This project is worth 7 real points

Congratulations! You, as the head networking consultant for F-R Networks, have been given the task of providing full high-speed networking for a collection of buildings (a ‘campus’) that, mysteriously, has no such infrastructure now. The map, below, gives you an idea of what you face. The total size of the campus, as shown on the map is 300 m long \times 150 m wide. All buildings are the same size except building C, which is 10 m taller (and just over twice as wide) than the others. One consequence of this is that there is no clear line-of-sight from buildings (D & E) to buildings (A & B).

All five buildings have to be linked together, as the company has at least 50 employees in each. The company has no Internet presence, so as part of your work, you need to establish them as “gotnonet.com.” That means, e.g., their employees will get email access as employee_lastname.employee_firstname@gotnonet.com. The company also wants a web site set up, www.gotnonet.com. The goal is to provide fast, reliable and secure network service for all employees anywhere on the campus, with full access to the Internet. Login access from the Internet should be via secure means, i.e., ssh only.

Note one feature of the layout is that there is a rail line going through the campus. Two of the buildings are on one side of the tracks, three on the other. The railway company has right-of-way over a strip of land 6 metres wide with the tracks in the middle of the strip, and will not allow any digging under the tracks or the placing of any wire or cable on towers over the tracks.

For this project you are to produce a written proposal to your customer (me; I pay the consulting fee in points depending on how good the report is) sketching the broad lines of how you will supply the network infrastructure they require. You must present a solution that includes at least these two scenarios:

1. An integrated solution making use of public networks wherever appropriate,
2. A completely internal solution, using no public networks; all the networking is handled internally

Keep the project short: it is given late in the semester, partly in the expectation that you are not intended to put weeks of time into the report (as one easily enough could, were there time).

The project should hit the high points like what has to be set up to provide network campus-wide network access, how the company gets its domain and web service established and what resources are needed to implement all this. You don’t need, e.g., to explore different router capabilities and prices, but should tell me where you might need to put a router in your design.