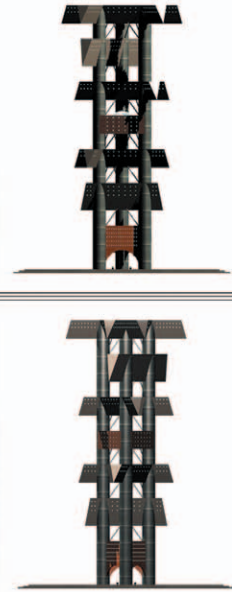
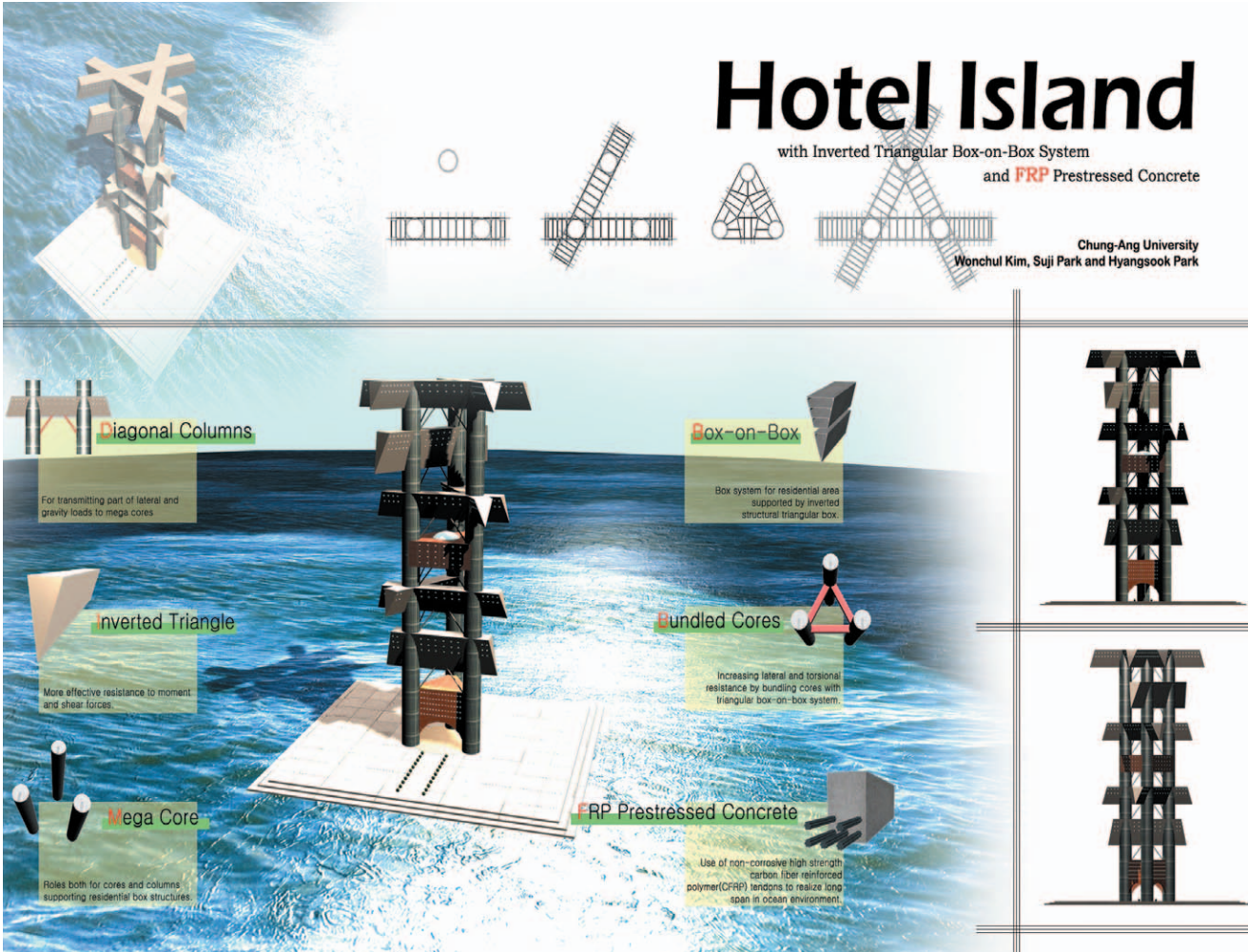


Hotel Island

with Inverted Triangular Box-on-Box System
and FRP Prestressed Concrete

Chung-Ang University
Wonchul Kim, Suji Park and Hyangsook Park

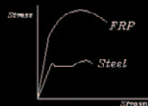


Synopsis

Location : Pusan
Height : 200m
Structural System [FRP Prestressed Concrete
Bundled Core with Inverted Triangular
Box-on-Box
Use : Ocean Hotel

Structural Outlines

FRP Prestressed Concrete
Inverted Triangle Box-on-Box
Diagonal Columns
Mega Cores
Bundled Core System



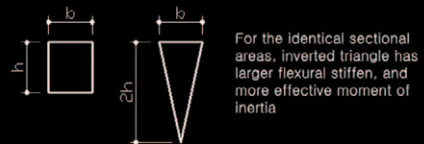
Advantages and Disadvantages of FRP

- | | |
|---------------|--|
| Advantages | <ul style="list-style-type: none"> Non-Corrosive Non-Magnetic High Tensile Strength Lightweight |
| Disadvantages | <ul style="list-style-type: none"> Non-Plastic Behavior Low Shear Strength Lack of Ductility High Cost |

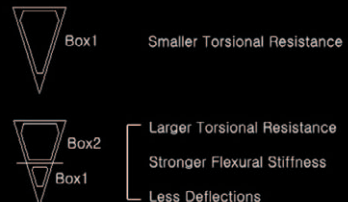
Advantages of Bundled Core System



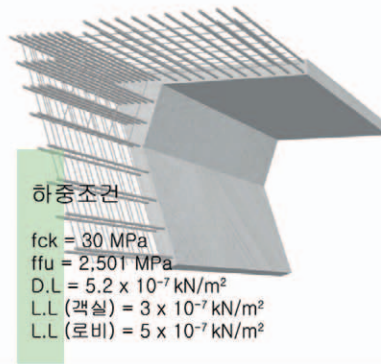
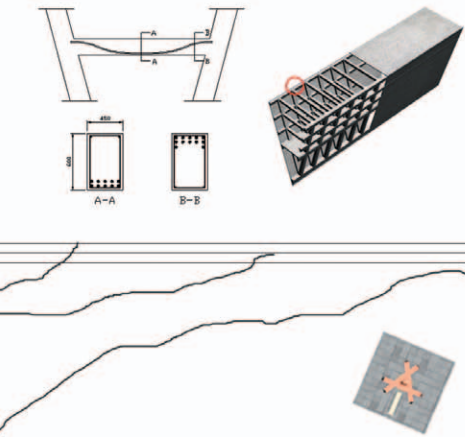
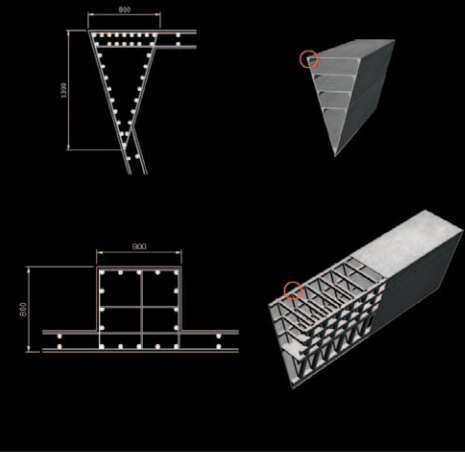
Advantage of Inverted Triangle



Box-on-Box

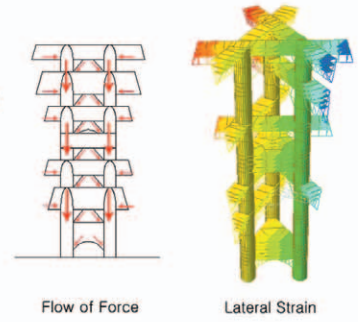


Reinforcement Details



하중조건

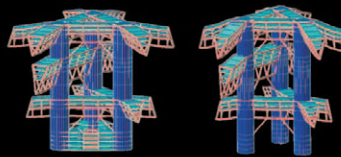
$f_{ck} = 30 \text{ MPa}$
 $f_{fu} = 2,501 \text{ MPa}$
 $D.L = 5.2 \times 10^{-7} \text{ kN/m}^2$
 $L.L \text{ (객실)} = 3 \times 10^{-7} \text{ kN/m}^2$
 $L.L \text{ (로비)} = 5 \times 10^{-7} \text{ kN/m}^2$



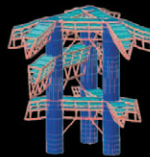
Flow of Force

Lateral Strain

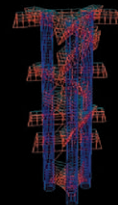
Comparisons



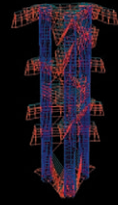
Box-on-Box System



Normal Box System

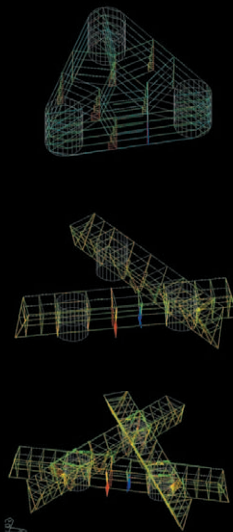


Inverted Triangle

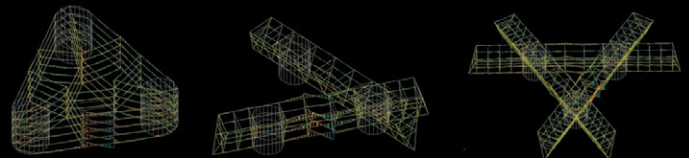


Rectangle

Axial Force Analysis



Moment Analysis



Shear Analysis

