What's in a Bus Shelter?

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This project was a commission to design, fabricate and install two regionally specific custom bus shelters that would comprise the transit center for the new Civic Center in the Town of Marana, Arizona. The project was delivered by the students, faculty and staff of School of Architecture at the University of Arizona.

Decentralized urban environments are ubiquitous in the United States. They are socially, environmentally and economically challenged. Decentralized urban environments are automobile dependent, inhibiting sustainable means of transportation such as pedestrian, bicycling and mass transit. While a few urban environments are beginning to implement smart growth strategies such as growth boundaries, most are not. A pragmatic, less ambitious, strategy suggests improving the decentralized urban condition incrementally, dimension by dimension. Can public transportation, in decentralized urban areas, be rendered more sustainable by increasing ridership, beyond the transit-dependent, by appealing to choice-riders?

The Town of Marana is positioned on the northern edge of the Tucson metropolitan area, which is the southern terminus in the megaregion known as the Arizona Sun Corridor. The Town of Marana, with a modest current population of 35,000, over the past two decades, has annexed great swaths of unincorporated land along interstate I-10 northbound to Phoenix. Despite the recession, Marana remains one of the fastest growing communities in the nation and it is decidedly decentralized. Because its development is impending yet emerging, opportunities are abundant to amend planning mistakes that plague established decentralized urban areas. These include establishing improved sustainable practices for public transportation infrastructure.

Existing bus shelters designs adopted by the local transportation authority are designed exclusively about economy or vanity and universally fail to consider the comfort of the occupants in regard to the extreme environmental conditions of the region. The transit-dependent ridership is perceived as tolerant; but when queried they express a strong desire for solar mitigation and expansive roofs to offer better protection from the rain. Many riders claim to miss their bus because they seek shade behind nearby utility poles, trees and buildings rather than sun-drenched bus shelters. This project aspires to instill dignity in decentralized public transportation in a hot arid environment, initially at two locations for the current transit-dependent ridership, but also as a new regional paradigm that might appeal to choice-riders.

The shelters are designed to mitigate the extreme environmental conditions endemic to the region; seasonally high temperatures, intense sunlight and torrential downpours. They utilize a horizontal louver system calibrated to eliminate early morning and late afternoon solar exposure between the vernal and autumnal equinoxes. The louvers are configured in varied densities; wider and deeper to optimize seated and standing occupant vistas. The louvered enclosure systems minimize vertical surfaces typically prone to graffiti and facilitate a sense of security for the occupants as they eliminate concealed spaces. The two shelters were designed by a student/faculty team and were fabricated by students, staff and faculty. The east shelter encompasses the sidewalk, requiring pedestrians to walk through the shelter. The west shelter is compact and justified to the street edge.

the DECENTRALIZED URBAN condition

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MARANA arizona

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P A R A D I G M

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s t r a t e g y

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D E L I V E R Y

The project was designed by a faculty/student team; the shelters were fabricated by a material fabrication course.

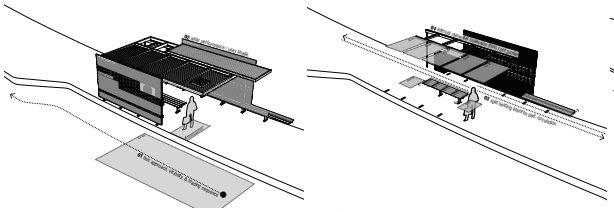
what's regional SPECIFICITY in a social DIGNITY bus shelter? environmental PERFORMANCE

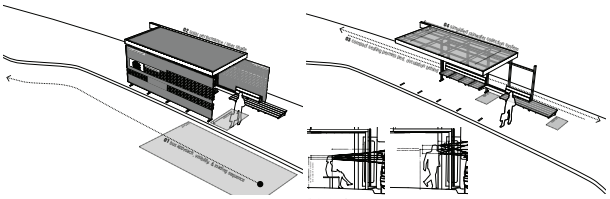
E A S T s h e l t e r

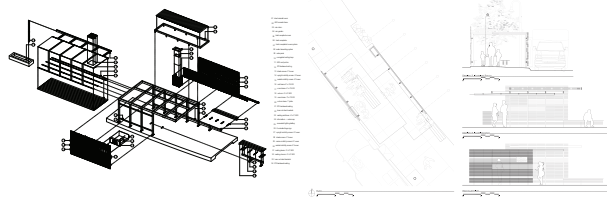
The east shelter spans the full breadth of the public right-of-way, encompassing the pre-existing sidewalk and pedestrian traffic. The shelter roof is comprised of a hard opaque area that offers shade from the midday sun and collects water which is channeled via a series of troughs to a primary gutter and a rain chain; the roof also includes a louvered plane that extends southward to mitigate specific solar conditions while exposing the water harvesting system and filtering views of the sky.

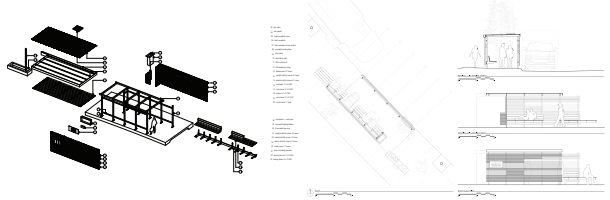
W E S T s h e l t e r

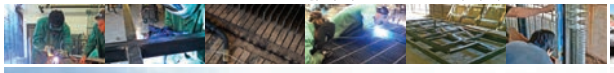
The west shelter is compact and justified to the street edge, accommodating pedestrian passage behind the shelter. The compact design is naturally conducive to providing shade to the occupants during critical solar conditions; a more condensed space requires smaller shading surfaces. The enclosed space also brings the occupants closer to the louvered visibility screens rendering their performance more critical; maximizing rider/driver visibility while mitigating solar exposure.

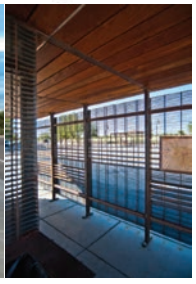












Urbanism