

# ARCH 2231

## BUILDING TECHNOLOGY II



THE NEW YORK COLLEGE OF TECHNOLOGY

# Class Overview:

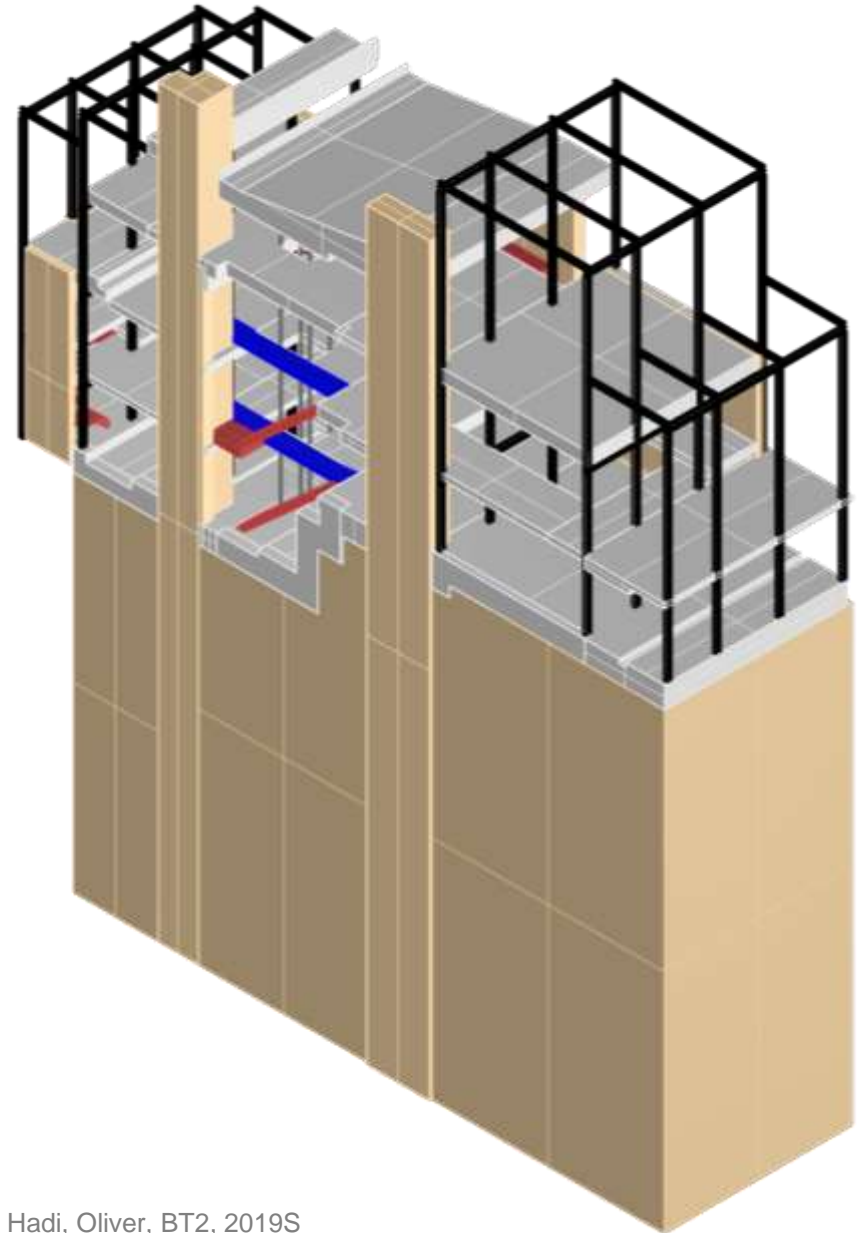
- Structural 3D computer model
- PRE-CAST concrete discussion / lecture
- Pin up

## Upcoming:

- **A** module Final Assignment deliverables
- Foundations
- **A** module final assignment final submission
- **B** module High performance house introduction

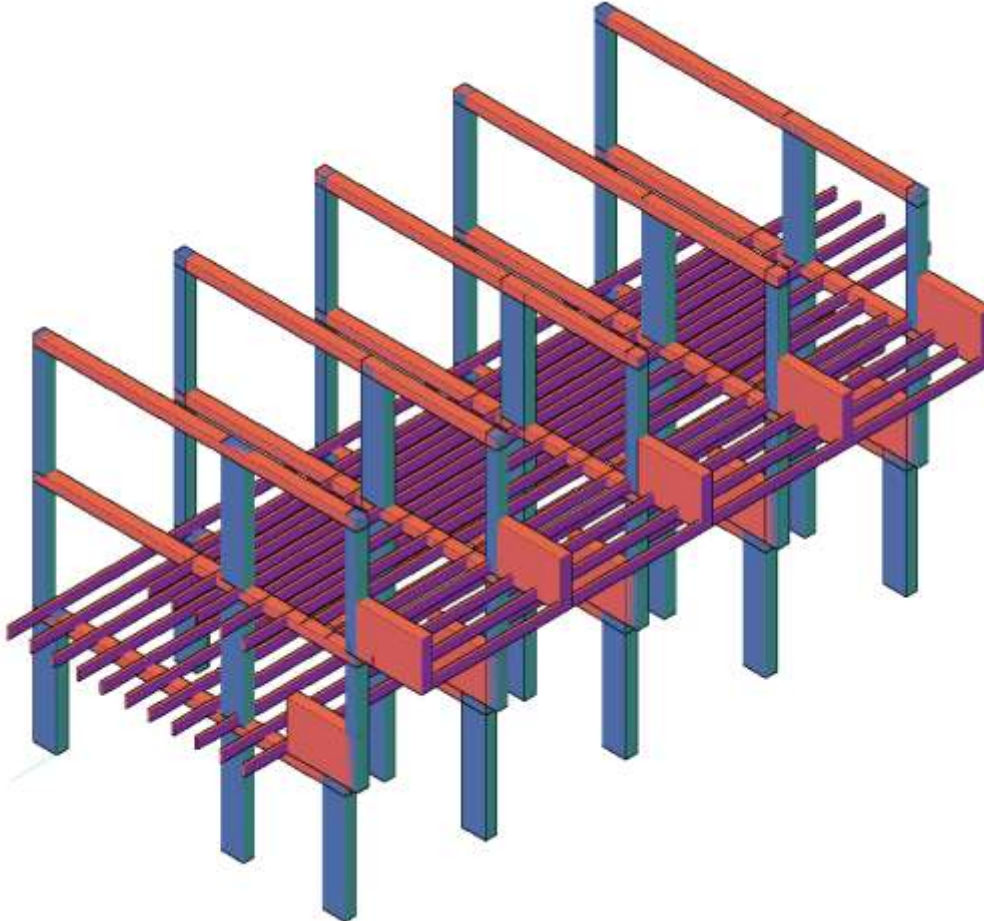
# A module, Structural 3D computer model

- Use rhino 3D or SketchUp for creating your model
- do not use AutoCAD 3D
- by instructor permission you may use a different 3D software tool for this assignment
- your model should focus on structural elements of the project
- if you include architectural elements make sure they are on a layer you can turn off or make transparent



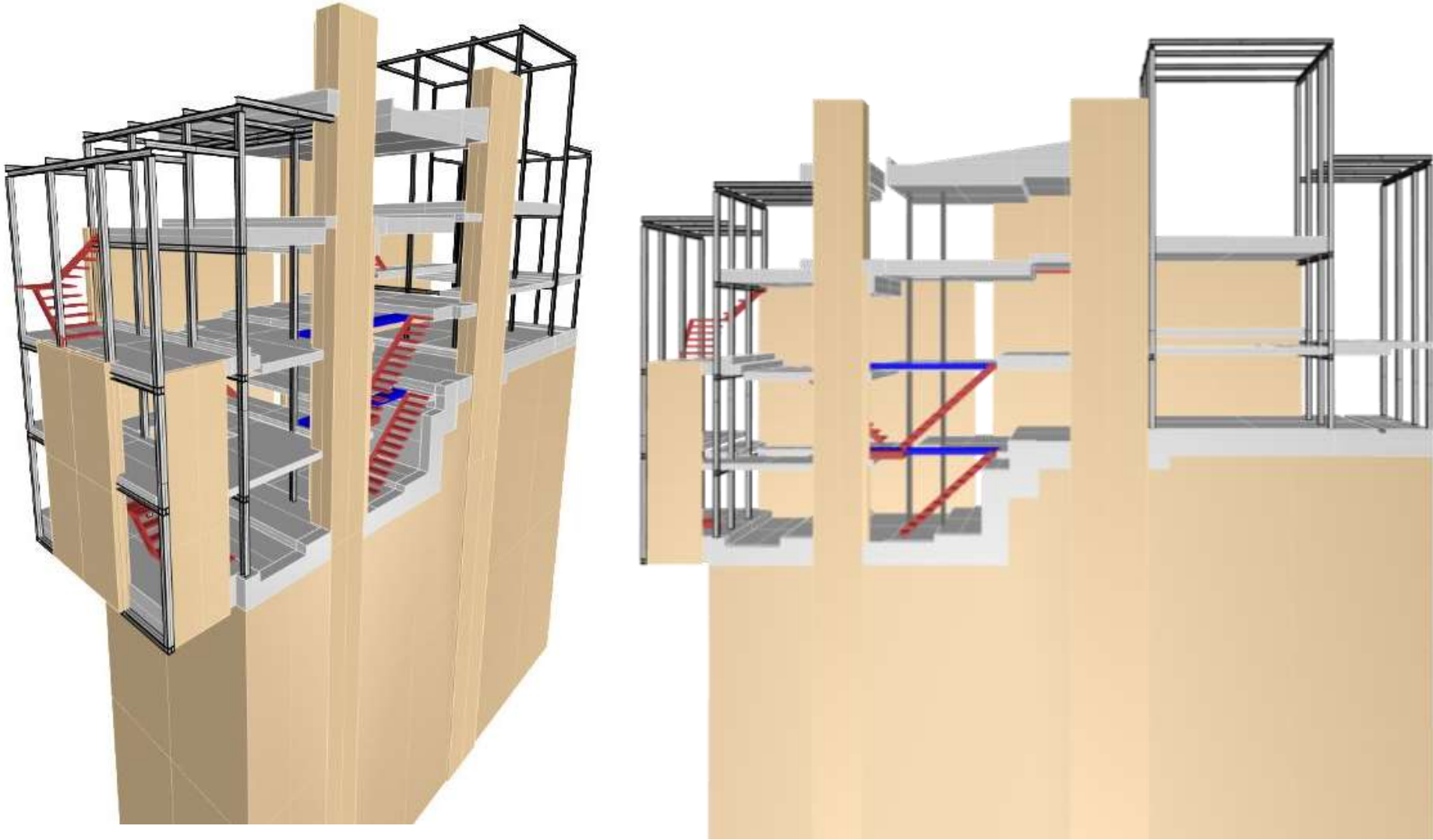
# A module, Structural 3D computer model

- use your AutoCAD structural grid as an underlay to develop your 3D model
- Create an image file and import it as an image into your AutoCAD project
- Your illustrations do not have to use complex materials.
- Your images do need to illustrate diagrammatically the functionality of the structure

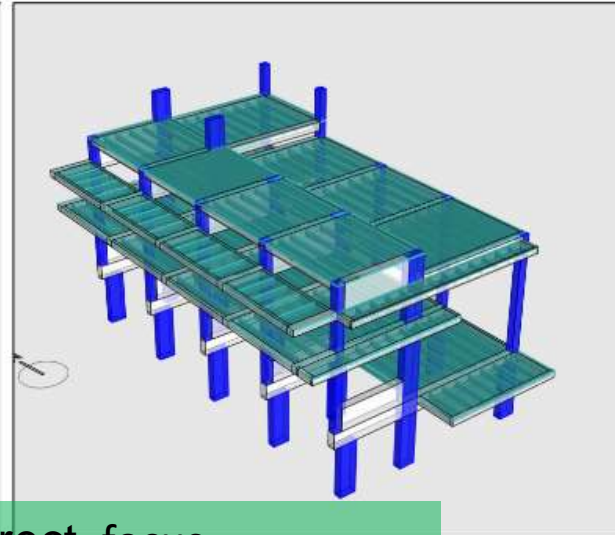
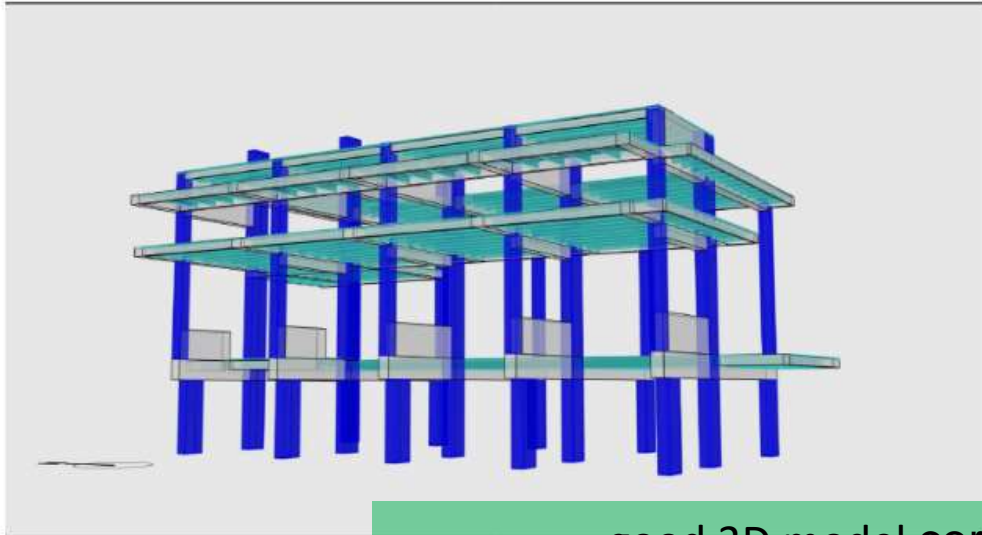




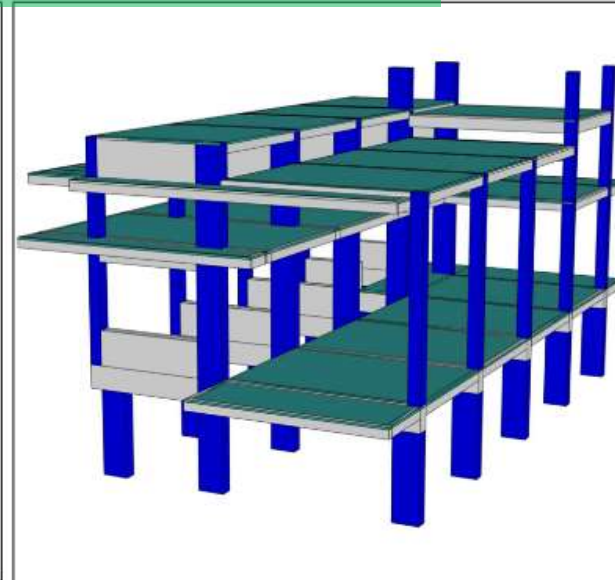
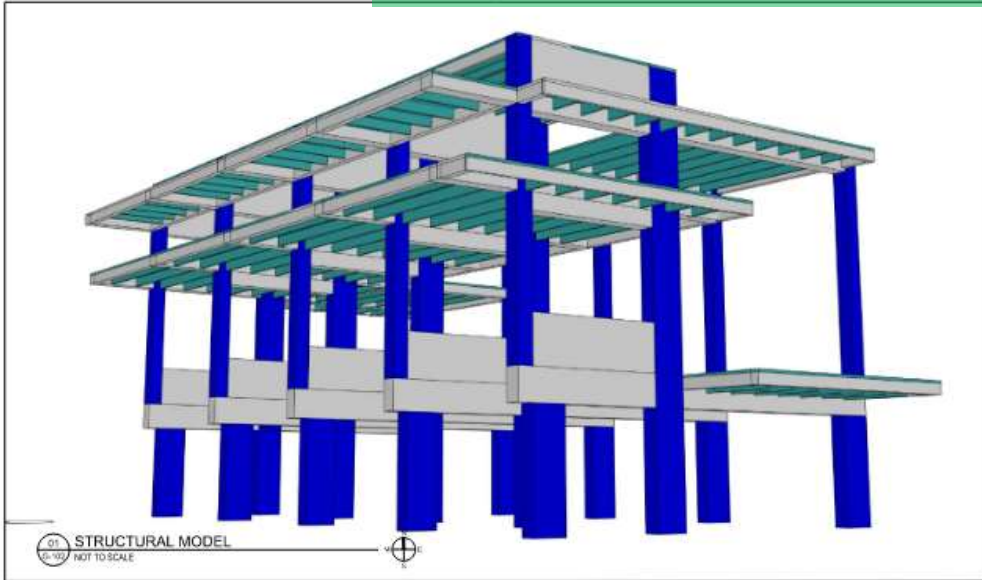
# A module, Structural 3D computer model



# A module, Structural 3D computer model



good 3D model correct focus



**LOVELL BEACH HOUSE**  
 1242 WEST OCEAN FRONT,  
 NEWPORT BEACH, ORANGE COUNTY, CA

Student Name:  
**SRICHAN, TREYAPAT**  
 Student ID:  
 Department of Architectural Technology  
 100 Jui Street, Back Bay New York  
 A2021 Building Technology II  
 Summer 2020  
 Class # BT 1109 535 P08

DATE: 06/09/2020

DWG TITLE  
**DRAWING TITLE**

SEAL & SIGNATURE

DATE: 06/09/2020	SCALE: 1/8" = 1'-0"
PROJECT: A-901	DATE: 06/09/2020
DRAWN BY: XXX	SCALE: 1/8" = 1'-0"

**A-901**

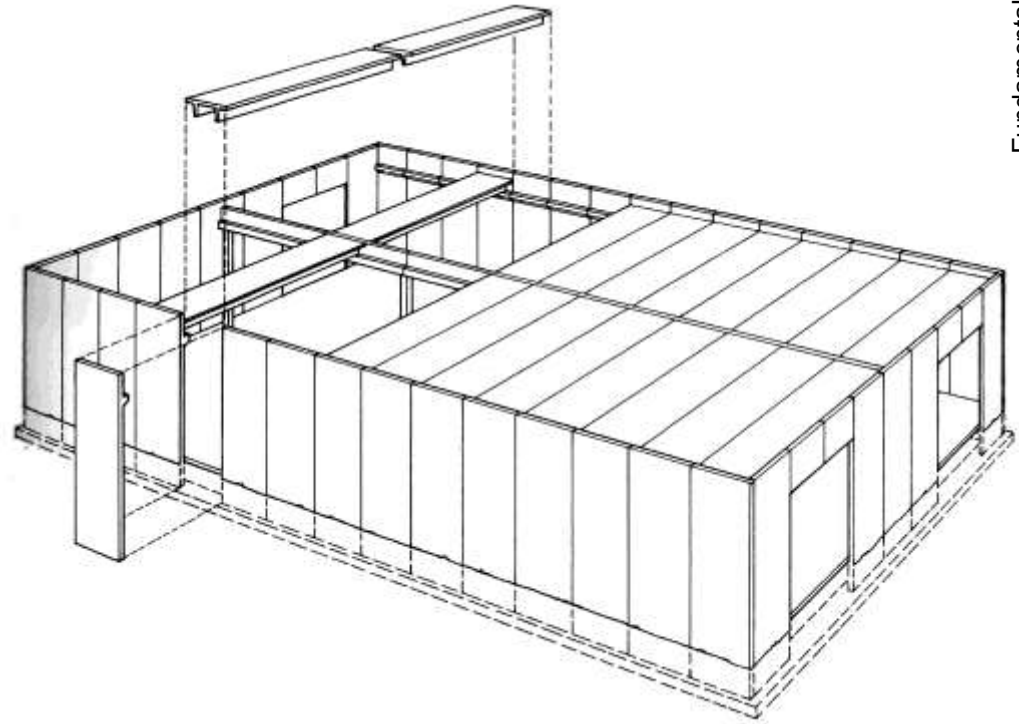
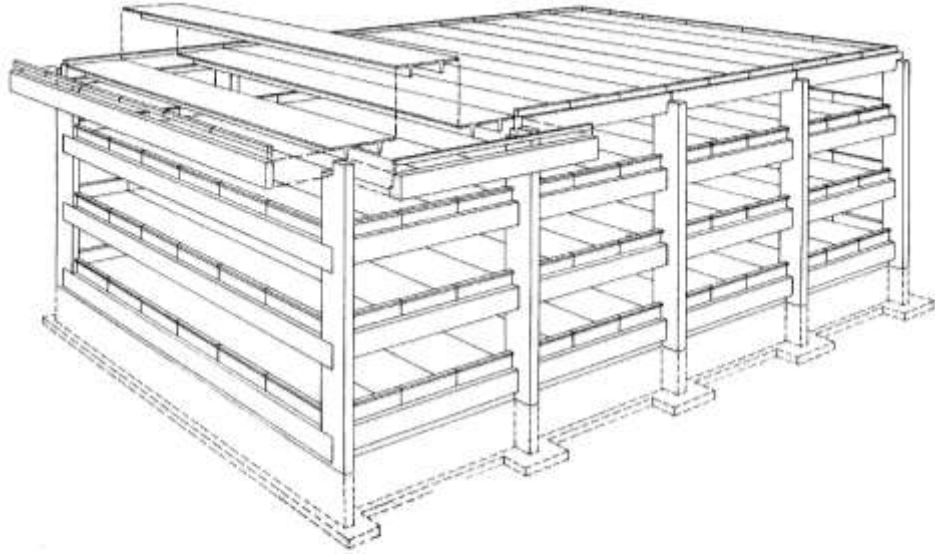
PROJECT: XXX-101.00\_XXXX

SCALE: 1/8" = 1'-0"

## REINFORCING CONCRETE: Methods of Construction

- **SITE-CAST** (cast-in-place or poured-in-place): concrete is poured at the building site.
- **PRE-CAST**: Structural members are cast at the plant and brought to the site.

# PRECAST CONCRETE



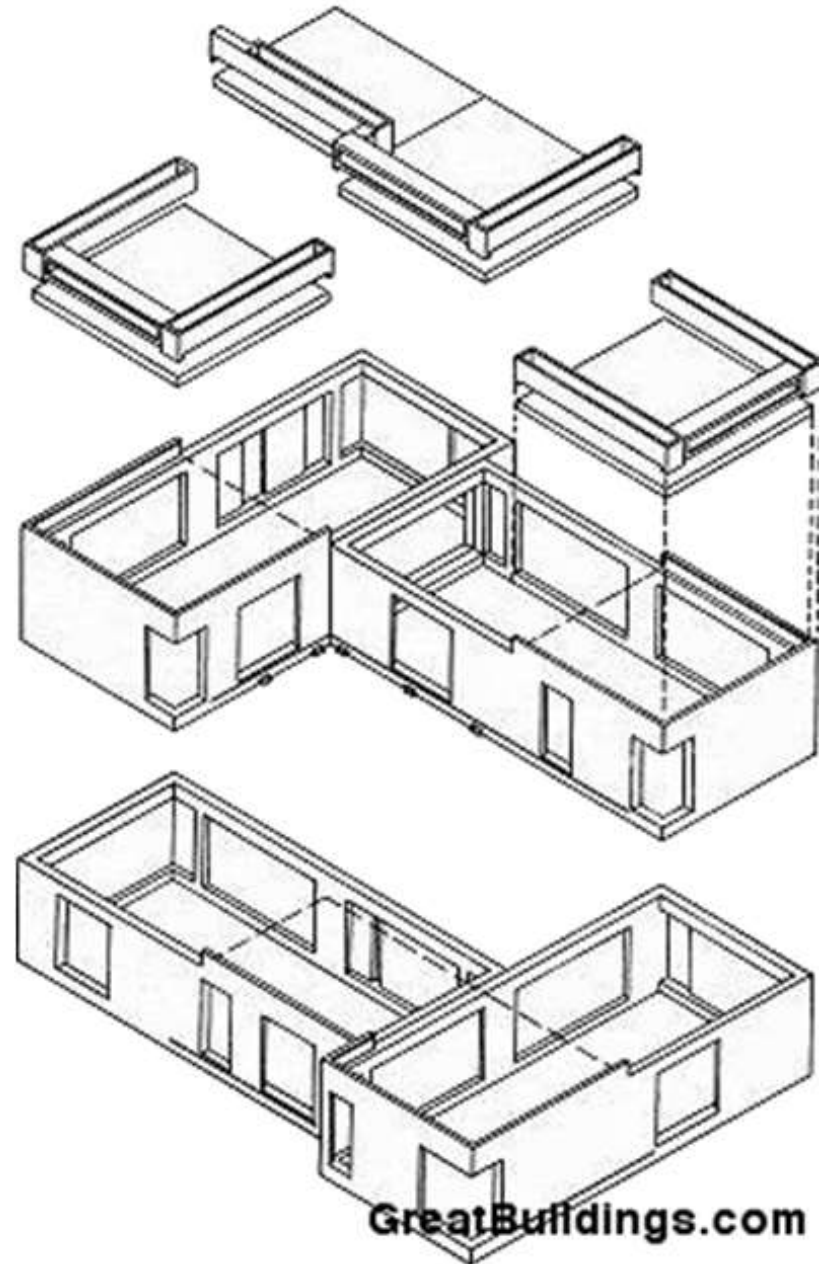


## Pre-Cast CONCRETE

- Better control on quality and performance of concrete and its shape
- Advantages:
  - Less Expensive
  - Faster construction time
  - Suited for modular type projects
  - Pre-tensioning.
  - Concrete is fully cured before delivery to site (steam cured)
- Disadvantages:
  - Limited range of surface finishes (textures, patterns etc)
  - Limited sizes and lengths (also limited by transport)
  - Some 3-dimensional sculptural quality of concrete is lost.

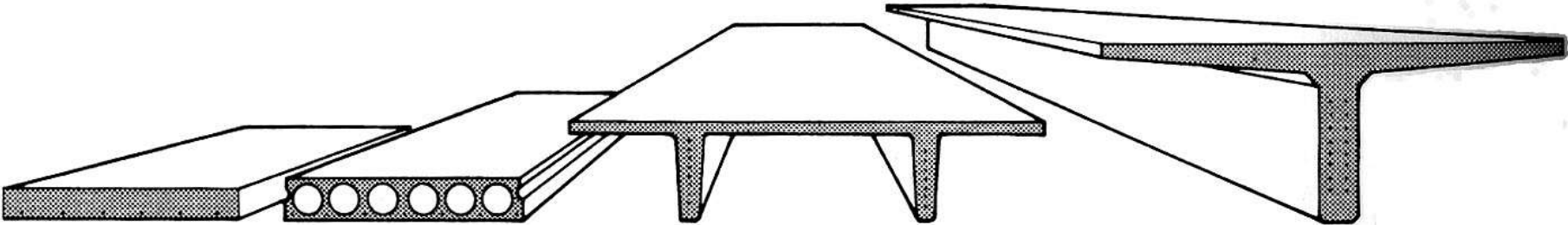
## Formwork for Pre-Cast:

- Formwork is used to shape concrete.
- Forms are set up in factory controlled conditions.
- Formwork is reused
- Formwork is usually oiled or waxed so concrete does not adhere to it.



# REINFORCING CONCRETE : Pre-Cast

## Typical slab shapes:



*SOLID FLAT SLAB*

*Widths vary*

*HOLLOW CORE SLAB*

*2', 4', 8' wide  
(610, 1220,  
2440 mm)*

*(1'4", 3'4"  
some  
manufacturers)*

*DOUBLE TEE*

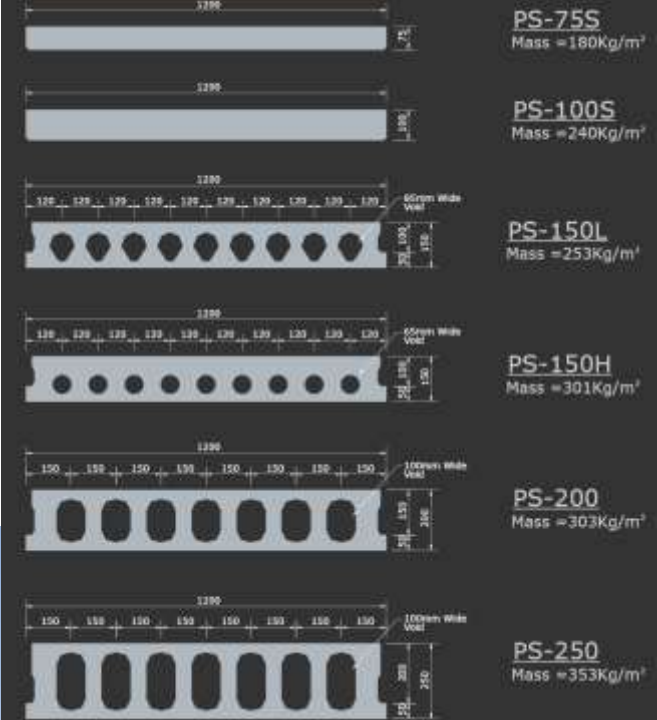
*8', 10' wide  
(2440,  
3050 mm)*

*SINGLE TEE*

*8', 10' wide  
(2440,  
3050 mm)*

# REINFORCING CONCRETE : Pre-Cast

## Typical slab shapes:





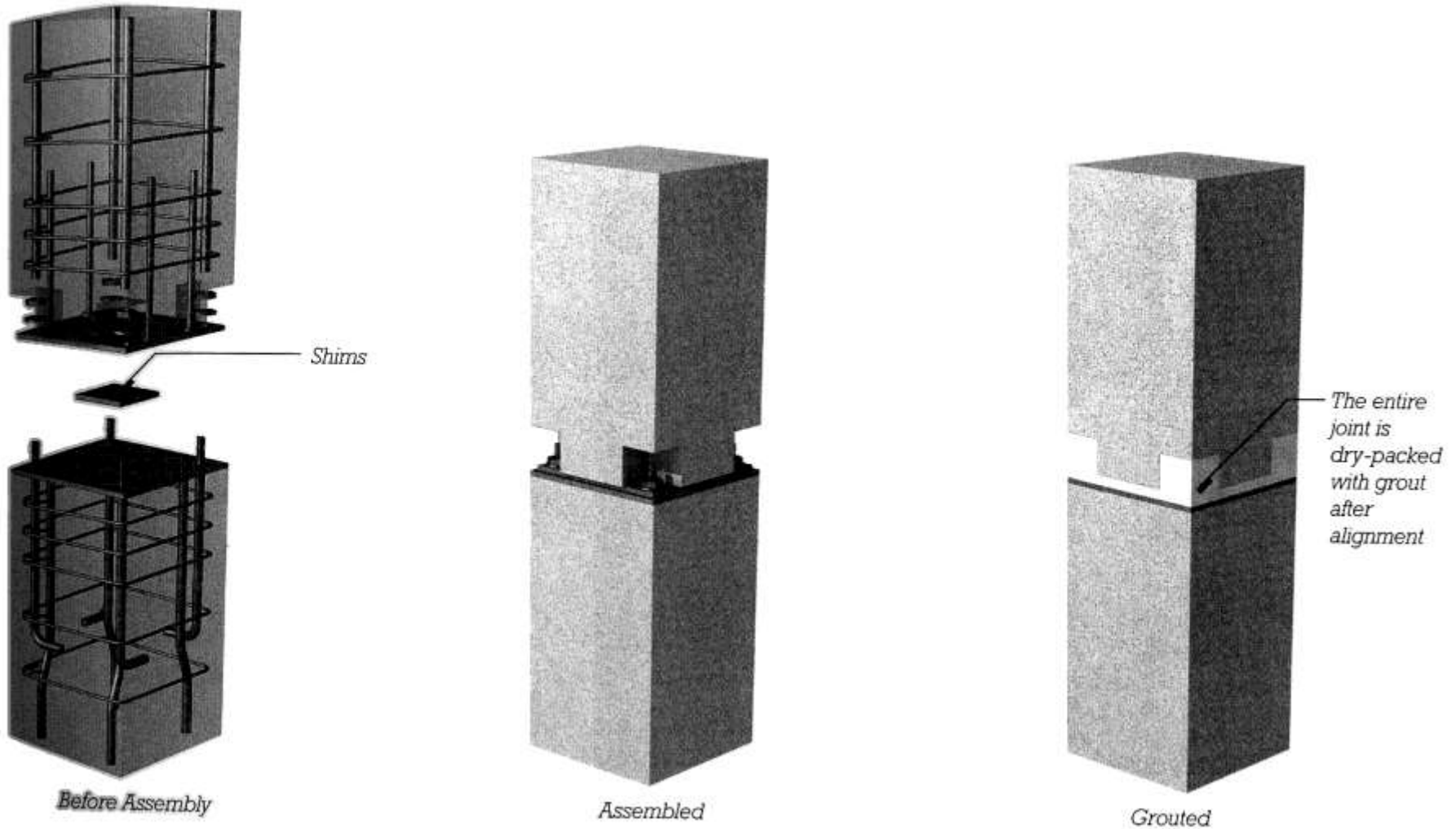
## REINFORCING CONCRETE : Pre-Cast

Factory conditions can control concrete quality  
heating elements and type II cement  
can shorten the curing time to 24 hours

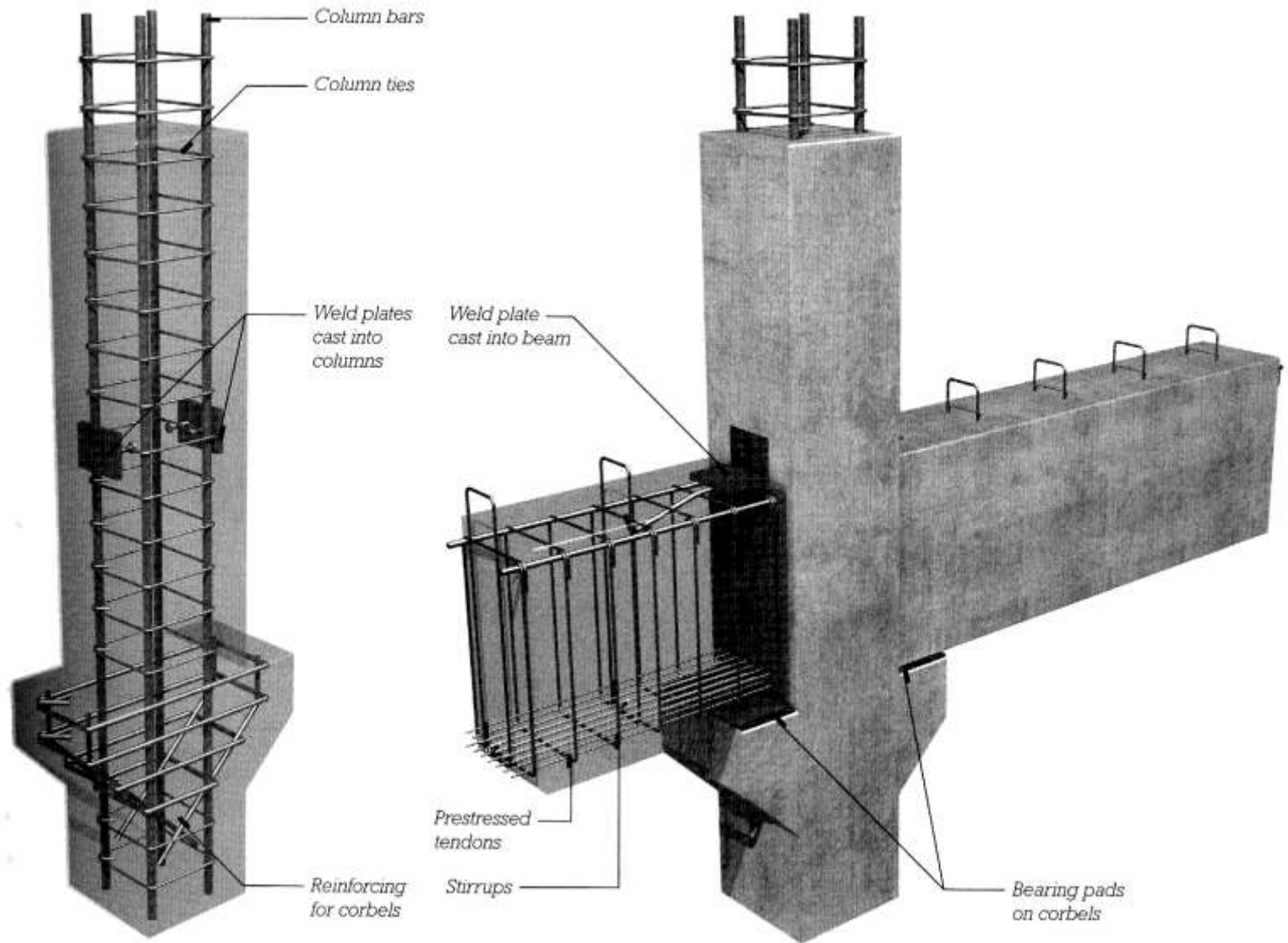


# REINFORCING CONCRETE : Pre-Cast

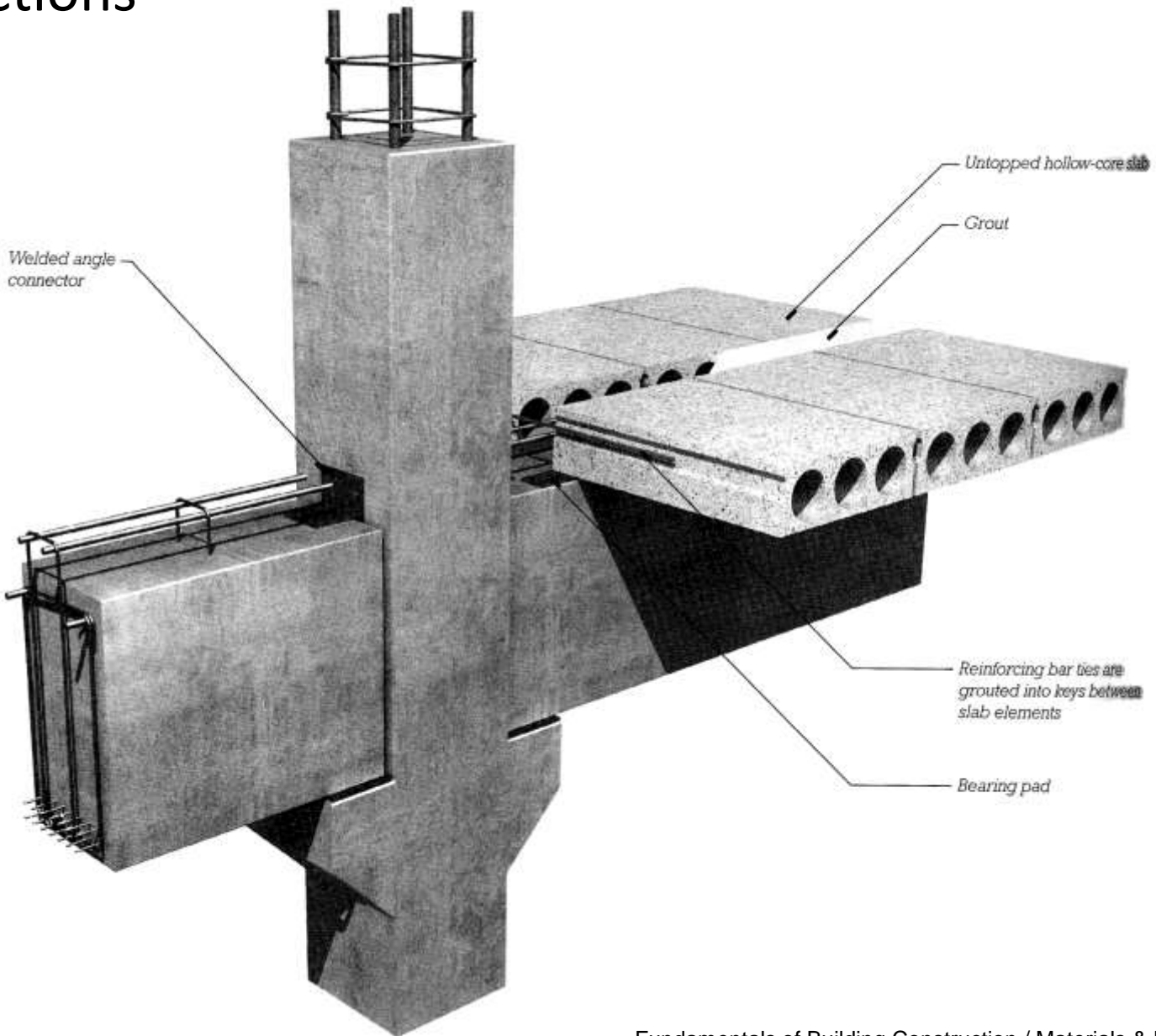
## Connections



# REINFORCING CONCRETE : Pre-Cast Connections



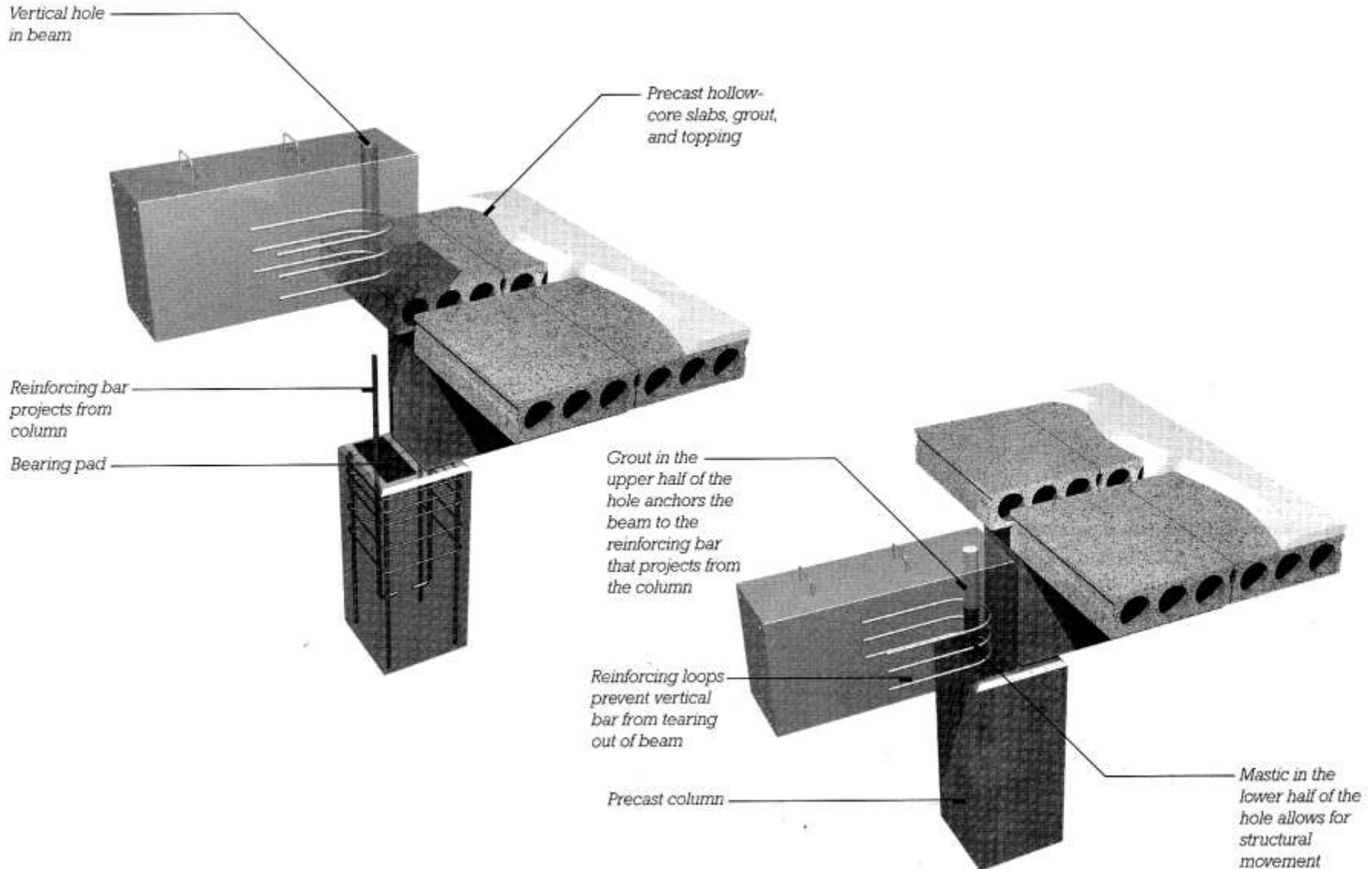
# REINFORCING CONCRETE : Pre-Cast Connections





# REINFORCING CONCRETE : Pre-Cast

## Connections



# REINFORCING CONCRETE : Methods of Construction : Pre-Cast





**REINFORCING CONCRETE : Methods of Construction : Pre-Cast**



NOV 2 2007



**REINFORCING CONCRETE : Methods of Construction : Pre-Cast**





# REINFORCING CONCRETE : Methods of Construction : Pre-Cast



# REINFORCING CONCRETE : Methods of Construction : Pre-Cast

courtesy of PROF. S. VAIDYA





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**REINFORCING CONCRETE : Methods of Construction : Pre-Cast**



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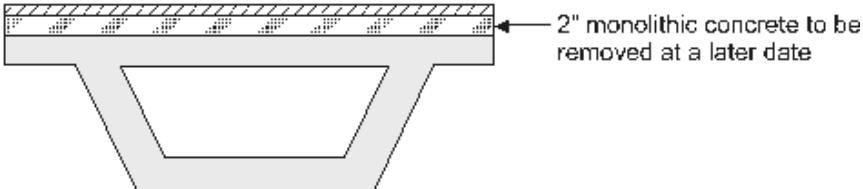
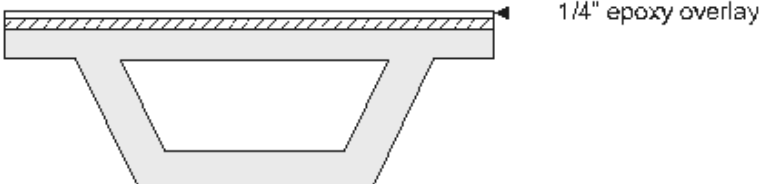
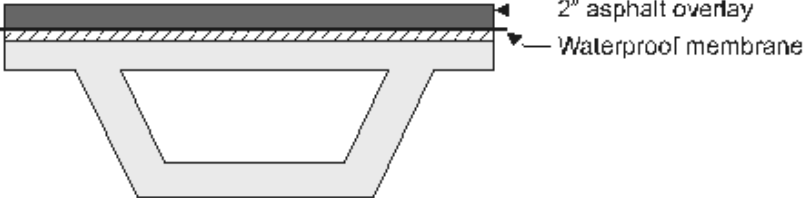
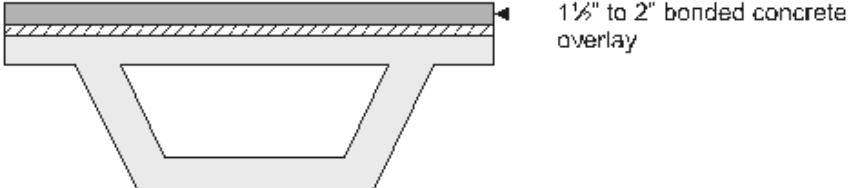
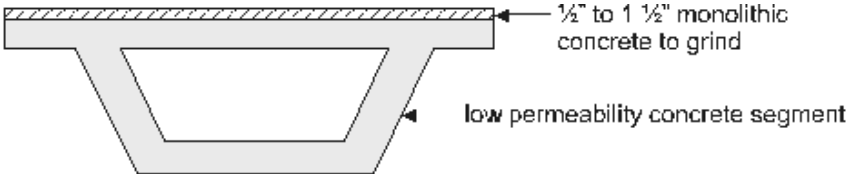




# REINFORCING CONCRETE : Methods of Construction : Pre-Cast



# REINFORCING CONCRETE : Methods of Construction : Pre-Cast



## REINFORCING CONCRETE : Methods of Construction : Pre-Cast



# REINFORCING CONCRETE : Methods of Construction : Pre-Cast or Site Cast





REINFORCED

Pre-Cast or Site Cast



# REINFORCING CONCRETE : Methods of Construction : Pre-Cast or Site Cast

Walker Art Center  
Herzog & De Meuron  
Site Cast Concrete: Water Jet through Steel Template



# REINFORCING CONCRETE : Methods of Construction : Pre-Cast

Liquid Wall



# REINFORCING CONCRETE : Methods of Construction :

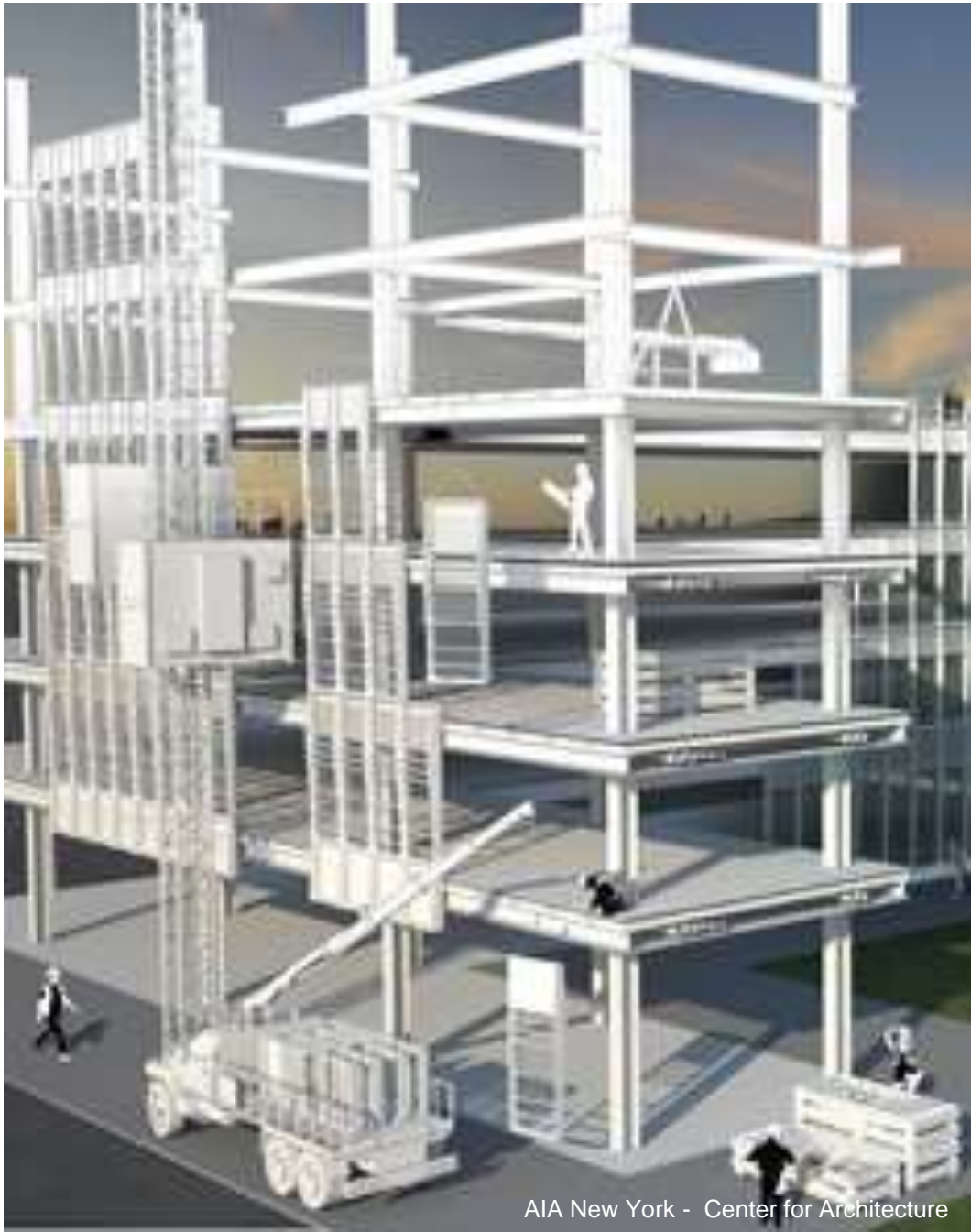
## Pre-Cast

### Curtain-Wall





# REINFORCING CONCRETE : Methods of Construction : Pre-Cast

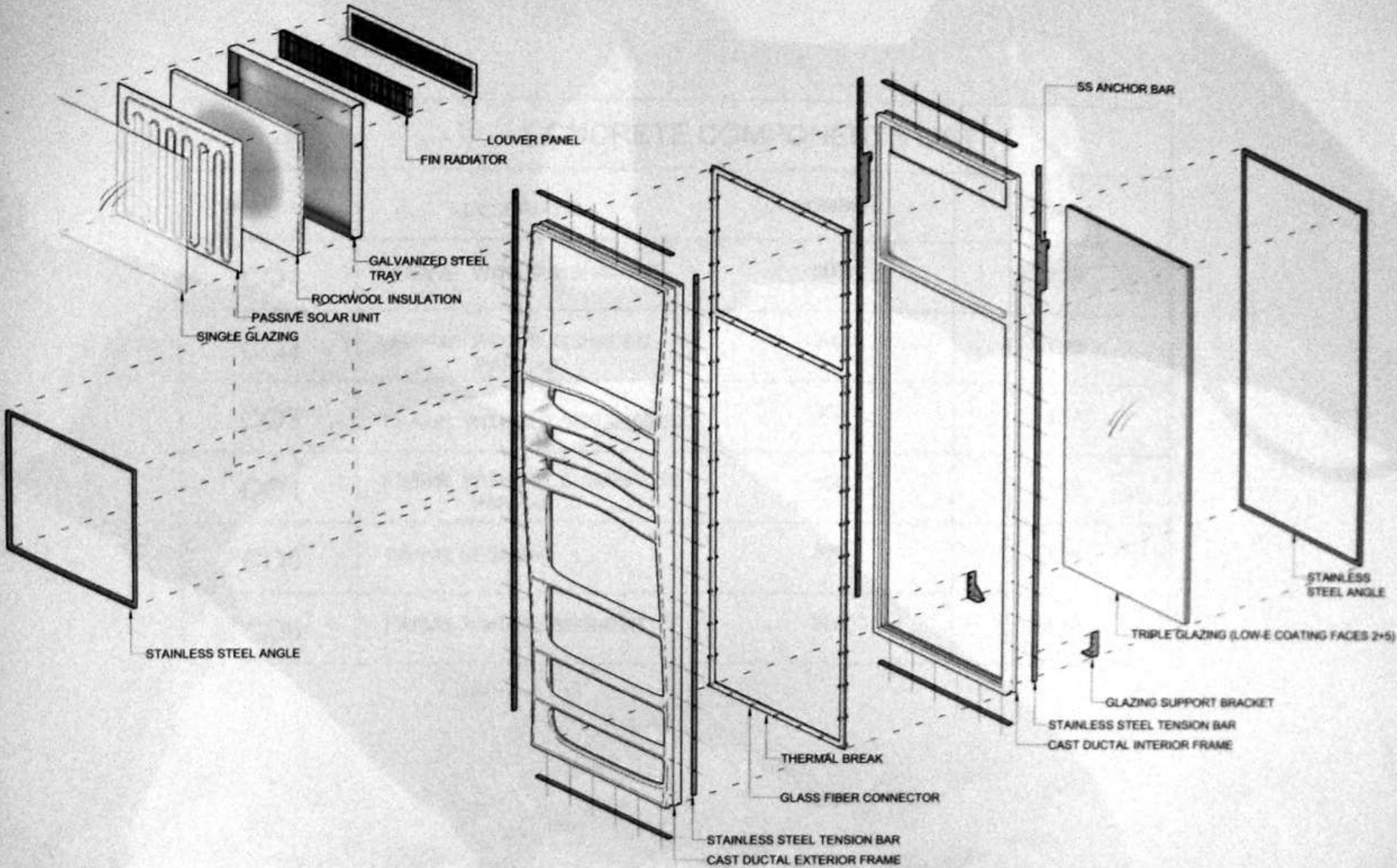


# REINFORCING CONCRETE : Methods of Construction : Pre-Cast



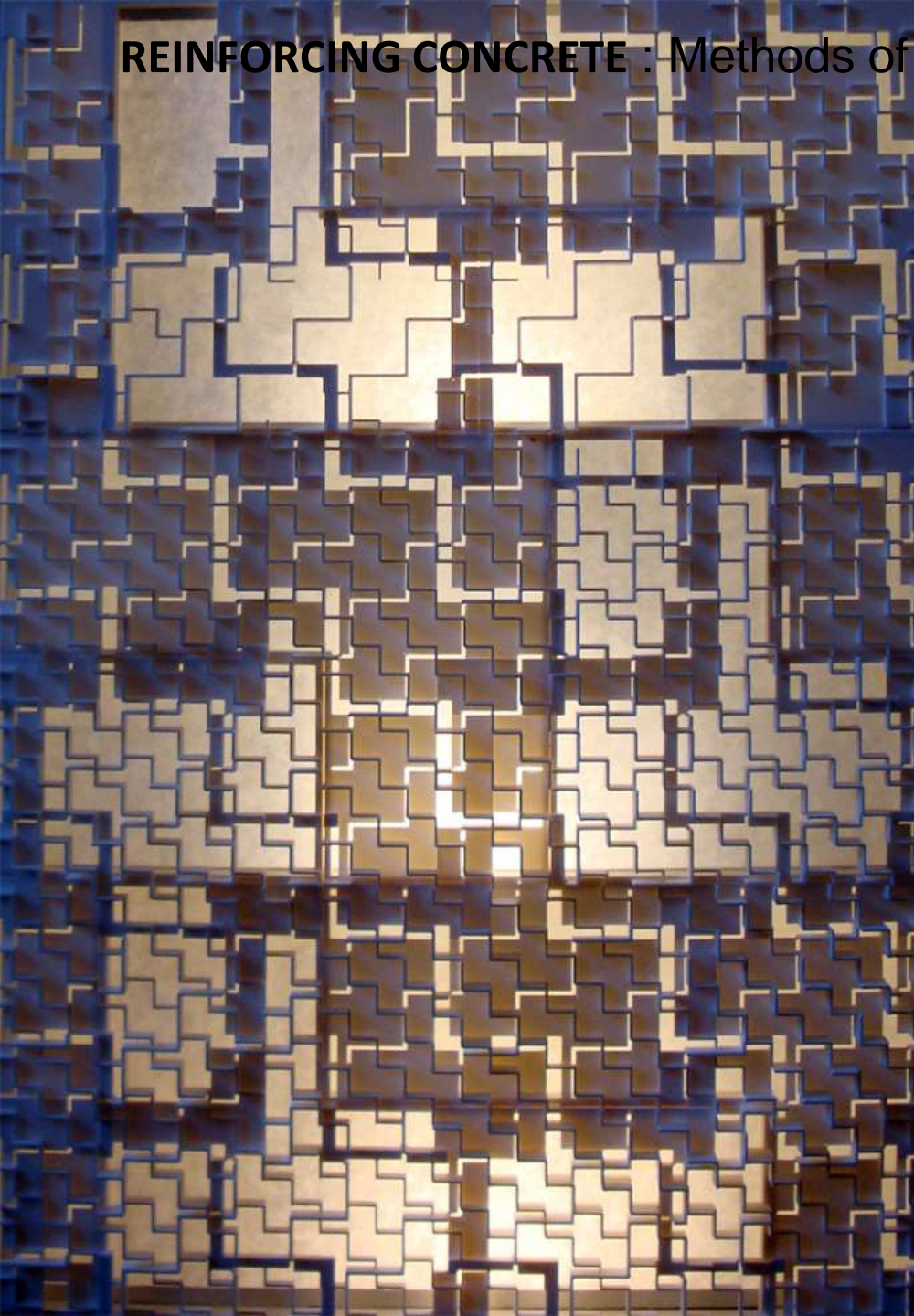


# REINFORCING CONCRETE : Methods of Construction : Pre-Cast





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**REINFORCING CONCRETE : Methods of Construction : Pre-Cast**





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REINFORCING CONCRETE : Methods of Construction : Pre-Cast





**REINFORCING CONCRETE : Methods of Construction : Pre-Cast**



**CONCRETE**



Tschumi - School of Architecture at Florida International University



CONCRETE: Photo-engraving



Herzog and DeMeuron  
Eberswalde Technical School  
Eberswalde, Germany, 1999



CONCRETE



Craig Gaulden Davis - Prince of Peace Catholic Church

# CONCRETE: Photocatalytic



Jubilee Church  
Richard Meier  
Rome, Italy 2003



# CONCRETE



**CONCRETE**



Hartshorne Plunkard - Teen Living Programs



# Reading:

Allen and Iano, Foundations  
Chapter 2, pp. 29-38, pp. 56-71

Ching, Building Construction Illustrated,  
Chapter 3, pp. 3.02-3.26







Photo. Prof. A. Aptekar





**Cite:** Gili Merin. "AD Classics: Habitat 67 / Safdie Architects" 21 Jul 2013. ArchDaily. Accessed 21 Feb 2019. <<https://www.archdaily.com/404803/ad-classics-habitat-67-moshe-safdie/>> ISSN 0719-8884



Photo. Prof. A. Aptekar





# REINFORCING CONCRETE: Videos

Precast/prestressed concrete Institute (PCI) :

<https://www.pci.org/PCI/Education/PCI/>

Spancreate:

<https://www.spancrete.com/>

Liquid Wall Prototype

<http://vimeo.com/15635281>

