DEE AND CHARLES WYLY THEATRE

Jimmy Chan  Brad Bertrand  Kevin Vandersall  Ryan Withrow
CLIENT: Dallas Center for the Performing Arts
LOCATION: Dallas, TX
AREA: 80,300 Square Feet
HEIGHT: 132 Feet
600 Seat multiform theatre
Only Pritzker Prize winning architects were solicited for design services
DATE OF COMPLETION: October 2009
PROJECT COST: $354 Million (AT&T Arts Center)
CONSTRUCTION MATERIAL: Aluminum, Steel, Glass, Concrete
Office for Metropolitan Architecture (OMA)

Key Personnel: Joshua Prince-Ramus (Partner in Charge) and Rem Koolhaas, with Erez Ella, Vincent Bandy, Vanessa Kassabian, Tim Archambault

Founded in 1975 by Rem Koolhaas, Elia Zenghelis, Madelon Vriesendorp, and Zoe Zenghelis

REX

Key Personnel: Joshua Prince-Ramus (Partner in Charge) and Rem Koolhaas, with Erez Ella, Vincent Bandy, Vanessa Kassabian, Tim Archambault

Founded in 2008 by Joshua Prince-Ramus and Sharon Ullman
ARCHITECTS

SEATTLE PUBLIC LIBRARY

CCTV TOWER
REM KOOLHAAS:

"By stacking all facilities necessary for the functioning of a theatre in a single vertical volume, we create a situation where the technologies of the stage define an infinite variety of theatre arrangements, from the completely open to the completely enclosed"
Rather than use the traditional front-of-house and back-of-house functions, the Wyly Theatre has been built up to include below-house and above-house. This redefines the traditional theater in two ways.

First, it liberates the perimeter of the theater’s chamber exposed on all sides, and can directly engage the city around it. This way it is no longer shielded by transitional and technical zones such as lobbies, ticket counters, and backstage facilities.
Can be blacked out for performances, using electric shades on tracks built into the glass.

The chamber is intentionally made of materials that are not precious in order to encourage alterations. The stage and auditorium surfaces can be cut, drilled, painted, welded, sawed, nailed, glued and stitched at limited cost.

Support Spaces are either above or below theatre.
The glass-enclosed theater is held up on three sides by 6 thin, angled concrete “super columns”. The fourth side is a concrete shear wall. Until those beams could be poured and set, six huge steel supports had to be erected to hold up the construction above.

Once the concrete beams were in place, the steel supports were no longer needed which came down the last month of construction.

The structure had to be built from the top down due to the corner cantilevers that span up to 44 feet.

Floating Effect
Floors 2 and 3 are supported by floors 4-7 which are wrapped in a 34 foot deep belt truss.

The belt trusses take both lateral and gravity loads.

Floors 8 and above rest on floors 4-7 and rely on the belt truss.

The beam-column acts as a truss member on the 4th-7th levels.

Columns are wrapped by steel belt trusses at the perimeter with steel floor plates with slabs on metal deck.
STRUCTURAL DESIGN

Theatre Space
Column Construction

Concrete “Superlegs” are made of 8,000 psi concrete containing 21 no. 11 pieces of rebar.

The theatre utilizes only 6 columns to maximize ground-level transparency.
STRUCTURAL DESIGN

Column Construction
Column Post Shores to prevent deflection after placement
Support Shoring and Scaffolding
T2 Truss being lifted over 92’ Columns
STRUCTURAL DESIGN
Temporary Bracing

- 4 steel corner columns largest is a W14 x 398
- 2 intermediate columns made from 24” diameter pipe
- 6 concrete column 12” HSS wind braces
- Shear wall wind braced with diagonals added to elevator framing
- McCarthy coordinated 5 different structural engineers for the work
Designed by Front, Inc.

Composed of 6 types of Aluminum

The vertical aluminum tubes are reminiscent of the corrugated metal shed of Wyly’s predecessor, the Dallas Theater Center.
Bending
STRUCTURAL LOADS

Bending
STRUCTURAL LOADS

Shear
Axial
STRUCTURAL LOADS

Model
Deflections