

LafargeHolcim Awards

The world's most significant competition in sustainable design.

Catenary Arches

Ban Chang Town Hall, Rayong, Thailand



Main author

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Project data

Project group: Architecture, building and civil engineering
 Client: Ban Chang Subdistrict Municipality
 Project background: Public commission
 Planned start: September 2017

Summary and appraisal of the project by the jury

The project began with a decision by the local community to invest in constructing a community hub instead of financing their annual festival – durable rather than temporary investment. The village is next to a large coal power plant that has impacted local health and economy. The building is a series of catenary arches out of concrete curving in different directions. An open air structure, it is intended to be functionally vague to host varied activities. The use of fly ash is common as a partial substitute for cement. In this location, though, it takes on additional meaning through the conversion of industrial waste into structure.

The jury enjoyed the playfulness of this surreal pavilion. By multiplying the possibilities for cultural activities in the village, it fosters a greater sense of communal engagement. Also commendable is the activism that has spurred the project. Community leaders and the project's architect have worked together to gain support for the project from locals and the public sector. This process has embedded the new building within the community before construction begins. Through this participation, it is clear that the imaginative construction will be met with equally imaginative uses.

Statements on the sustainability of the project by the author

Ethical standards and social inclusion – People

The project started from local's wills to invest Power Development Funding in a city landmark instead of spending on an annual festival that did not benefit future generations. The environmentally friendly landmark will instead revitalize tourism; stimulate community economy by attracting visitors locally and internationally. The proposal passed through public hearing from members of village, municipal district and provincial levels leading to the approval within a year for new Power Development Funding with the supports of architect, community leader, government officer and Map Ta Phut Industrial Estate. The collaborative action expressed the solidarity among all parties, overcame conflicts between locals and power plant industry, leading to sustainable energy security of the nation.

Resource and environmental performance – Planet

The town hall utilizes the fly ash, coal combustion waste from nearby power plant as concrete mixture to gain concrete performance efficiency. Fly ash reduces cement usage, but increases strength and durability, suitable for seaside construction that requires acid and sulfate corrosion resistance. It lowers maintenance costs and risk of cracking due to the higher exothermic rate than usual concrete. Using fly

ash responds to government policy of waste reuse instead of placing in landfills, reducing risk of soil contamination, water and air pollution. Less cement usage also leads to less limestone mountain destruction. The town hall construction reduces pollution and preserves natural resources by transforming fly ash into the environmentally friendly habitat for humans, plants and animals.

Contextual and aesthetic impact – Place

The town hall was designed to trigger consciousness of "living with nature through realizing the overlapping between air volume and void space". The catenary shaped dome amplifies voices for the assembly hall. Repetitive forms function as structure and planter while the bamboo form-work traced walls express delicate handcraft feelings. Perceiving various colors of the walls stimulates energetic sense, attracting people to get inside. The town hall will be the monument of industrial history, imprinting community efforts to preserve natural resource since coal power will be replaced by other renewable energy in the near future. The aesthetic arises from polishing trash into diamonds, which resembles the beginning of city revitalization of abandoned brownfield to prosperous tourism economy.

Acknowledgement prize 2017



Image 1: The project is not only the expected future prosperity of Ban Chang community; it is also about people's perspective of the problem, power of unity, creativity and conciliation. The community members, all together have written down the new history by transforming conflict into harmonious collaboration for their better future, and also for the nation.



Image 2: The key of this revitalization project is to see the possibility for community's future. It is about changing the perspective of locals and visitors in perceiving the unique identity of Ban Chang as Brownfield-Tourism community. The project encourages urban activities through organizing tourist attraction route. The town hall will serve as the gateway to Ban Chang with its location on beachfront streets connecting two famous beaches with community temples, and the highway to U-Tapao International Airport.

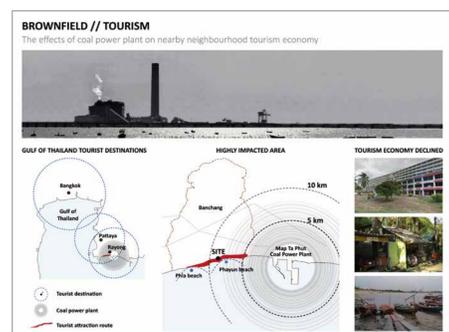


Image 3: Brownfield/tourism: The effects of coal power plant on nearby neighbourhood tourism economy.

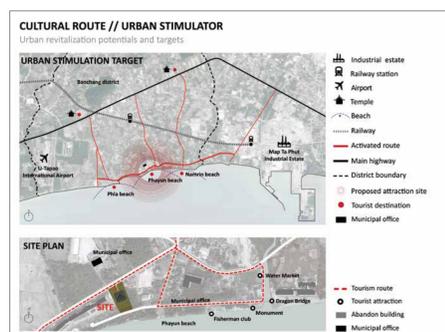


Image 4: Cultural route/urban stimulator: Urban revitalization potentials and targets.

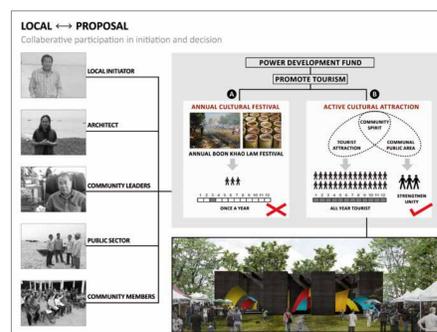


Image 5: Local proposal: Collaborative participation in initiation and decision.

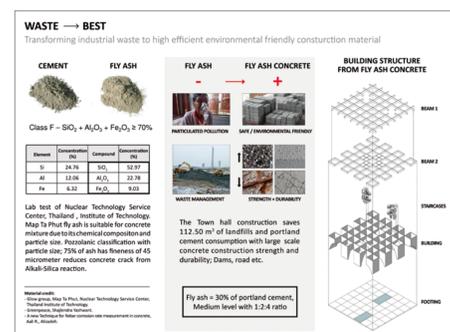


Image 6: Waste: Transforming industrial waste to highly efficient and environmentally friendly construction material.

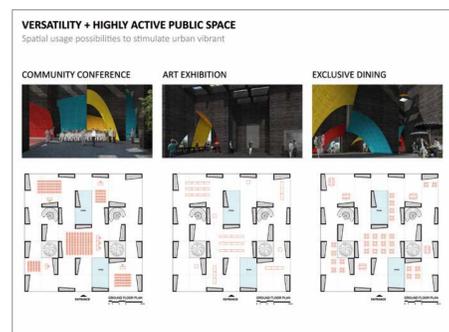


Image 7: Versatility and highly active public space: Spatial usage possibilities to stimulate a vibrant urban enclave.



Image 8: Space: Trigger conceptual consciousness of "living with nature".

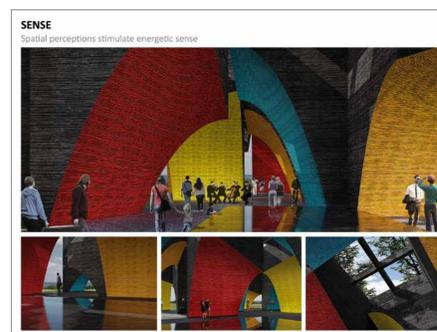


Image 9: Sense: Spatial perceptions stimulate energetic sense.



Image 10: Place: Landmark that stimulates the fruitful tourism back in the area once again.