

BRIEF TECHNICAL SPECIFICATION for MILBURY PRECAST, PRESTRESSED PANELS

Design Parameters

Designed to BS8110, part 1, section 4, as prestressed units. Individually wet cast in 'long-line' process and subjected to accelerated curing.

Design Life:-	Bridge Work	120 years
	Industrial	60 years
	Agricultural	20 years

Limiting tension – from item (a) table 4.2 modified by values in table 4.3 – (BS8110)

Class 1	0.00 N/mm ²	No tension – no cracking
Class 2	-3.49 N/mm ²	No perceptible cracking
Class 3	-5.28 N/mm ²	Design crack width limited to 0.1 mm
Class 3	-8.03 N/mm ²	Design crack width limited to 0.2 mm

Vertical cantilever units designed monolithically with insitu foundations. Rebar passes through pre-formed holes and under panels for foundation reinforcement.

Panel Constituents

Concrete

Nominally a C50/60 mix (cube strength of 60 N/mm² at 28 days) using max. 20 mm aggregate, a minimum OPC content of 400 kg/m³, slump to class S2 (50-90mm) and a water/cement ratio not exceeding 0.45.

30 mm cover to strand and rebar which, embedded in C50/60 concrete, is sufficient for 'Very Severe' exposure to table 3.3 of BS 8110 part 1.

Reinforcement

9.3 mm dia. prestressing strand, with the number and location of strands within units to suit individual design requirements. Initial force per strand generally a maximum of 75% UTS – 69 kN/strand. Strands cut flush at ends with no special treatment unless requested and specified. Proprietary epoxy paint can be used where required.

Rebar ($f_y - 500 \text{ N/mm}^2$) used in 'wideslab' and 'MilWall' applications. Welded mesh used for fire applications. Rebar or strand offcuts may be used as cross bars, tied to the prestressing strands, at ends to control bursting.

Handling

Units handled in factory using cranes, vacuum lifters and forklifts and loaded for transportation using forklifts or vacuum lifters.

Erection lifters are either 28mm diameter holes (2 per panel) through which specialist lifting devices are passed, or proprietary lifting devices – typically 'DEHA' spherical head anchors. Installation may be by telescopic handler, tracked excavator or crane.

Surface Finish

Front face and sides are ex steel mould – 'Type A' to Cl. 6.2.7.3 of BS 8110.

Panel ends are cast against steel plates (Type A finish) but marked when the projecting strands are ground off.

Top surface (as cast) either:-

- | | | |
|------|------------------------------------|---------|
| i) | Left as cast with no treatment | type 1U |
| ii) | Brushed to form textured surface | type 1U |
| iii) | Trowelled with plastic floats | type 2U |
| iv) | Trowelled smooth with steel floats | type 3U |

Standard Thicknesses

Non-loadbearing wall panels	80mm or 120mm.	
Loadbearing panels	120mm, 160mm and 200mm 320, 360 and 400mm	Plain. Haunched.

Corbels

Loadbearing concrete corbels can be cast integral with panel in factory. These can be individually designed to sustain vertical and line loads.

Panel Applications

Non loadbearing	Horizontally spanning walls.
Loadbearing	Horizontally or vertically spanning, vertical cantilever and propped cantilever retaining walls.



Fire Resistance

Values are taken as the worst case from table 4.4 (Plain soffit concrete floors) of BS8110 part 2 and treated as simply supported precast or simply supported prestressed, dependant upon strand/rebar content.

80 panels	up to ½ hour fire resistance
120 panels	up to 1½ hours fire resistance.
160 panels	up to 3 hours fire resistance.
200 panels	up to 4hours fire resistance.

Thermal Conductivity

λ Value – approx 1.400W/mK.

Cast-in Fixings

Generally there are no cast-in items other than lifters, holes for rebar and certain large service holes.

Casting of masonry anchorslot, conduits, chases, small service holes etc. is extremely costly and may suffer from tolerance differentials on site. Due allowance should be made for this during the design development process.

Milbury Systems Ltd. recommends retro-fixed 'drill and plug' fixings for masonry ties and site cored holes and chases for services.

Revision E

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