

ARCHITECTURAL DESIGN II

Project 1

Form & Function: Expression of Truth/Beauty

Theory / Conceptual Issues:

The relationship of form and function has been a central theme in architecture since the enlightenment. The core issue is whether a building's form should truthfully express its function or should it be independent of its function. The outcome of this issue provides a rationale for architectural design. 17th century architect Claude Perrault was one of the first architectural theorists to separate the issue in this thesis of positive beauty and arbitrary beauty. According to Perrault, positive beauty plays a normative role of standardization and perfection in design that typically is expressed through the classical rules and language of architecture. Arbitrary beauty on the other hand is expressive of function and its particular circumstances and requirements. Modernist architect Mies van der Rohe coined the phrase, "form follows function," to justify his architecture but his work largely treated function as a surreal entity that could be poured into almost any glass and steel container that fit the program.

This project examines the relationship of form and function in architectural design. It encourages the awareness of truth, whatever position the designer takes, and promotes the arbitrary aesthetic of "functional" beauty.

Creative Design Process:

1. Use of prototypes: for selecting the span/form
 - a. research various prototypes
 - b. conceptual analysis of each
 - c. selection
2. Use of analogies: for selecting the movement/function
 - a. find common mechanical things that move (open, swing, draw, lift, etc.)
 - b. find common human things that move (joints, rotations, etc.)
 - c. selection
3. Integration and transformation:
 - a. merger of two concepts for form a new and original entity
 - b. account for all places where function interacts with form
 - c. expression of form and function becomes the new aesthetic

Assignment:

All buildings must, in some way, resist the forces of gravity to create a space in which its function is allowed to take place. This project will use a structural sliver of a span called a bridge as a platform to attach a function. The structural bridge will support a pedestrian walkway. The function in this case is the ability of the walkway on the bridge to open, allowing a 30' wide x 40' object to pass through.

The project will be assessed on structural clarity, functional expression and the creative transformation that takes place.

Design Criteria:

Pedestrian bridge, physically handicapped accessible, no slope greater than 1:12.

span = 190' at 1/8" = 1'-0" or (23 3/4" actual)

width = 12' at 1/8" = 1'-0"

height = 40' at 1/8" = 1'-0"

The bridge must also support a small structure on the span. The structure is an observation tower with a kitchenette, rest bedroom and bath room. It must be a duplex arrangement (two stories) approx. 250 s.f. total. The bridge can have moveable parts to achieve the 40' height clearance, i.e. draw bridge, elevator bridge, swing bridge, etc. Symmetrical designs are prohibited. Structural components cannot be larger than 1' x 1' and the structure cannot be covered or encased in a skin.

Material (optional model):

Balsa wood (no piece larger than 1/8" actual), string, paper and hot glue. Cardboard is not allowed except to create the base.

Procedure:

Week 1: Each student shall compile a series of different bridge types, i.e. suspension, arch, truss, etc. from research conducted at the library. Oral reports will be given next class period. Preliminary ideas will be developed.

Week 2: Design sketches and rough study model.

Week 3: Finished model and drawings.

Week 4: Web presentations and animation or model.

Submission requirements:

DRAWINGS:

AutoCAD, Ink or black marker mounted. Final presentation shall be in electronic form.

1. Bridge Plans @ 1/8" = 1'-0"
2. Section @ 1/8" = 1'-0"
3. Elevation @ 1/8" = 1'-0"
4. Axonometric views @ 1/8" = 1'-0"

3-D AutoCAD ANIMATION or MODEL:

1. 1/8" = 1'-0" model from balsa wood, thread/wire, paper and hot glue

WEB PORTFOLIO:

All projects will be presented on-line in electronic form.

Project Due Date:

4 weeks from date given.

Bibliography:

Francis Ching, Architecture: Form, Space & Order