



Senior Thesis Program
The Department of Architectural
Engineering
The Pennsylvania State University
University Park, PA

Building Statistics

This summary type assignment requires you to gain knowledge of and be able to describe the physical existing conditions of your building. Included is information relative to overall building systems, construction methods and design concepts. You should be able to discuss and answer questions throughout the semester relative to an overview understanding of all the systems and components of the building. Much of this information will be used in your thesis assignments including your discipline existing conditions reports, thesis abstract and fall semester proposal.

Address each of the topics noted below. Refer to the examples discussed in class. In some cases, you can simply list the appropriate information (i.e. building name, project delivery method, etc.). In most cases, particularly in the systems areas, you should provide one or more paragraphs on the topic. **A page with just bulleted items is not acceptable, particularly for the systems descriptions.**

Note: This assignment / section of the CPEP should be heavily populated with photographs, renderings, electronic building elevations etc. as they make it much easier to understand the size, scope and configuration of your buildings.

Finally, watch your sentence structure when creating this assignment. There is a tendency to start each sentence with “The” as you describe the various systems and building elements. Learn to vary your sentences for this and all other Senior Thesis Assignments. This is a W course and over time you will lose points on your assignments for not developing variety in your sentences.

Part 1

General Building Data

- Building name
- Location and site
- Building Occupant Name
- Occupancy or function types (type of building)
- Size (total square feet)
- Number of stories above grade / total levels
- Primary project team including owner, general contractor, CM, architects, engineers, etc.
 - ✓ Remember to provide live web links to the websites of these organizations
- Dates of construction (start – finish)
- Actual cost information (be specific on what type you are providing and what is included (i.e. just the building cost, overall project cost, soft costs, etc.) *If cost is a sensitive issue, note that the figures are being withheld at the request of the Owner, or costs are not*

available at this time, or something to that effect. Do not leave it blank or we will think you forgot.

- Project delivery method (design-bid-build, design-build, etc.)

Architecture

- Architecture (design and functional components)
- Major national model code/s (IBC 2003, BOCA 1999, etc. Do not list routine standards such as ASTM etc. for this assignment)
- Zoning
- Historical requirements of building or historical district where built (if applicable). This will not apply to most buildings but check to be sure. Again, list the topic and note as not applicable rather than leave blank.

Building Enclosure (New breakout section for 2009)

This section is to include very specific details about the various types of enclosure systems including windows, curtain wall systems (including the type of glass / glazing), façade / exterior wall materials and extents, and roofing. Note that Roofing is not the same as Roof. Roof generally refers to the structural framing and slab / decking used and is covered in the structural section. Roofing is the type of weather resistant covering used as part of the exterior enclosure (standing seam metal, EPDM, etc.). Shading devices may be described here or as part of the architecture description as they are often aesthetic as well. Photographs or renderings showing the facades or close up views of the enclosure elements often can save a lot of descriptive writing in this section. At a minimum use the two subtopics:

- Building façades
- Roofing

Sustainability Features (New breakout section for 2009)

Included in this section should be a description and photos as appropriate of the major active and passive sustainability features of the building or site. Roof top gardens, green roofs (remember they have Roofing underneath...see previous section), solar shades, natural ventilations etc.

Building Statistics - Part 2

This section requires system descriptions, not a listing of pieces and parts. For example, do not indicate you have a concrete structure with columns. What type of concrete structure is it? Give examples of spans and thicknesses etc. For example, the following is a **structural description** written by 2005 **Lighting/Electrical** Thesis Award Finalist Diane Emert: Refer to the e-studio archives for additional examples of all the various engineering system descriptions.

The structural system for Broadway Plaza is primarily a post-tensioned concrete system. The common multifunction floors (1-3) are 10"-12" thick non-post-tensioned concrete slab on concrete frame. Slab along the entry lobby is depressed 2 ". The structural slab system on the residential floors (4-25) is 8 " thick concrete flat plate post-tensioned system. This system reverts back to a thicker (10" or 12") non-post-tensioned concrete to support the residential penthouse, mechanical penthouse areas, and roof. The roof was built using a roof framing system of curved W16X26 beams to support the primarily curved metal roof. HSS4X8 beams can be found bracing the roof in addition to the W16X26 beams. Typical curtain wall construction, meanwhile, was used for several lower floor exterior walls. The skyway bridge is constructed of crisscrossing W8-18 beams and HSS3.5X3.5X1/4 beams clad in aluminum and glass.

Another example from the class of 2005 is this description of Cira Centre by structural student Andrew Kauffman:

The main super structure of the building consists of structural steel columns, beams, and flanges. Floors are composed of composite concrete floor slabs on composite metal decking supported by wide flange beams. Typical office floor beams are a W 18x40, while the typical girders are W21x44. Column sizes range from W14x61s to W14x605's. The foundation system of the Cira Centre consists of drilled concrete piers drilled from 9' – 21.5' into bedrock. Concrete piers are spaced on an approx. 30' x 30' grid. The lateral force resisting system of the Cira Centre is a combination of braced frames and moment resisting connections.

Primary Engineering Systems

- Construction (means and methods, special systems, expanded contract info, general items not covered in other engineering categories, etc.
- Electrical
- Lighting
- Mechanical
- Structural

Additional Engineering and Engineering Support Systems

- Fire Protection (active and passive systems as appropriate. Primarily fire construction type as defined by code)
- Transportation (elevators etc.)
- Telecommunications
- Special systems, special uses or unique aspects of the building / project not discussed above

Directions for Posting on your CPEP

A progress version of Part 1 of this assignment will be handed in very early in the semester (See the course schedule) in paper format. **Follow up drafts and final versions will be posted directly to your CPEP site.** As you will note from examples from previous years, this assignment **is not posted as a link to a .pdf file**, but rather text is inserted or created in an HTML file format, often with the use of tables.