non-profit sector in the U.S. has been active in seeking solutions to meet the immediate needs for housing of families in poverty conditions. For instance they have partnered with and provided support and technical assistance to community groups and individuals involved in self-building of homes. Building homes quickly and simply on a low budget using sustainability principles has been another strategy demonstrating an approach and providing know how. One example of this is to be found on the web site of Necessary Housing where one can find a video of the three-day house built in Mexico, with labor input of six workers. (Necessary Housing: 2006.) The Green Home Building and Sustainable Architecture web site features articles that emphasize sustainability approaches in building housing and Builders Without Borders construct demonstration homes in various parts of the world. Thus the non-profit sector is extremely important in enabling poor communities to organize and in guiding them to good and reliable technical information and professional support. These organizations embrace the

approach to sustainable housing construction to varying degrees.

PRIVATE SECTOR HOUSING

The fact that there is a real and growing need for housing that is accessible and affordable for those in the lower strata of incomes has not escaped the attention of the private sector. Private sector housing developers building in the Tijuana-Tecate region are constructing a large number of units of “workforce” housing. These companies, some of who are constructing housing on the edges of the Tijuana fringe close to Tecate and on the edges of Mexicali, are building densely packed terrace and row housing with little or no yards, landscaping, nor any apparent effort to design in passive climate control. There is a significant opportunity for influencing outcomes here. The private construction sector may be induced to build sustainably by providing technical know-how and also subsidy/incentives for using passive energy conserving materials and design. Private developers as a group are in a position to implement the theoretic approach and design guidelines developed in academic research into market driven housing. One way to bring in this community might be through demonstrations of design effectiveness and provision of supportive data on energy sustainable housing units developed as prototypes.

In this context the Stardust Center for Affordable Homes and the Family, Arizona State University has constructed two prototype houses which are designed on principles of passive energy efficiency. The demonstration houses can potentially provide carefully collected data on efficiencies gained through building with sustainable, passive energy conservation in mind. The housing prototypes are suitable for the U.S.-Mexican border region. They were built through engagement of ASU faculty, student teams, and community providing input and participation in construction. The ongoing monitoring of these prototypes promises to yield good information on energy efficiency and design utility. This evaluative data on these prototypes promises to be applicable and useful in approaches to housing construction in the U.S.-Mexico border region

as they have been designed for similar climatic conditions, and social/cultural contexts.

PROTOTYPE HOUSES

The Stardust Center for Affordable Housing and Families at ASU states the following about the Nageezi home.

“The Stardust Center’s first design/build project, the Augustine residence, was completed in July of 2005 for a Navajo family of elders on allotted land of the Navajo Nation. It was intended as a model of affordable, sustainable and culturally responsive housing. The project was designed and built with the participation of Navajo students in the ASU College of Design and evolved into a partnership with the Navajo Housing Authority. The house was the first house built on the reservation using Navajo Flex-Crete, an aerated flyash concrete block produced by the Navajo Nation, and the design responds to the climate and culture of the Navajo people. The project is being monitored remotely by the Center for one year to determine its climatic performance. Thus far the home is meeting or exceeding predictions and demonstrating a 60 percent reduction in energy use than if the home were built with conventional materials. The Center is working with Indigenous Community Enterprises to build thirty similar homes on the reservation.”

The Stardust Center for Affordable Housing and Families at ASU states the following about the Guadalupe House:

“The 2006 Design/Build project is being build in partnership with Guadalupe YouthBuild and a construction team that includes volunteers and ASU students. The design, developed in a workshop process involving community members, accommodates a multi-generational household and allows expansion for the future. The traditional courtyard design minimizes energy use through the use of passive solar heating and cooling techniques, day lighting, a photovoltaic system. Navajo FlexCrete aerated concrete walls and a structural insulated panel roof provide a desert-responsive enclosure. The project is

designed as an infill prototype for the Town of Guadalupe, and will be built on multiple sites by the YouthBuild program and Self-Help program.”

On a similar note California State Polytechnic University’s departments of Architecture, Landscape Architecture and Lyle Center for Regenerative Studies in the College of Environmental Design have developed a prototype house for Tijuana. To be built in the grounds of the Lyle Center, the design emphasizes the use of local materials and technology appropriate for the cultural and economic conditions of the community in Tijuana. These include inexpensive solar heating systems, waste and water systems. The plan is one that allows for incremental growth with additions of rooms moving it from a single room with toilet to a U shaped layout with multiple bedrooms and a flexible layout. Mate-

rials with high thermal capacity are used for passive heating and cooling. (La Roche et. al.:2006)

A prototype house designed for the El Rincon settlement would have involved community and been developed on site with the residents of the settlement. Since the community was not successful in obtaining land rights this component of the research remained incomplete. A simulation of a possible design for this community (Figure 56) reflects housing which is higher density, designed for passive heating and cooling, allow for incremental build out, and landscaped for water conservation and climate control. The simulation illustrates that the sustainable housing that might evolve on the railroad right of way would be aesthetic, appropriate to the context and sustainable.



Figure 54: Prototype House, Navajo Reservation in Nageezi, New Mexico
Figure 55: Prototype House Guadalupe, Arizona

Source Figures 54 & 55: The Stardust Center for Affordable Housing and the Family, ASU



Figure 56: Simulation of a Prototype Design for El Rincon

Source: Claudio Munoz Whiting

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Housing
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