UNIVERSITY of NOTRE DAME
School of Architecture

BUILDING TECHNOLOGY I / ARCH 20411
September 10, 2013

CONNECTIONS & PENETRATIONS

Exploring Customary Materials and Methods of Construction through the generation of standard details of primary building assemblies: Roof, Superstructure (wall), and Foundation; primary spanning devices (floor/s); and the customary methods of connection between these primary assemblies and the treatment of penetrations (openings – windows, doors, etc.) in them.

This is a two part exercise that you will work on in your (randomly assigned) small groups. Each group will select a **construction type** from the list provided. Each group is responsible for generating a series of 1½" details to describe:

DETAIL #2: A Typical Roof to Wall Connection

Graphic description and notes to describe the primary building assemblies depicted, roof and wall, and the method of connection between them

DETAIL # 3: A Typical Foundation to Wall Connection

Graphic description and notes to describe the primary building assemblies depicted, exterior bearing wall and foundation, and the method of connection between them.

This detail must also include the first floor structure and its connection to the superstructure. You must also show a single window penetration (this will show how the opening in the wall assembly is treated, at the head (top) of the window and at the sill, in order to accommodate the window assembly).

The purpose of this exercise is to *learn by doing*:

1) To gain an understanding of the fundamental logic of a specific construction type by drawing it;

2) To gain an understanding of the materials involved – you will need to be able to describe each component: what it is and what it does;

3) To become familiar with the reference materials architects use when selecting materials and designing building assemblies;

4) To learn how to draw and annotate technical details.

You are responsible for selecting an exemplary building or a series of details to reference when completing this assignment. **Please include full citation of the references sourced.**

Deliverables:

Your final drawing, a line drawing in pen/ ink, should be submitted on the **template provided**. Pay close attention to line-weights, note style, and the organization of your sheet. **Excellent primary sources:** Knoblock, Architectural Graphic Standards Student Edition and Standard 3rd and 4th Editions.

NB: You are primarily concerned with structural materials and assemblies that make the structure air and water tight; may make simple assumptions about interior wall finishes.

You will need to make an assumption about the depth of the building (assume you are drawing your details through the transverse section) and "size" the horizontal or pitched spanning devices accordingly. Please note assumed depth of building and reference the appropriate span table(s) for the spanning devices depicted in your details.

DEADLINES:

Detail # 2: **Thursday, September 19 at 12:30 pm**
Digital Copy to Box
Bring Hard Copy to Class

Detail # 3: **Thursday, November 14 at 12:30 pm** (note and correct on course schedule)
Digital Copy to Box
Bring Hard Copy to Class

CONSTRUCTION TYPES (AND VARIATIONS):

Load Bearing Masonry

1. Monolithic, Ashlar Masonry with pitched, timber roof
2. Composite/ Bonded masonry
    a. Opus Reticulatum OR Opus Quadratum
    b. Mill Construction (multi-wythe brick)

Modern Masonry Cavity Wall

3. Brick rain screen with masonry structure and parapet
4. Stone rain screen with masonry structure, pitched roof and closed eave

5. Heavy Timber
    a. Trussed Roof & Exterior Wood Framing System (or SIPS)
    b. Timber Rafters/ Purlins & Interior/ Infill Wood Framing System

6. Light Wood Framing
    a. Wood Cladding & Closed/ Boxed Eave & Rafters
    b. Masonry Veneer& Closed / Boxed Eave & Engineered Wood Trusses

7. Steel Frame with masonry infill, masonry veneer, parapet (sugg: composite floor system)

8. Light gauge steel framing with masonry veneer

9. Straw Bale Construction