Learning Objectives:

1. To understand that engineering and design are processes that require a technical skill set and effective written/oral communication in equal parts.
2. To experience the iterative basis for engineering design, construction, and permitting in the United States.
3. To practice and reinforce mathematics-based skills such as creating scaled drawings, visualizing and understanding spatial information, reading maps, and understanding technical writing.
4. To introduce students to higher level applied mathematics/engineering in the form of geospatial information systems and structural analysis.

Problem Statement:

You are employed for a local design-build housing firm in Aurora Colorado. You have been assigned to be the project manager and lead developer for a single family residence to be permitted and built in Aurora. Your client is a science teacher at Aurora Hills and has recently won the lottery. As money is no longer an option for your client you will only need to design and build a structure that makes him happy. You will have to meet with your client to discuss his preferences and requirements for his new home. You will also be responsible for meeting with a civil/structural engineering subcontractor to review your housing plans and having specialty drawings (electrical/plumbing, site layout/parking) developed and approved. You must also have your building permitted by the city of Aurora prior to final submittal to your construction group.

Client: Mr. Elliot

Engineering Contractor: Mr. Huggins

City Permitting Officer: Mr. Potozak

Project Requirements:

1. The client has identified three locations within Aurora that he would consider constructing his home, the coordinates are
   1.1. TBD

2. The client really loves custom homes, he wants you to design a dwelling for each location (just a quick floorplan with FLW Design Studio will be fine) for him to look over. He would like you to pay particular attention to any natural features (waterways, mountain views) and built features (the cityscape of Denver) when making the preliminary design.

3. After you have agreed on a location and a preliminary design with your client please finish the preliminary design to include any comments or requests from your client meeting.

4. Please print your floorplan in duplicate, someone will assist you if needed.
5. Schedule a meeting with the consulting engineer who will discuss with you relevant setback
requirements, parking requirements, electrical and plumbing code requirements.
6. Please draw up an electrical/plumbing plan, and site plan based on your discussion with the
engineer.
7. Schedule another meeting with your consultant engineer to review the plans
8. Address any markups
9. When finished, take plans to client for final review
10. Schedule a permit hearing with the building code officer. You will need to be in compliance
with city building regulations to begin construction. Remember, the city has an engineer also,
both professionals will need to sign off on your plans, this is why you hired your consultant.
If you have any special requests for code variances, you will have to make your case to the
building officer.
11. If the permit officer approves your plans, you are finished. If not, you will need to address
any shortcomings with your client and consulting engineer before resubmitting to the city.

Sources:

Frank Lloyd Wright Architectural Design Studio:
http://www.architectstudio3d.org/AS3d/home.html

Colorado Geospatial Information Systems Clearinghouse
http://coloradogis.nsm.du.edu/Portal/

City of Aurora Building Code
building design and architectural standards

parking ordinances