



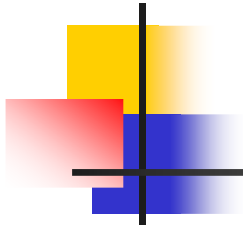
Progressive Collapse

Andrew Macilwraith ME CEng MIEI MISTrustE MIBCI

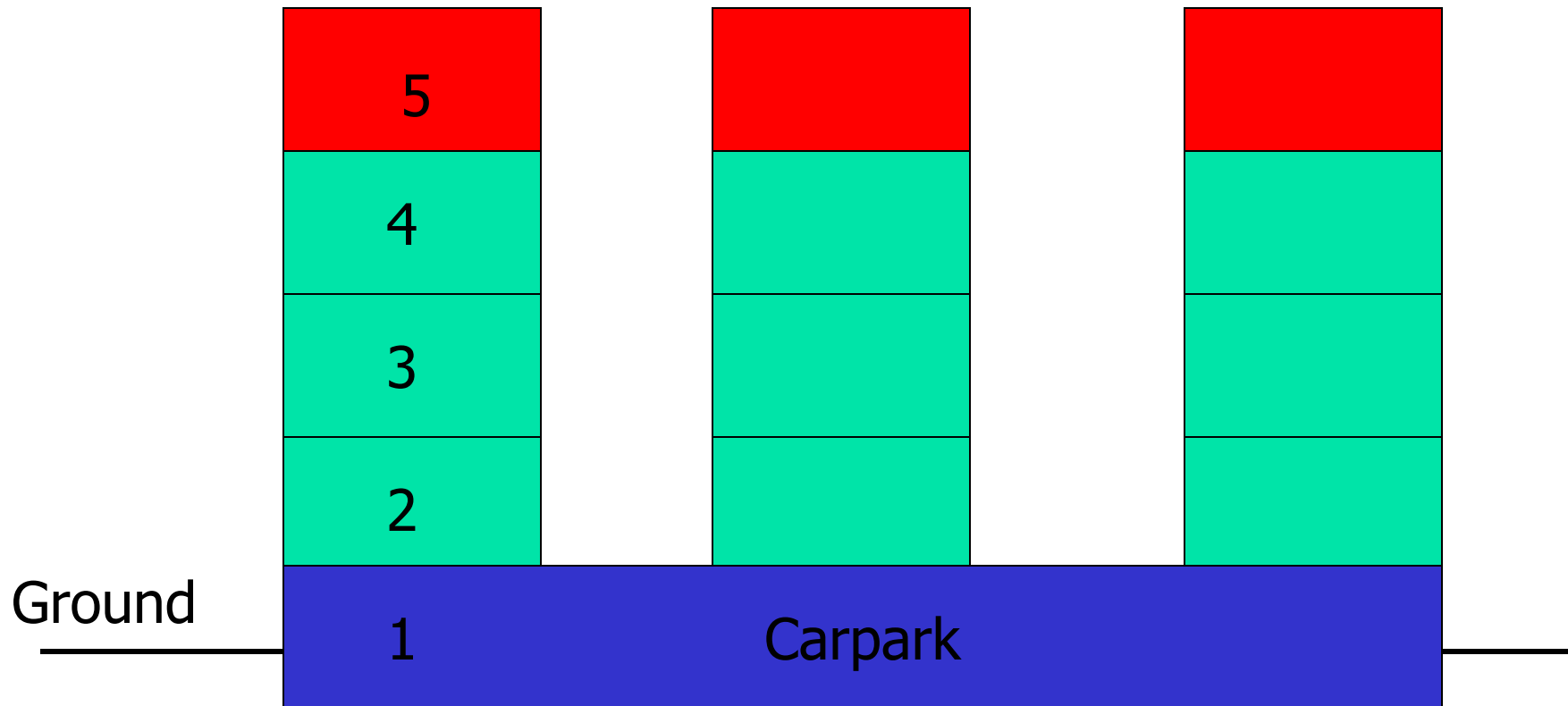
Chartered Structural Engineer

Senior Executive Fire Officer (Building Control)

Cork County Council



Current Project





Masonry IS 325 - STABILITY

- 1. Resist Lateral Forces by walls in plane of forces or by bracing.
- 2. Responsibility for overall stability clearly defined party.



Accidental Forces – 20.2

- ● Prevent catastrophic collapse, or disproportionate collapse in event of accident or misuse
- ● Additional requirements if hazardous process - chemical plants, flour mills etc. consider ERPs (explosion relief panels).
- ● Protect vital load-bearing members against damage from vehicular traffic.



Damage Limitation

- ● Design as protected members
- ● Un-protected members cannot result in collapse of adjacent stories > Lesser of 70m² or 15% of floor area of storey.



Load Factors

- (Clause 22(d))
- 0.95 & 1.05 Dead Load & Permanent Imposed.
- 0.35 for general imposed



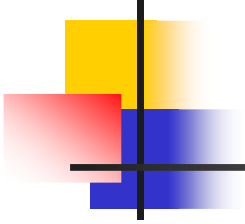
4 Storey Buildings – Table 12

- Horizontal Ties - Peripheral & internal
CColumns & walls tied in to horizontal elements.



5 Storey Buildings

- ● **Option 1** - Both Vertical & Horizontal structural elements removable one at a time.
- ● **Option 2** - Provide Horizontal Ties & Remove Vertical Structural Elements one at a time.
- ● **Option 3** - Provide Horizontal Ties & Vertical Ties.



Thank You