**Midterm Exam for Civil Engineering & Architecture**

Instructions

Create space in the document below, and write or type your answers to each question. When you are done, submit your work as an email attachment.

Answer questions completely, and show all units (inches, square feet, cubic yards, etc).

Resources

1. You will need the Coronado House plans which were handed-out in class. These are also posted on the Midterm Exam page as the “Country Club Lane plans”. We have looked at these plans several times in the class.
2. Google Earth or other mapping application.

Scoring

50 questions, 2 points each (100 points total possible).

Basic Project Information

Refer to the Title Sheet (sheet A0-1).

1. What is the address of this project?
2. Who is the home owner? Who is the architect?
3. Who is acting (at this point) as the structural engineer, electrical engineer, and mechanical engineer?
4. What specific building codes will govern the design & construction of this residence? (there are at least seven).
5. What is the ‘legal description’ of the property?
6. Will this house require a fire sprinkler system?
7. What specific steps must be taken to prevent sediment, silt, debris, and stormwater runoff from entering the storm drain system during construction? (6 steps given)
8. Why do the plans require that existing underground utilities (underground water & sewer pipes, gas pipes, and electrical conduit) be located, identified, and ‘staked-out’ before any digging & excavation can take place? Think about this before answering.
9. What must be obtained before any existing trees can be removed from the city right-of-way (the area near the street & sidewalk)?

Project Site

For these questions, pull up the property on Google Earth, and also refer to the Site Plan on sheet A1-1.

1. Has the existing house been demolished? What is located on the site now?
2. Describe the house immediately to the left (920 Country Club Lane). Use as many architectural terms as you can. Describe the front of the house, the windows, doors, and other features.
3. Now look at the house across the street (the fairly new house – 901 C.C. Lane). Do you think (as an Architect) that this house “fits” in the neighborhood. Explain why or why not.
4. Now zoom out until you can see the whole surrounding area. What large recreational, man-made feature is a few blocks away?
5. Zoom out even further. What military base dominates the whole neighborhood?
6. On the Site Plan (sheet A1-1), what are the site dimensions? Give the dimensions of the front, back, and north & south sides of the property in feet and inches.
7. What is the lot size in square feet? You can estimate if needed.

Foundations

Refer to the Foundation Plan on sheet S1-1.

1. The Foundation Plan depicts four (4) column footings (concrete footings which support architectural columns) along the South side of the structure. What are the dimensions of these footings? Give the length and width in feet and inches.
2. The plans call for a 5-inch thick concrete slab-on-grade foundation. For estimating purposes, if the foundation slab is 60-ft long X 54-ft wide, and is exactly 5-inches thick, how many cubic feet of concrete is needed? Hint: the volume is L x W x H. You will need to convert all dimensions to feet, first.
3. How many cubic yards of concrete does this represent? Hint: there are 27 cubic feet in 1 cubic yard.
4. How many concrete mix trucks will be needed? Assume each truck carries 9 cubic yards of wet concrete. (Check your answer for reasonableness. If you get 1,000 concrete trucks or something, it’s wrong!)
5. The plans call for #4 rebar to be placed in the foundation slab every 18 inches (an 18 X 18 grid pattern). What is the diameter of #4 rebar? In other words, how thick is it? Use the Internet.
6. What is the purpose of the rebar? Try to be as specific as possible.

Floors and Walls

Refer to the 1st and 2nd Floor Plans on sheet A2-1.

1. When you enter from the front porch through the front door (the door labeled with a 1 inside an oval), what room is to your left?
2. What are the dimensions of that room, in feet and inches? Estimate as best you can.
3. In that same room, there is a ‘callout’ showing a #14 inside a diamond. What is that contraption?
4. You walk over to the kitchen. How many people can comfortably sit at the kitchen island?
5. Hungry, you walk over to the Panty. What are the dimensions of the walk-in Pantry, in feet and inches? Estimate as best you can.
6. How many bathrooms are located on the first floor?
7. In the Laundry Room, two items are labeled with a #3 and #4 inside diamonds. What are these objects?
8. Now go upstairs. How many bedrooms are located on the second floor?
9. Does each upstairs bedroom have its own bathroom?
10. Does each upstairs bathroom have its own tub or shower?
11. In the Master Bath, how many sinks are there? How many water closets (toilets)? How many bathtubs?
12. What are the dimensions of “Her” walk-in closet in feet and inches?
13. The Master Bedroom is located directly over which room on the first floor?
14. The Game Room is located over which room on the first floor?

Doors and Windows

Refer to the Door Schedule on sheet A5-1.

1. How many doors will be required for this house?
2. What is the width in feet and inches of the widest door needed? What is the width in feet and inches of the narrowest door?
3. How many different “Door Types” are used in the residence?
4. What material are all the doors made from? (not including any glass inserts).
5. What type of “Finish” must all the doors have?
6. What are the dimensions (width and height) of the Front Door (entry door) in feet and inches?

Roof Systems

Refer to the Roof Plan on sheet A2-2.

1. What type of roofing material is specified for this house? List the manufacturer and the type.
2. What size in feet and inches are the roof overhangs all around the perimeter of the roof?
3. What material is to be used as the decking (the part you walk on) for the observation deck?
4. West Elevation (sheet A3-2) shows two people up on the observation deck. How does a person get up there?
5. If the 2 people on the observation deck cut a hole in the deck flooring, what room on the second floor would they be looking into?

Exterior Walls

Refer to the Exterior Elevations on sheets A3-1 and A3-2.

1. What type of siding material is specified for the house exterior?
2. How tall is this house?
3. What is the elevation in feet and inches of the first and second floors?