

Office Building Case Study

Due: 10:00, Thursday 6 May 2009

No late submissions accepted

Contributes 50% to Overall Project III Mark

Prepare an outline structural scheme for an office building with basement car-park. The client is a speculative developer and so both cost and prestige are important. The building layout is given further on, along with the dimensions of your particular building, and the number of storeys, n .

In addition to other relevant information, you must address the following:

- Select a structural material, form of construction, and cladding;
- Sketch the structural scheme showing columns/beams/slabs etc.;
- With minimum calculation, indicate approximate sizes for the main structural elements;
- Identify lift/stair core locations, taking into account basic fire escape requirements;
- Identify any expansion joints that may be required and how lateral stability is achieved;
- Prepare a car-park scheme, indicating circulation/access, column locations, and ventilation;
- Show how the basement car-park structure relates to that of the building overhead;
- Identify how costs have been minimized and a feature that provides prestige to the building, both as required by the client.

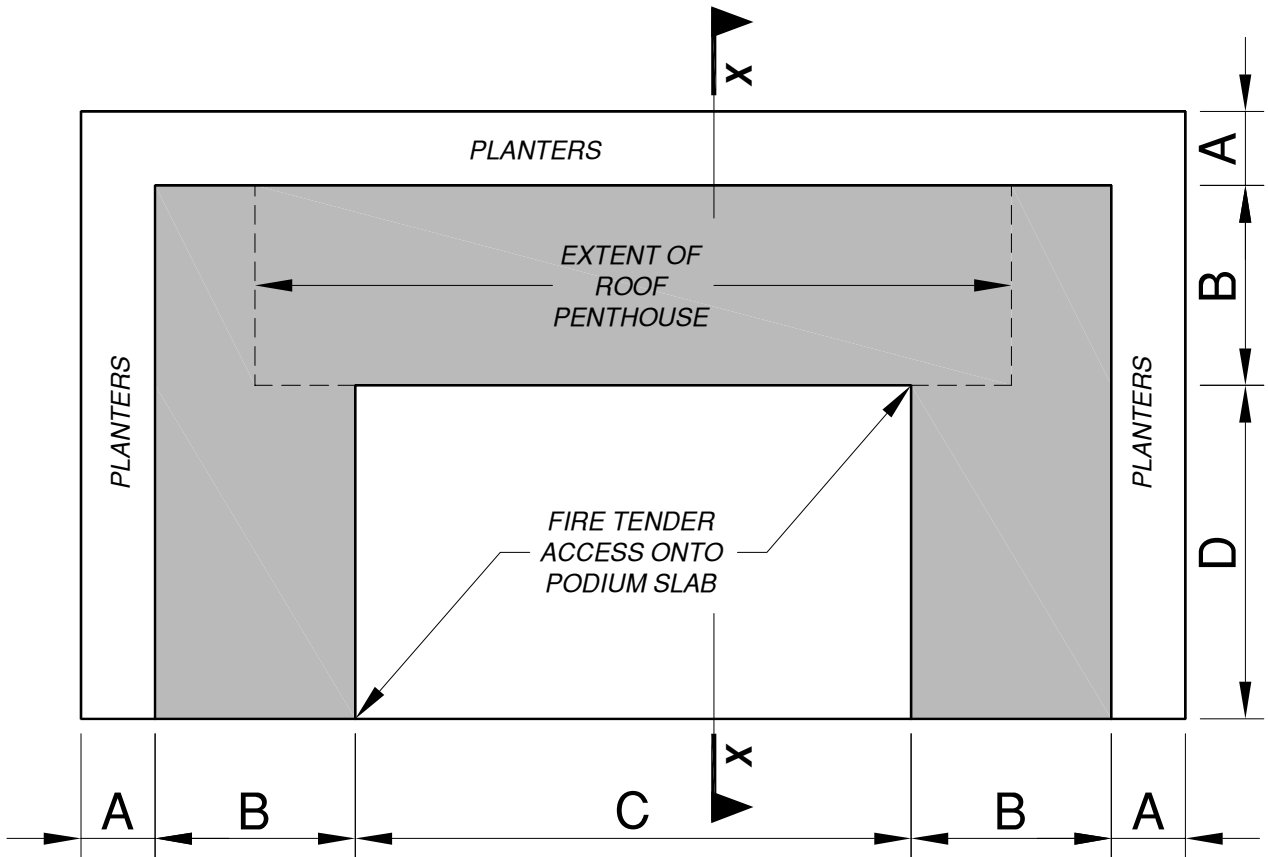
Note

The problem is deliberately vague (to reflect the practice of structural engineering) and so requires you to make *reasoned, rational* decisions, which you must justify. Some other points are:

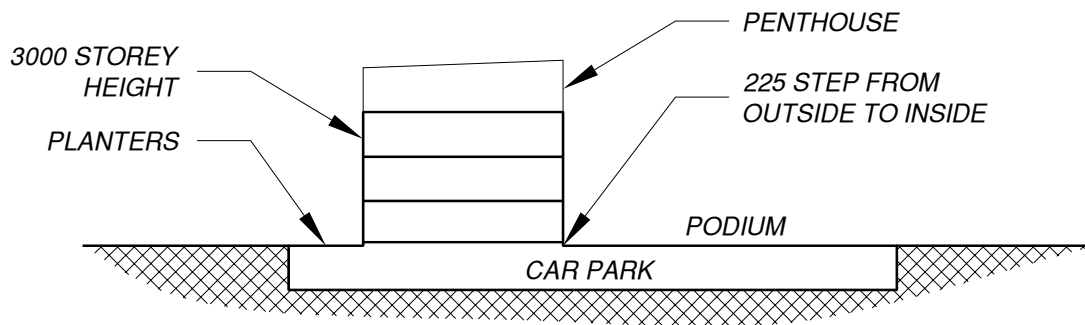
- The basement car park extends under the full site;
- The car-park access ramp must be contained on site;
- Site access can be achieved from any boundary.

Directions

1. Prepare a report on your design, following the Report Guidelines. Include any calculations in an Appendix. The total length of your report will be between 15 and 30 pages.
2. Prepare a set of A3 drawings, done by hand, showing, at minimum, typical floor plan; car-park layout; two orthogonal sections, and; relevant structural details of interest.
3. Prepare a storyboard to outline your design using no more than two A1 boards. You may use both sides. Your storyboard will contain your A3 drawings and relevant extracts from your report.
4. You will present your storyboard, drawings and report at an individual assessment.
5. Submissions that do not meet the Report Guidelines, are poorly presented, or do not meet the other directions will be returned to be re-submitted and re-presented at a later date.



PLAN



SECTION X-X

Name		A (m)	B (m)	C (m)	D (m)	Storeys <i>n</i>
James	Ashmore	2.5	11.5	39.5	21.5	4
Sean	Bradley	4.0	11.0	38.0	26.5	3
Peter	Brady	2.5	10.5	31.0	20.5	5
John	Breen	4.5	10.5	32.0	19.0	5
Adam	Carpenter	4.5	10.5	32.5	21.5	4
Peter	Coleman	4.0	9.0	31.5	25.0	3
Kieran	Convery	3.0	13.0	41.0	19.5	3
Liam	Corscadden	4.0	10.0	37.5	26.0	5
Cillian	Courtney-Finn	3.0	10.0	39.0	20.0	5
Ian	Crowley	4.5	10.5	38.5	23.5	5
Kevin	Doody	3.5	11.5	30.5	20.5	3
Oisin	Doyle	5.0	12.0	42.0	24.0	4
Matthew	Fagan	4.0	15.0	43.0	29.5	4
Kevin	Freyne	4.5	14.0	34.5	22.0	5
Killian	Gallagher	4.0	13.0	38.5	19.5	4
David	Gibbons	3.0	11.0	32.5	29.5	4
Sean	Harpur	2.5	14.0	35.5	29.5	4
Jane	Hennaghan	2.5	9.0	35.5	23.5	4
Kevin	Higgins	3.5	14.0	31.0	23.0	4
Domhnall	Keane	3.5	14.5	41.5	27.5	5
Fergal	Kellett	4.0	10.0	30.5	23.0	3
Maria	Leonard	3.5	13.0	39.0	18.0	5
Killian	Mason	4.5	12.0	40.0	25.0	4
Robert	McAuliffe	3.5	12.5	43.5	29.0	4
Fiach	McDaid	3.5	10.5	42.5	20.0	4
Craig	McDonnell	5.0	10.5	36.5	18.0	4
David	McGuire	4.5	14.0	35.0	28.0	4
Joseph	Mears	3.0	14.0	44.0	23.5	3
Anthony	Morris	3.0	12.5	41.5	23.5	4
Padraig	Mullen	2.0	14.0	34.0	28.0	5
Joseph	Muller	4.0	14.5	30.5	28.5	4
Colin	Mulvihill	4.0	11.0	35.5	23.5	5
Enda	Murphy	2.5	10.0	38.0	22.5	5
Gavin	Murphy	2.5	15.0	36.0	24.5	3
Tom	Nolan	3.5	14.5	30.5	28.5	4
William	Noonan	4.5	11.5	32.5	20.0	5
Kevin	O'Brien	2.5	13.0	31.0	23.0	4
Neal	Rehahan	2.0	12.5	42.5	26.0	5
David	Roche	4.0	14.5	41.0	25.0	5
Miriam	Ryan	4.5	10.5	43.5	28.5	3
David	Sreenan	4.5	11.5	44.5	27.0	4
James	Sutton	2.5	13.0	32.5	26.0	5
Aidan	Tighe	4.0	15.0	35.0	29.0	5
Thomas	Vaughan	3.5	10.0	32.0	28.5	5
James	Whelan	3.0	12.0	33.5	25.5	5