

Index

- Architect, 1, 16, 81
- Asbestos-cement corrugated sheeting, 18, 81
- Assessment of loads, 8, 120
- Beams, 7, 15–16, 26–33, 122, 129
 - bending, 10, 15, 16, 26–33, 129
 - brackets, 60–5
 - choice of sections, 6–7, 129
 - connections, 65–6, 74–7
 - end restraint, 26, 60
 - flange restraint, 26, 29
 - web, buckling, 15, 62–4
 - crushing, 15, 62
 - shearing, 15, 64
- Bending, relationship to shear, 9
- Bolts, loading values, 72–4
 - types, 70–1
- Brittle fracture, 12
- Buckling length, 17
- Camber, in plate girder, 48
- Client, 1
- Collapse load, 12
- Columns, 17–18, 33–41, 101–7, 140–1
 - base plates, 55–60, 105–7, 133–4
 - buckling, 17–18
 - connections, 60, 76–80
 - eccentricity of loading, 39
 - end fixity, 17, 40–1
 - formulae, 17, 18, 39
 - foundations, 66–70, 108–10, 132–3
 - radius of gyration, 18, 40
 - slenderness ratio, 17, 118
 - splice, 66
- Corrugated sheeting, 18, 81
- Cost of fabrication, 6, 137
- Curtailment diagram for flange plates, 52
- Customer, 1
- Dead load, 8
- Deflection, 13
 - beams, 33
 - plate girder, 47
- Depth, plate girder, 41, 47, 141–3
- Design procedure, 1, 6, 138
 - preliminary considerations to, 1
 - procedure in, 6
- Drainage of roofs, 120–1
- Drawings, 1
- Dynamic loading, 8
- Economical design, 1, 16, 137–43
- Effective length, 17
- Elastic limit, 10
 - range, 10
 - theory of design, 10, 11
- Engineer as designer, 1
- Erection procedure, 67
- Fabricated units, size of, 5
- Fabrication costs, 6, 137
- Factor of safety, 12
- Fatigue, 12
- Flange, plate curtailment, 52
 - stresses, in beams, 30, 33
 - in plate girders, 43, 45–6
- Floor, loads, 30
- Foundations, 66–70, 108–10, 132–3
- Gable and side framing, 112–19
- Grouting to column bases, 67–8
- Gyration, radius of, 18, 40

- Holes, allowance for, in tie members, 22–3
- Inertia, moment of, (second moment of area), 13–14
- Ladders, access, 134–5
- Lattice girders, 21–2
- Load, assessment, 8
 - dead, 8
 - dynamic, 8
 - factor, 12
 - live, 8
 - relationship to stress and strain, 9
- Maintenance of exposed structure, 135–6
- Minimum size and thickness of material, 4, 136
- Moment of inertia, (second moment of area), 13, 14
- Moment of resistance, 10
- Neutral axis, 9
 - plane, 9
- Plastic theory of design, 11
- Plate girder, 41–55
 - assumptions in design, 41
 - camber, 48
 - curtailment of flange plates, 52
 - deflection, 47
 - depth, 41, 47, 141–3
 - flanges, 41, 43
 - inertia, 48
 - web, 44, 49
 - weight, 41, 52
 - welded connections, 53, 54
- Pressure, wind, 33, 84–7, 125–8
- Purlins, 87–90
- Radius of gyration, 18, 40
- Roof, coverings, 18, 81
 - drainage, 120–1
 - purlins, 87–90
 - trusses, 18–19, 81–4, 90–101
 - connections in, 99–101
 - design of members in, 93–9
 - force diagrams of, 91–4
 - framing of, 18–19, 82–4
- Roof, trusses (*contd.*)
 - spacing of, 82–4, 139–40
 - types of, 18–19
 - weight of, 90
 - wind loading on, 91, 93–4
- Safety factor, 12
- Section, modulus, 14
 - properties of, 13
- Shear, in beams, 15, 64
 - plate girders, 49
 - relationship to bending, 9
- Sheeting rails, 110–12
- Shop premises, 24–80
- SI units, 3
- Side and gable framing, 112–19
- Size of fabricated units, 5
- Slenderness ratio, 17, 118
- Specifications, 4–7, 84
- Steel, grades of, 7
- Strain, 10–12
- Stress, distribution in beams, 15
 - ultimate, 10, 12
 - working, 11, 12
 - yield, 10
- Struts, 17
- Tabulated information, 8
- Tension members, 22–3, 97–9
- Transport of large fabricated pieces, 5
- Triangulated frameworks, 18
- Ultimate stress, 10, 12
- Units, design, 3
- Warren girder, 21–2
- Water tower, 122–36
- Weight, of plate girders, 41, 52
 - of roof trusses, 90
- Welded connections, beams, 65–6, 74–6
 - columns, 56–7, 77–80
 - plate girder, 53–5
- Wind, bracing, 113–17, 124–8
 - pressure, 33, 84–7, 125–8
- Working load, 12
 - stress, 11, 12
- Workshop design, 81–121
- Yield point, 10–12
 - stress, 10