LIGHTING

Daylight and Electric

Careful consideration has been given to the integration of daylight, electric light, and the consequences relative to energy conservation, spatial quality, and nighttime identity. The most prominent feature of the lighting system is the underside of the roof. It reflects daylight and fluorescent light and drops it into the space with a quality of falling snow. A second light is admitted through the clearstory in a selective manner. Slots of sunlight will wake the bedroom in the morning and rest in the living room towards evening. Summer sun will be blocked on the south façade and the interior wall of the north core will be bathed in sunlight during winter afternoons. A third softer light is created by translucent wall panels. This highly insulated wall acts as a dematerialized surface, holding a glowing light similar to that of a Japanese pagoda. A distinctive night image is physically and symbolically established as the energy of the day is collected and radiated back through the lantern glow of the house.

A collar beam running throughout the house is a key architectural element. As a datum line that cuts the verticality of the columns before they touch the ceiling, it plays a critical role in setting the scale. It is the functional and aesthetic equivalent of the Shaker pegs and helps define the rooms within the larger volume. Serving as a horizontal wire chase, it houses T-5 fluorescent tubes with dimmable ballasts that provide the overall ambient lighting. These uplights employ the ceiling as a reflector to drop light into the activity areas. It is a high quality even light that uses very little energy. The warmth of the maple on the center core wall, the Lyptus (eucalyptus) floor, and the color of the cabinetry on the north core interior help balance the fluorescent color.

Low voltage incandescent lights support various tasks, As warm pockets in the fluorescent field, they create a sense of a larger space. Special surfaces such as the intricate Interlam panels (located in the office, entertainment and TV alcoves) are lit to create dramatic effects of art that align with the theme of technological application of materials and processes. Exposed low voltage lines are strategically placed (reinforcing the scale set by the collar beam) to support activities at the required light levels. All lights are on dimmable switches easily accessible near the entry of in the center of activity areas. Furthermore, daylight and occupant sensors reduce lighting use when not required.

As the fluorescent up-lights in the collar beam hit the ceiling underside, light will also spill to the outside of the house by reflecting off the white reflective soffit. Security will be established without the use of exterior fixtures. The donor wall light will serve to illuminate the entry further, and an LED house number will glow nearby throughout the night.

Research was conducted regarding the use of LED's for overall lighting. It was found there was less energy draw with fluorescents to achieve the same overall lighting requirements. However, LED's are used efficiently for special effects. Within the translucent wall assembly, LED fixtures allow the possibility to change the wall to any color. This is particularly effective when in party mode and for the marketability of the house, but also plays significantly regarding research on the psychology of space. Alteration of color makes the house different in the traditional sense of changing furniture or repainting. In addition, studies indicate color affects one's sensitivity to temperature and space, thus blue might be employed to cool the hottest summer nights. Over time with iterative use, the occupants may discover that certain color combinations affect their mood or that of their spouse, thus pre-empting the build-up of tension and increasing the quality of life.