In this chapter, a complete visual technical investigation is done to cast light on the detailed design of the market building and its components. The essence of the design lies in its detailed connections.
Technical Resolution
BASEMENT PLAN

>>117: Basement floor plan.
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GROUND FLOOR PLAN

>>118: Groundfloor plan.
FIRST FLOOR PLAN
SECOND FLOOR PLAN

>>120: Second floor plan.
PORTAL FRAME STRUCTURE ON 800mm X 800mm CONCRETE FOOTINGS/COLUMNS

TEC TONIC

STEREOTOMIC

CONCRETE BASEMENT FLOORS AND RETAINING WALLS

CONCRETE FLOOR SLABS = 300mm DEEP WITH 500mm DEEP BEAMS IN BOTH DIRECTIONS

LIGHTWEIGHT CONCRETE SUSPENDED FLOOR SLABS = 320mm DEEP WITH 25mm Ø STEEL CABLES

VENTILATION/CIRCULATION CORES = GLASS CURTAIN WALLS AND STEEL STRUCTURE

STRUCTURAL COMPOSITION

>>121: Isometric structural composition.
**Structural Calculations**

**Steel Suspension Cable Floor Layout**

- Portal Frames
  - L = 40 M
  - L/4 = 10 M
  - Frame Spacing = 10 M
  - Frame Depth
    - L/D = 35 – 40
    - D = 1.25 M

- Elements in Frame
  - H-Section Steel Posts
    - H Between Floors = 4 M
    - H/3 = 1.33 M (Correct)
    - H/0.3 = 13.3 M (Correct)

- Substructure
  - Concrete Columns
    - Height Between Floors = 4 M
    - H/d = 6 - 15
    - d = 500 mm (Est.)
    - 4/0.5 = 8 (Correct)

  - X = Height/10
    - 1500/10
    - 1500 mm

  - Y = Span/20
    - 36000/20
    - 1800 mm

**Lightweight Concrete Suspended Floors**

- H = Span/32
  - 10000 mm / 32
  - 312.5 mm

**Direction A**

**Direction B**

- Steel suspension cable floor layout showing connection points.

- Lightweight concrete suspended floor design with internal spherical void formers.
SECTION C-C
DETAILED DESIGN

PORTAL FRAME CONNECTION TO CONCRETE COLUMN

Steel to concrete connection detail.

Steel to concrete connection detail.

Technical resolution.
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PORTAL FRAME TENSION MEMBERS DETAIL

>>128: Portal frame detailed design.
129: Service core glass facade detail.

GLASS CURTAIN WALL DETAIL
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>>130: Suspended floor horizontal service duct detail.

>>131: Floor anchor detail.
Powerglass, plexiglass and aluminium louvre roof details.
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36 mm X 36 mm RECYCLED PLASTIC PLANKS CONNECTED TO STEEL STRUCTURE WITH M12 SUNKEN BOLTS

RECYCLED PLASTIC COUNTER AND SHELF DETAIL
RECYCLED PLASTIC CORNER COVER CONNECTED TO STEEL STRUCTURE WITH SUNKEN M12 BOLTS
GALVANISED STEEL GRID OVER PLASTIC CHANNEL COLLECTING LOOSE PIECES OF PRODUCE
STEEL AND RECYCLED PLASTIC SHELF, FITTED ONTO CORNER BRACKETS

36 mm X 36 mm RECYCLED PLASTIC PLANKS CONNECTED TO STEEL STRUCTURE WITH M12 SUNKEN BOLTS
STEEL TRACK FOR RUBBER WHEELS
80 mm DIAMETER INDUSTRIAL RUBBER WHEEL, RUNNING ON A 10 mm ROUND STEEL SECTION AXI

RECYCLED PLASTIC FLOORING BOARDS, FIXED TO STEEL FLOOR STRUCTURE WITH GALVANISED BOLTS
2.5 mm WALL THICKNESS GALVANISED STEEL CORNER BRACKET

80 mm DIAMETER INDUSTRIAL RUBBER WHEEL, RUNNING ON A 10 mm ROUND STEEL SECTION AXIS
RECONSTITUTED FLEXIBLE POLYURETHANE FOAM RUBBER SHEET
75 x 75 x 20 x 3 mm COLD FORMED TOP HAT STEEL SECTION FIXED INTO CONCRETE WITH ZINC EPOXY

>>133: Market stall detail.