

**design thesis [ 6 th year graduate] Spring 06 : " Indian reservation revamp" Alissa Piere, Cunningham Medal finalist / best thesis for its comprehensive consistency from the general to the specific / tectonics ( selected by faculty and local AIA ) / University of Nebraska USA**

editing publication of mentored student work: *templates draft for layout terminal project spring 2006 Alissa Piere in the AIT magazine 7 / 8 2006*

# Student

## Indian Reservation Revamp

Alissa Piere

This project investigates the current housing challenges of the Winnebago Indian Reservation located in Northeast Nebraska, USA. It investigates prototypical solutions which address many of the social and cultural issues that are currently being ignored in new developments built by the United States government.

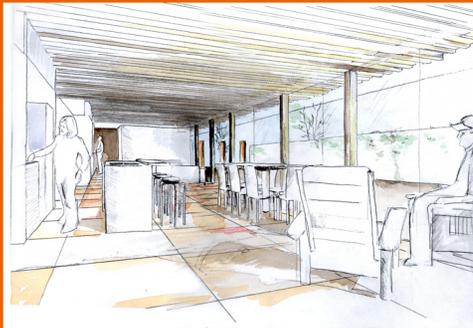


Ceramic Site Model



As a master's student at University of Nebraska, I wanted to focus my final thesis project on a subject that was very close to my childhood. Growing up on an Indian reservation was a very unique and cultural awakening experience for me being non Indian. I have found the quality of life on the reservations in Nebraska to be very unsatisfactory compared to mainstream American lifestyle. The United States has an obligation to provide safe, decent and affordable housing to its Native people; however the housing on reservations is substandard in comparison to housing nationwide. The guidelines and regulations that are used for Native American housing are based off economics, and little government money is spent on tribal research and culturally sensitive architecture. My Thesis investigates a housing typology that could replace the Winnebago's current housing system to improve their over all quality of life.

After months of research and working through many possible solutions for the tribe I developed a system that not only was a prototype for individual houses, but for small community clusters, which I called "mini communities." This was based off the tribe's historic housing model of a longhouse. The design also mocks the historical arrangements of tepees where the tribes would surround a protective community space. This design does the same by protecting an outdoor community space with the houses themselves. This is meant to be a safe space where children can play under the protection of the community.



Living Area Watercolor

Due to the extremely low income rates of the community, it is crucial that the houses are energy efficient. To achieve this, the design utilizes a passive house system. The mini community plan is arranged in accordance with the sun, so that each house has a long south facing wall. Passive solar energy is stored in an earth colored concrete slab which is enhanced with water pipes. The temperature is then regulated with the use of highly insulated materials on the remaining surfaces.



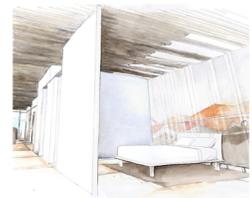
Mini community Model

Each house is designed with a straw bale wall facing the North. This wall's main purpose is to act as a super insulator for the passive house concept. The straw wall also acts as a social mechanism to unite the community members during the construction of the houses. The straw bale wall section model shows the straw sitting on the foundation, with an interior treatment that is unusual to most straw buildings. Because all the bedrooms are located next to this north wall, the design again refers back to the interior of a tepee. The straw wall is stretched with a canvas material. The canvas is at an angle toward the wall replicating that of the tepee. The lighting for the room is incorporated inside the wall. This creates a very soft "sleepy" light. Light also floods into the room through a "moonlight" in the ceiling.



Wall Section Model

The ceiling material refers back to the historical application of burning wood to create arrows. The structural component of the ceiling is heat modified wood. This creates a large amount of thermal protection as well as creating an interesting texture and variable color.



Bedroom Watercolor

The prototype will soon be presented to the Winnebago Tribal Housing Authority. The goal is to make the community aware that it is possible to create a culturally sensitive prototype that can improve their over-all quality of life on the reservation.



Courtyard Space Watercolor

Hochschule: University of Nebraska, USA College of Architecture  
Betreuer: Assistant Professor Dipl.-Ing. Architekt BDA Martin Despang, and  
Assistant Professor Zeynep Kezer.  
Entwurf: Alissa Piere

Liebe Studentinnen und Studenten,

wir möchten zukünftig noch mehr studentische Projekte zeigen.

Stellen Sie uns Ihre Arbeiten vor! Es kann sich dabei um Semester-

projekte, Vordiploms- oder Diplomarbeiten von Gruppen oder

Einzelpersonen handeln. Wir benötigen zur Voransicht Angaben

über Aufgabenstellung, Entwurfsverfasser und Betreuer, PC-kompa-

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# Studenten-Werk



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## Indian Reservation Revamp

Hochschule: University of Nebraska, USA College of Architecture  
 Betreuer: Assistant Professor Dipl.-Ing. Architekt BDA Martin Despang, and Assistant Professor Zeynep Kezer. Entwurf: Alissa Piere

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Due to the extremely low income rates of the community, it is crucial that the houses are energy efficient. To achieve this, the design utilizes a passive house system. The mini community plan is arranged in accordance with the sun, so that each house has a long south facing wall. Passive solar energy is stored in an earth colored concrete slab which is enhanced with water pipes. The temperature is then regulated with the use of highly insulated materials on the remaining surfaces.

Each house is designed with a straw bale wall facing the North. This wall's main purpose is to act as a super insulator for

**1. Watercolor of interior living space with heat modified wood ceiling.**

**2. Ceramic model depicting entire site. The "Mini Community" clusters are organized over the prairie.**

**3. "Mini Community" model. Shows example of one possible prototypical solution.**

**4. "Mini Community" floor plan. The dark black lines indicate the straw bale wall. The drawing also shows the outdoor shared community space.**

**5. Watercolor showing view from outside the prototype. The garage door, and operable fence are designed using corten steel.**

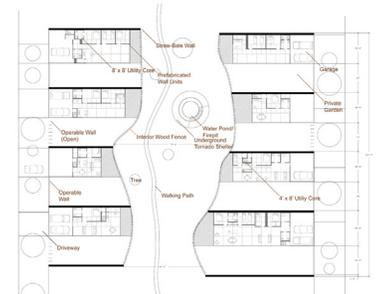
**6. Model with samples of corten steel and concrete with ground stone (used in floor slab).**

**7. Wall section model of bedroom (North) wall.**

**8. Wall section drawing showing bedroom (North) wall.**



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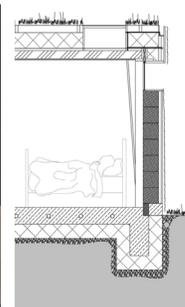
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the passive house concept. The straw wall also acts as a social mechanism to unite the community members during the construction of the houses. The straw bale wall section model shows the straw sitting on the foundation, with an interior treatment that is unusual to most straw buildings. Because all the bedrooms are located next to this north wall, the design again refers back to the interior of a tepee. The straw wall is stretched with a canvas material. The lighting for the room is incorporated inside the wall. This creates a very soft "sleepy" light. Light also floods into the room through a "moonlight" in the ceiling.

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publication of mentored student work: terminal project spring 06 Alissa Piere in the AIT magazine 7 / 8 2006 positioned among international student work.



### Indian Reservation Revamp

Kulturell sensibles Siedeln in Indianerreservaten

Alissa Piere wuchs selbst in der Nähe des Winnebago Indianerreservates auf und empfindet die Wohnsituation dort mehr als unbefriedigend. In ihrer Masterthesis untersucht sie eine Wohntypologie, die die derzeitigen Unterkünfte in Winnebago ersetzen und die gesamte Lebensqualität steigern soll. In Analogie zur historischen Siedlungsform der Indianer in Langhäusern entwickelt sie als Grundstein der Gemeinschaftsunterkunft einen Prototyp für kleine Wohngemeinschaften, mini communities genannt. Ebenso wie früher von Tipis umfasst Alissa einen gemeinsamen Außenbereich mit ihren mini communities. Um eine größtmögliche Energieeffizienz der Gebäude zu erreichen, entwickelt sie ein Passivhaussystem und orientiert die communities so zur Sonne, dass jedes Haus eine große verglaste Südfassade besitzt. Die hier gewonnene Solarenergie wird in einer erdfeuchten, von Wasserrohren durchzogenen Betonplatte gespeichert. An den übrigen Außenflächen werden hochdämmende Materialien eingesetzt. Jedes Haus hat an der Nordseite eine starke Isolierwand, die sich als lineares Verbindungselement der Einzelhäuser fortsetzt. Alle Schlafräume liegen, entsprechend dem Tipigrundriss, an dieser Wand, die mit Leinen überspannt ist. Belichtet werden die Schlafräume indirekt und somit sehr sanft durch die Stoffbahnen an Wand und Decke. Die Dachkonstruktion ist massiv, Bezug nehmend auf die traditionelle Bogenherstellung, aus thermomodifiziertem Holz. Diese Brettstapeldecken dienen einerseits der Dämmung, andererseits sorgen sie für warme Oberflächen und Licht. So liefert diese Arbeit eine kulturell sensible, praktikable Alternative zum Bestand.

Entwurf: Alissa Piere  
University of Nebraska, USA, Department of Architecture  
Betreuung: Ass. Prof. Martin Despang; Ass. Prof. Zeynep Kezer

### Home Delivery

Wohnraum, flexibel zu konfigurieren

Alleine zu wohnen ist ein Stück Unabhängigkeit. Kann man seinen Wohnraum noch individuell gestalten und einrichten, bleibt man darüber hinaus jedoch innerhalb des Grundrisses meist eingegrenzt. Um diese Struktur aufzubrechen, entwickelt Jan Domin ein flexibles Wohnsystem. Er reduziert die einzelnen Wohnfunktionen auf ein Minimum und teilt sie in einzelne Funktionsstreifen, von denen er eine große Vielzahl anbietet. Grundmodul ist ein Basis-Unit, das auch autark installiert werden kann. Dies funktioniert mit Hilfe von Fotovoltaikmodulen sowie Frisch- und Abwassertanks, die bei Bedarf regelmäßig von Home Delivery erwartet werden. Zur Optimierung des Transportgewichts bestehen alle Elemente aus mit Epoxidharz versiegeltem Styropor®. Der Innenraum wird durch Paneele gestaltet, die mit Schraubverbindungen an den Elementschalen befestigt sind. Sie sind mit den verschiedensten Materialien, Grafiken und Farben belegt, um der jeweiligen Nutzung gerecht zu werden. Durch Addition verschiedener Ergänzungsstreifen – die auch wieder zur Stromerzeugung gerüstet sind – an das Basis-Unit kann sich jeder Nutzer eine individuelle Wohnraumkomposition konfigurieren. Das Liefersystem Home Delivery basiert auf dem Prinzip von „order and delivery“. Über Showrooms und Internet kann man sich über sämtliche Funktionsstreifen informieren und die gewünschten bestellen. Geliefert werden die Elemente an die vorgesehene Fläche oder das bereits bestehende Basis-Unit, wo sie der Nutzer selbst zusammenfügt. Streifen, die der Nutzer nicht mehr haben möchte, werden zurückgenommen und nach Reinigung wieder allen zur Verfügung gestellt.

Entwurf: Jan Domin  
Fachhochschule Mainz, Fachbereich II, FR Innenarchitektur  
Betreuung: Prof. Antje Krauter, Dipl. Ing., Katrin Mohr