**CONSERVATION CONCERNS**

The Cheng Mei Ancestral Hall located in Yongjing Township, Changhua County is the family mansion of the renowned Wei family from Taiwan that built in 1885 adjacent to one of the biggest irrigation systems in Taiwan, Babao Canals. Its unique fusion of Hokloized Hakka (fulao ke, 福佬客), Han Chinese, and local Taiwanese culture and architecture contributes to the designation of the County Historical Building of Changhua in 2008 for its historic and cultural values.

Like other historic residences, the mansion had its ups and downs over the past century. The factors triggered the degradation of the mansion are:

<table>
<thead>
<tr>
<th>Environmental</th>
<th>Structural</th>
<th>Biological</th>
<th>Social</th>
</tr>
</thead>
<tbody>
<tr>
<td>Extreme weather conditions, e.g. heavy rain or flood</td>
<td>Water damage of timber structure caused by roof leakage</td>
<td>The high humidity content attracts termite infestation</td>
<td>Negligence or lack of maintenance, e.g. theft of movable heritage</td>
</tr>
</tbody>
</table>

The disastrous 921 Earthquake in 1999 was the last straw in devastating the Hall, however, this united the Wei family and led to the creation of a comprehensive conservation plan to prevent their ancestral home from further destruction. Documentation and condition survey started in 2005, and the actual conservation process took place between 2009 and 2012. Besides series of family and regional history research along with intensive conservation appraisals, the restoration work and risk-mitigating preventive measurements had not only prolonged the life of the mansion and safeguarded the traditional artisan skills, but also extended the family legacy and created valuable cohesion for the family, while successfully safeguarding the tangible and intangible heritage in Taiwan and facilitating regional regeneration of Yongjing area.

**BUILDING BACK BETTER**

1. **Elevation of the foundation**

In addition to the ground setting and high ground water content posing threats to the stability of the estate and causes severe deteriorations, the lowlying site and the clay layer (7 m) have posed threats to frequent floods during torrential rains. To solve this problem and increase greater resilience, the whole compound foundation was raised 48 cm and a 50cm-thick reinforced concrete foundation was installed to strengthen the foundation structure and reduce the impact caused by uneven geological settlement. It aims to reduce the disaster risk and prevent further losses may cause by ground subsidence, dampness, fluctuation of humidity, flooding and frequent earthquakes, in order to prepare for the future. The design also reserved space for subsequent piping/electricity systems in order to avoid further openings of the foundation in the future, and thereby reducing leakage possibilities.

2. **Preventive waterway route design for suitable drainage and protection**

Another implementation for disaster risk reduction measure was to redesign the water route within the compound to create better drainage and resilience to reduce the vulnerability and impact of future disasters, also to reach a better coexistence with the canal.

**MITIGATION FOR FUTURE THREATS**

1. **Reinforcement between the Wooden Truss and Brick Wall Structure**

In order to fortify the attachment between the timber framework and wall foundation, and to prevent future cleavage, several traditional Han Chinese construction techniques were converted for further reinforcement and prevention of frequent earthquakes in Taiwan: a long bamboo frame and bamboo braid mesh are inserted into cavity walls; also at the joint of wooden columns and masonry walls, a shear mechanism is affixed to the wood.

2. **Moisture Insulation Mechanics for Bamboo Wattle and Daub Walls**

Preventive mechanisms were added to the traditional material to increase stability and prolong the life of natural materials, especially around the joints between walls and pillars, which are usually the most vulnerable spots for leakage or moisture accumulation.

3. **Plinth improvement**

The structural mechanism of the wooden column–stone plinth–stone stylobate was installed for stability while maintaining the original appearance and materials. The stone plinth was embedded in a stone stylobate tray to improve anti-seismic performance; and a brass cylinder (9 x 4.5 cm) was inserted between the wooden column and stone plinth as a floated joint to improve the resistance to lateral forces.

4. **Infiltration prevention**

Heavy rain or flood may cause further deterioration and losses of movable cultural heritage.

**MANAGEMENT OF SUSTAINABLE DEVELOPMENT**

1. **Management and Risk Mitigation Plans according to SDGs**


2. **Accelerated Aging Test of Paint Layers**

A follow-up accelerated aging test of the paint layers was carried out between 2017-2020 to gather more references for maintaining the authenticity and long term preservation, including finding alternative paint sources from local suppliers that accommodate the local environment in Taiwan, instead of constantly using paints imported from Germany for sustainability and budget concerns.

**CONCLUSION**

The restored mansion continues its original role uniting the Wei family, and as one of the first private sectors in Taiwan to lead the conservation of architectural heritage independently, the Cheng Mei Cultural Park has become the conservation knowledge exchange center in Taiwan. The conservation project and the subsequent regional regeneration of the Yongjing area made the mansion a social and cultural center for the local community. The Tinghsin Hote Foundation is on its mettle to create new responses for the emerging challenges, and is continuously strengthening the means of implementation and revitalization the global partnership for sustainable development, promoting Taiwanese cultural heritage to international community, in order to preserve the cultural heritage on a global scale.

**REFERENCES**