Information from Construction Documents (100 points) The Millennium Science Building

Reference Architectural Graphic Standards and Building Construction Illustrated
Use the Assigned PSU Building for this homework, except questions noted as NCS (National Cad Standard) or Sweets Catalog/Network online at http://products.construction.com (free registration at site) or the large green Sweets Catalogs.
This is a group homework. Try sharing a google document so all members can update it at the same time. see https://support.google.com/drive/answer/2494822?hl=en
See PSU Box link on Angel or O:\PSU Drawings and Specifications\ (for assigned PSU building).
For all CD answers either list the Drawing sheet number and detail number or Specification page number

1 List the architect or engineer.
   ■ Architect - RV Architects (PA), LLC
   ■ Consulting Architect - Perfido Weiskopf wagstaff + Goettel
   ■ Structural Engineer - Thornton Tomasetti Engineers
   ■ MEP Engineer - Flack and Kurtz
   ■ Civil Engineer - Sweetland Engineers & Associates, INC

2 Do the exterior walls carry the building loads?
   ■ No (If there are columns probably not)

3 Does the building have a curtain wall?
   ■ Yes (A 2.2.8)

4 Is the building supported by columns? If so, what material?
   ■ Steel columns (S 1.0.1)

5 Do any interior walls carry the building loads?
   ■ Yes

6 What is the General Building Structural Type (Concrete, Steel, Wood or what combination)
   ■ (SPECS: 04 sec. 04810 Part 1 General 1.11) Concrete, Fire Rated CMU, Concrete Brick, Clay Facing Brick
   ■ (SPECS: 05 sec. 05120 Part 1 General 1.1 ) Structural Steel pipe support
   ■ (SPECS: 06 sec. 06100 Part 1 General 1.01) Wood framing and subflooring

7 What is the Basement (or lowest) structural Floor material (concrete, wood..)? What is the depth/thickness?
   ■ (S 1.0.2) Basement Level Slab on Grade Plan: Slab material is concrete. Slab sections labeled on drawing
     ○ Slab 1: 6” slab on grade
     ○ Slab 2: 8” on grade
     ○ Slab 3: 12” on grade
     ○ Slab 4: 24” on grade
     ○ Slab 7: 24” on grade
     ○ Slab 8: 12” on grade
   ■ (S 1.2A)
     ○ Total slab depth and concrete weight: 6 ¼” LWT
8. What is the Basement (or lowest) structural Floor Support (steel beam, concrete beam...)? What is the depth/thickness?
   - (S 1.0.2) Basement Level Slab on Grade Plan: Slab on grade with reinforcement. Slab sections labeled on drawing
     - Slab 1: 6x6 W1.4xW1.4 welded wire reinforcement top
     - Slab 2: #5 rebar @ 12"
     - Slab 3: #6 rebar @ 12"
     - Slab 4: reinforced with Enduro 600 fibermesh and Propex concrete systems
     - Slab 7: #7 rebar @ 12"
     - Slab 8: #4 rebar @ 12"
   - (A 0.4.0) Piles and pile caps because they are pictured on the elevation

9. What is the Upper structural Floor material (structural - wood..)? What is the depth/thickness?
   - (S 1.3A) Third Floor Part Plan A: Slab material is concrete. Slab sections labeled on drawing
     - Slab 1: 6” slab on grade
     - Slab 2: 8” on grade
     - Slab 3: 12” on grade
     - Slab 4: 24” on grade

10. What is the Upper structural Floor Support (steel beam..)? What is the depth/thickness?
    - (S 1.3A) Third Floor Part Plan A: Slab with reinforcement. Slab sections labeled on drawing
      - Slab 1: 6x6 W1.4xW1.4 welded wire reinforcement top
      - Slab 2: #5 rebar @ 12"
      - Slab 3: #6 rebar @ 12"
      - Slab 4: reinforced with Enduro 600 fibermesh and Propex concrete systems

11. List two (2) materials for the front door and or frame.
    - The front door is a double glass door with aluminum steel framing (A1.2.1C says the front door is N-F101, this door type is found on A7.3.1 type 12)

12. What is the floor finish material for the floor inside of the building at the front door/s?
    - Terrazzo flooring, stainless steel crate flooring in the vestibule (A6.1.1 type1)

13. What is the wall finish material for the walls inside of the building at the front door/s?
    - Glazing (A6.1.2 type 2)

14. What material/s are used for the windows?
    - Glass, Aluminum mullions (A4.5.2.B)

15. List three (3) materials for the exterior finish of the building.
    - brick (panels)
    - glass
    - metal sunshades (A2.2.9)

16. How is the exterior finish attached to the building?
    - Threaded in rod cast in precast panel bolted into a steel column (Found on sheet A4.9.20)

17. What is the roof slope or pitch?
    - The roof has a slope of 2% (Found on sheet A4-9-20)

18. What is the Roof finish material (shingles, etc....)
6 1/4" L.W. CONC. SLAB (Found on sheet A1.7.5)

19 What type and thickness of insulation is in the exterior wall system?
   ■ Composite wall cladding of rigid insulation and reinforced finish coating ("Class PB")
     (Found on page 07240-1)
   ■ The thickness is 11 ¼" (Found on sheet A4-6-12)

20 What type and thickness of insulation is used in the roof system?
   ■ Batt insulation (Found on page 07212-1)
   ■ The insulation is 6" thick (Found on page A5.5.21)

21 List one item that is listed in the specifications but would not be shown on the drawings.
   ■ Form of Agreement

22 List one item that is shown on the drawings but would not be listed in the specifications.
   ■ Dimensions

23 List 5 types of Plans
   ■ Campus Plan (A0.1.1), Site Plan (A0.1.2), Life Safety Plan - First Floor (A0.3.1), Roof Plan (A1.1.5), First Floor Reflected Ceiling Plan (A1.5.1)

24 Sketch the NCS (National CAD Standard) for a building section symbol.
   ■ (A0.0.2)

25 List a door number (with UL rating) and find the material for the frame and door. What is the UL rating?
   ■ Z001: Stair A (Ground Floor)
     ○ Door Material: SC (Solid Core)
     ○ Frame Material: AL (Aluminum)
     ○ UL Rating: 90 minutes
     ○ (A9.02, in the Biobehavioral Health Building drawings)

26 Find and list 3 partition type symbols and list all of the materials for a stair well.

27 Find and list the sheet number that has a revision, list the number, date and know it’s location on the sheet.
   ■ (Sheet Number - A 1.1.0), (Revision date - 7/7/2009)

28 What is the minimum depth from exterior grade to the bottom of the footer for an exterior wall?
- Depth of least thick pile cap - 3’ (S 2.1)
  Lowest elevation of exterior grade - 1150’ (L 1.1.0)
  Elevation of top of pile caps - 1147’ (S 1.0 A - in the notes)
  Exterior minimum depth - 6’

29 What is the design snow depth listed in IBC for the location where the building is built?
  - Roof snow load is 28 psf (Partial Specs pg. 671)

30 What is the smallest floor to floor height?
  - The 2nd Floor to the 3rd floor is 18 feet. (A 0.3.4)

31 What is the largest floor to floor height?
  - The 1st floor to the 2nd floor is 20 feet, reference sheet: A0-3-4/ Section 2 pg 53

32 What is the thickness of the concrete floor for all floor types?
  - 4” pg 94 Detail 10

33 What is the width of the metal studs used for a stair well?
  - 6 inch metal stud, reference sheet: A4-5-2-20/ Detail 8 p290 The wall located across from the stairs

34 What is the smallest interior wall width? (architectural -> partition types)
  - Interior wall width: 0’-1” 1/2 (Detail S11 page 616/ reference sheet: A7-2-1)

35 What is the largest foundation footer/pad thickness/depth?
  - Foundation footer: (Wall section 4 page 1094/ reference sheet: S2-11) Pad thickness: 6’-6” Depth: 4’-0”

36 Sketch the material representation for the following according to NCS (Read Drawings): (By hand)
  a. Steel
  b. Brick – plan, section and elevation
  c. CMU’s - plan, section and elevation
  d. Concrete
  e. Grout
  f. Wood Framing
  g. Finish Wood Trim
h. Batt Insulation

i. Rigid Insulation

37. List a manufacturer for the gypsum wall board. (Specs 2.03 Gypsum Board Materials)
   - National Gypsum Company: www.nationalgypsum.com

38. What line weight is used for walls according to NCS (Read Drawings - pg.10)?
   - Wall Thickness: (.50mm wide)

39. What scale could be used for a site plan according to NCS (Read Drawings)?
   - Engineering: 1”= 5000’ or 1”= 2500’ or 1”= 1250’ or 1”= 1000’ or 1”= 500’ or 1”= 200’
     or 1”= 100’ or 1”= 50’ or 1”= 40’ or 1”= 30’
   - Architectural: 1/32”= 1’

40. What scale could be used for a floor plan according to NCS (Read Drawings)?
   - Engineering: 1”= 20’ or 1”= 10’ or 1”= 5’
   - Architectural: 1/16”= 1’ or 1/8”= 1’ or 1/4”= 1’

41. What scale would be used for elevations based on question 40 above according to NCS (Read Drawings)?
   - Architectural: ¼” = 1’
   - Engineering: 1” = 5’

42. What scale would be used for building sections based on question 40 above according to NCS (Read Drawings)?
   - Architectural: 1/16” = 1’ or ¼” = 1’
   - Engineering: 1” = 20’ or 1” = 10’

43. What scale could be used for the partition types according to NCS (Read Drawings)?
   - Architectural: 3”=1’

44. What scale could be used for a wall section according to NCS (Read Drawings)?
   - Architectural: ½” = 1’ or ¼”=1’ or 1”=1’ 1-½” = 1’
   - Engineering: 1” = 2’ or 1”= 1’

45. What scale could be used for a detail taken from the wall section in question 44 above according to NCS (Read Drawings)?
   - Architectural: 3”=1’

46. List a manufacturer for gypsum wall board.
   - SPECS: 09 sec. 09230 Part 2.01 Manufacturers) For the Glass-fiber-reinforced gypsum fabrics
     ○ IndexForms, Inc
     ○ Plastrgals, Inc
     ○ Stromberg Architectural Products

47. List a manufacturer of steel doors or steel frames
   - SPECS:05 sec 05400 Part 2.01 Manufacturers) For Steel Framing
     ○ Dietrich Metal Framing
- Marino-Ware
- The Steel Network Inc
- Telling Industries
- Substitutions
  - (Specs08 sec 081190 Part 2.01 Manufacturers) For Steel Doors and Frames
    - Assa Abloy Ceco, Curries or Fleming
    - Windsor Republic Doors
    - Steelcraft
  - For Sound-Rated Steel Doors and Frames
    - Krieger Steel Products
    - Industrial Acoustics Company
    - Overly Manufacturing Company

48. What is the strength of the reinforcing?
   (SPECS:03 sec 03300 PArt 2.01 G Fibrous Reinforcement)
   - It will have a minimum tensile strength of 73-80 ksi

49. List strength of the concrete? List all strengths/types/uses. (under specifications and drawings)(under 03?)
   - (Drawings S0)
     - Foundation wall, slab on grade, footings, and all non listed concrete should have the strength of 4000 psi after 28 days.
     - The concrete pads and slabs should have the strength of 3000 psi.
     - The pile caps should have the strength of 6000 psi.
   - Types of concrete (SPECS:03 sec 03300) Normal Weight Concrete (5000 psi), Lightweight Concrete (4000 psi), Lightweight fill (3000 psi), Slump
   - Uses (SPECS:03 sec 03300) Formwork, beams, slabs, and columns according the the specs and drawings. For other uses see above in drawings bullet.

50. Combine individual sheet PDF’s into 1 file for each master format division. Add short cuts for each sheet using the sheet number on the sheet (EG A-101) Combine master format divisions into the following four (4) groups (go to sheet and add short cut and type in name ) (use adobe)
   a. G thru I
   b. Q thru P
   c. M
   d. E thru O

The Drawings and Specs are uploaded to the Google Folder and can be found [HERE](#).

Share these four (4) files from your PSU Box to Bowers and TA’s