

MODULAR PRECAST CONCRETE BUS SHELTER

Technical Specification & Design Data Sheet

Document Ref:	TS-PC-BS-2026	Standard Compliance:	IS 456, IS 15916, ASTM C109
Product Model:	PC-BS-01 (Standard Heavy Duty)	Last Updated:	June 23, 2026

1. PRODUCT OVERVIEW

The **PC-BS-01 Precast Concrete Bus Shelter** is a heavy-duty, modular, vandal-resistant public transit infrastructure solution. Engineered using high-strength reinforced cement concrete (RCC), this monolithic-style structure provides maximum protection against extreme weather conditions, requires virtually zero maintenance, and offers rapid deployment capability.

Featuring a split-compartment design with an integrated continuous precast concrete bench, high-clearance openings, and strategic rear viewing slots, the architecture balances user comfort, personal safety, and structural longevity.

2. KEY STRUCTURAL DIMENSIONS

PARAMETER	SPECIFICATION VALUE
Overall Length (Outer)	4500 mm (4.50 m)
Overall Width / Depth	1800 mm (1.80 m)
Overall Height (Front to Roof Level)	2400 mm (2.40 m)
Wall Thickness	100 mm to 125 mm (Reinforced)
Integrated Bench Height	450 mm from finished floor level
Integrated Bench Depth	400 mm
Estimated Total Weight	Approx. 7.5 Metric Tons (distributed across modular segments)

3. MATERIAL & COMPOSITION SPECIFICATIONS

Concrete Mix Design: M35 / M40 Grade High-Performance Concrete (HPC) utilizing Portland Pozzolana Cement (PPC) or Ordinary Portland Cement (OPC 53 Grade) with controlled water-cement ratio (< 0.40) and optimized superplasticizers for high density and low porosity.

- Reinforcement Steel:** High-Yield Strength Deformed (TMT) steel bars conforming to IS 1786 (Fe 500D / Fe 550) forming a rigid double-layered structural matrix.

- **Aggregate Size:** Well-graded crushed granite/angular aggregates (maximum 20mm size down) matching standard structural durability requirements.
- **Curing Method:** Controlled steam curing or intensive water immersion curing to ensure optimal compressive strength conversion prior to delivery.

4. ARCHITECTURAL FINISHING & PROTECTIVE COATINGS

- **Surface Finish:** Fair-faced smooth shutter finish on all exposed surfaces, treated with non-porous pinhole filler compound.
- **Primary Coating:** Two coats of exterior-grade anti-fungal, anti-carbonation acrylic emulsion paint over a deep-penetrating water-resistant primer base.
- **Accent Marking:** Distinct high-visibility safety orange/yellow polyurethane (PU) aliphatic paint applied to inner framing contours and roof overhang edges for high low-light visibility and aesthetic contrast.
- **Vandalism Resistance:** Optional hydrophobic anti-graffiti clear topcoat to allow easy removal of spray paint and markers.

5. STRUCTURAL & FUNCTIONAL FEATURES

- **Weathered Slope Roof:** Integrated slight rearward structural slope (1.5% to 2%) with an optimized drip-course projection to eliminate front water runoff and pooling.
- **Dual-Compartment Opening:** Optimized structural layout consisting of a wide main seating bay and an open secondary standby alcove, facilitating separate entry/exit vectors and maximizing natural ventilation.
- **Safety Cutouts:** Rear observation slit window provides natural cross-lighting and enhances commuter safety by maintaining clear lines of sight to oncoming traffic.

6. INSTALLATION & FOUNDATION REQUIREMENTS

The modular precast units are equipped with cast-in high-tensile lifting anchors (recessed) for balanced crane rigging. Installation guidelines include:

1. Excavation and preparation of a level, compacted sub-grade base coarse (minimum 95% Proctor density).
2. Provision of a 150mm thick Plain Cement Concrete (PCC) leveling pad or reinforced structural slab foundation depending on localized soil bearing capacity (SBC).
3. Placement via standard mobile hydraulic crane followed by structural grouting of anchoring pins using high-strength non-shrink epoxy grout.