LEO CASE STADY

Leo, a 300-year old cottage located in Stanhoe, a small farming village in Norfolk, was remodelled and extended with the brief to create a comfortable holiday home without erasing the spirit of the place. The new extension had to find a common language with an old cottage and its surrounding without becoming a pastiche.

The design was inspired by the original cottage as well as the flint walled barns and ancient churches of Norfolk. Natural light, materials' honesty and re-connection with the ground were the basis of all design decisions. Re-learning to live with nature the way our ancestors knew was at the art of this project.

Greek philosopher Xenophanes wrote: "In houses with a south aspect, the sun's rays penetrate into the porticoes in winter, but in the summer the path of the sun is right over our heads and above the roof, so that there is shade. If, then, this is the best arrangement, we should build the south side loftier to get the winter sun, and the north side lower to keep out the cold winds."

The strategy was to relate all design decision to the buildings location and its microclimate. We set out to achieve this through orientation, massing and layout, utilising the passive solar heating, daylight, natural ventilation and also, by using sustainable building materials and construction techniques. Positioning, sizing and detailing of the windows were very carefully considered so to maximise the benefit of exposure to the sun while avoiding overheating in summer and heat loss in winter. "Rooting" the building two steps down from the front ground level and utilising the even higher ground at the north nested the building cosily into its surrounding.

Heavy massing and low profile of west elevation were chosen to minimize the harsh effects of prevailing south-western winds and to maximize passive thermal gain. The north elevation is using a natural slope to provide sheltered envelope and help further reduce energy loss.

The layout and landscape were organized so that life of and within the house follows the sun, allowing natural relationship with the environment and creating visual comfort without compromising on the environmental comfort. The kitchen was placed to enjoy the morning sun and living space opens to views of the sun moving throughout the day. Entrance was positioned to shelter from the winds and big bi-fold door were set back within the sheltered west facade creating its own shadow and wind protection.

The old cottage was restored and left to "breathe". Its 500mm thick stone walls provide adequate thermal mass to keep this part of the house very comfortable throughout the year. The new extension has high levels of insulation with detailing at all interfaces in order to avoid thermal bridging. The materials were chosen adequately so to fit into overall design strategy. Wherever possible, the materials, suppliers and contractors were sourced locally. Materials chosen for the external envelop range from the lime render of the old cottage, new flint faced cavity walls, charred timber cladding and thick old walls of the cottage at the back elevation. The massing and geometry follows the changes of wall construction and help in avoiding thermal bridging. The wall construction features a combination of a solid masonry wall internally lined with chalk and with exterior insulation and render, insulated cavity wall with external flint lining, rain screen charred timber cladding over insulated sold block wall as well as the original non insulated existing cottage wall. External retaining walls are a combination of gabions filled with local flint, and untreated oak railway sleepers. The patio areas are covered with in situ concrete slabs featuring wide gravel gaps for rainwater run-off. Soft landscaping was designed and implemented by a local landscape designer and featured local species of shrubs flowers grasses and trees.

Traditional flint is the primary material for the new extension. The old house was retained and all its walls left exposed. Steel frames were introduced to openings with flint elevations so to preserve a sense of mass and texture. Original chalk wall at the rear remained untouched and new rear extension is clad in charred cedar resembling a shadow connecting past and present. Interior finishes are a combination of exposed original chalk walls, new white stucco walls, tiled floors, oak timber, steel stairs and window frames resulting in a simple, calm and almost primordial enclosure.

Windows are carefully planned to offer consistent daylight, visual comfort and cross ventilation. Well insulated new building fabric and 500mm thick original walls keep the house cool during the summer and warm during winter.

The works started with the new extension while the specification for renovation and preservation of old building was being finely tuned. This allowed for a better budgetary control of the renovation of the original building. Budget was limited in a broad sense only with full awareness that the old cottage may require special works; in the event its floor had to be lowered and its walls grouted and underpinned for structural reasons.

Internal paint was chosen with low VOC and without added preservatives, solvents or plasticisers. Charred timber cladding and untreated oak sleepers were chosen to avoid chemical timber treatment and to achieve longer lifespan All materials chosen for all areas of the build were natural and locally sourced materials,

This project we saw as staging of tension between inside and outside, olds and new, perception of scale, transitions and borders to rediscover just right balance for this project.