A BOURBON MUSEUM

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The introduction of a new structure in the premise of an existing one can generate an interesting conversation between the two. This thesis offers a design to explore the interaction between the two structures and the identification of the roles of each.
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To my father and my mother.

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THE IDEA: A defunct distillery, part of a former industrial complex, is to be revitalized and reused as a museum. The thesis proposes the retention of a significant part of the existing building and the introduction of a new enclosure in wood and steel, enveloping the old structure. A 19th century industrial building in steel and terracotta, The James E. Pepper distillery houses equipments such as mash tubs, kilns, grain scales and milling machines, that facilitated the production of Bourbon. While the old distillery holds the machinery once used for making the whiskey, the new structure showcases the distillery and presents it as the central exhibit.
The selection of materials for the new architecture is based on elements essential to the process of bourbon making. These are limestone, wood, and copper. A new floor finished in smooth limestone is laid for the new structure 5 feet above the existing floor level. As it infiltrates the distillery, it transforms into a courser texture.
THE EXISTING DISTILLERY The James E. Pepper distillery and its industrial support buildings are located on the historic corridor off Manchester Street, close to Lexington downtown in Kentucky. Other buildings on site include a bonded warehouse, a water tower to the east and smaller ancillary structures. To the south of the site is the sweeping Elk Horn Creek, which presents opportunities for a waterfront development.
Part of the distillery facing Manchester Street is retained along with the massive chimney.
THE EXISTING DISTILLERY
THE ENVELOPE: The envelope is composed two layers – an internal primary load bearing system in Glulam and an external strengthening skin in steel. The envelope spans 90 feet to enclose the distillery. To obtain such a great span without intermediate supports, glued and laminated timber (Glulam) was used instead of regular wood. Glulam systems, along with steel joinery, are capable of covering extensive spans, with depths considerably lesser than regular wood construction. Also, due to their controlled manufacture in industrial settings, they can offer greater strength.
The internal Glulam posts and the external tubular steel columns are tied together by steel bracing members. This increases the width of the section and consequently the structural stability of the system. The entire system is anchored to an R.C.C foundation.
Illustrations showing fabrication of the glulam and steel assembly

Glulam roofing member

21'X36' Glulam post

SECTION
The roof is constructed out of Glulam trusses spanning 90 feet. The alternating ridgeline of the truss members create a faceted roofing pattern.
THE ROLES OF THE TWO BUILDINGS: The envelope takes on the function of a massive box enclosing the exhibition space within, protecting it from sun, wind rain and snow. While the monumentality of the new structure is quite overpowering, the existing distillery establishes a scale relative to human. Movements within the distillery and under the high roof are contrasting in nature. The distillery which offers confined spaces, more or less sets an order in movement within it. The hallway under the high roof, on the other hand, offers an unregulated movement with its water bodies and view to the creek.
READINGS

Architektur Zentrum Wien / Klaus Kada
Renzo Piano . Centre Kanak / Werner Blaser
Glass in Structure Elements Concepts Designs / Rob Nijsse
New Wood Architecture / Slavid
Techno-Waltz M I:333 Innovative Austrian Architecture / Ramesh Kumar Biswas