

The Grandstand at Leopardstown Racecourse, Dublin (Ireland)

Autor(en): **Bobrowski, J.**

Objekttyp: **Article**

Zeitschrift: **IABSE structures = Constructions AIPC = IVBH Bauwerke**

Band (Jahr): **4 (1980)**

Heft C-13: **Sports halls and stadia**

PDF erstellt am: **14.08.2024**

Persistenter Link: <https://doi.org/10.5169/seals-16534>

Nutzungsbedingungen

Die ETH-Bibliothek ist Anbieterin der digitalisierten Zeitschriften. Sie besitzt keine Urheberrechte an den Inhalten der Zeitschriften. Die Rechte liegen in der Regel bei den Herausgebern.

Die auf der Plattform e-periodica veröffentlichten Dokumente stehen für nicht-kommerzielle Zwecke in Lehre und Forschung sowie für die private Nutzung frei zur Verfügung. Einzelne Dateien oder Ausdrucke aus diesem Angebot können zusammen mit diesen Nutzungsbedingungen und den korrekten Herkunftsbezeichnungen weitergegeben werden.

Das Veröffentlichen von Bildern in Print- und Online-Publikationen ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. Die systematische Speicherung von Teilen des elektronischen Angebots auf anderen Servern bedarf ebenfalls des schriftlichen Einverständnisses der Rechteinhaber.

Haftungsausschluss

Alle Angaben erfolgen ohne Gewähr für Vollständigkeit oder Richtigkeit. Es wird keine Haftung übernommen für Schäden durch die Verwendung von Informationen aus diesem Online-Angebot oder durch das Fehlen von Informationen. Dies gilt auch für Inhalte Dritter, die über dieses Angebot zugänglich sind.



2. The Grandstand at Leopardstown Racecourse, Dublin (Ireland)

Owner: Leopardstown Club

Architect: Howard V. Lobb & Partners

Engineer: Jan Bobrowski and Partners

Contractor: Hugh O'Neill & Co Ltd

Precasting:

Ardglass Ltd – Riversdale Concrete Products –

Roconcrete Ltd – Wall Units Ltd

Completion date: 1971

The grandstand, situated in a magnificent rural setting, consists of two 4 storey buildings, one housing the Tote betting hall and facilities, the other being the grandstand itself. The latter is an H-framed structure with a cantilevered roof as shown in Figure 1a. The roof consists of precast prestressed components, each component being the full length shown on the drawing and 1.9 m in width. In cross-section each roof component is curved so that it approximates to a quarter of a circle in shape, with stiffening rib forming a spine along its centre, the circular shape being 63 mm in thickness as shown in Figure 1b. Figure 1b also shows the method of anchoring the cantilevers and stressing them transversely.

On the opposite elevation – which is equally important since it faces the paddock and parade ring – the betting hall building has viewing galleries carried on T-shaped white concrete components, and above this

level, a colonnaded facade of precast white concrete frames 8.5 m in height, forming a series of arches along the top of the building with a recessed band of concrete with a ribbed surface halfway down. Principal dimensions and data for the Leopardstown grandstand are listed in the table.

An interesting innovation which has contributed to this good result is that to control tensile stresses due to temperature and so eliminate cracking which would mar the highly-polished surfaces, a limited amount of post-tensioning was introduced along the edges of the viewing balconies.

Attention should perhaps be drawn to the figures given in the table for the strengths specified for the lightweight concrete. Solite aggregate was used and a high level of strength was consistently achieved. Another interesting technique is the use of hanging cladding panels, consisting of precast, prestressed "planks". These panels contrast with cement-painted walling. The technique of using prestressed planking has been extended to permanent formwork and most of the beams cast in place in the grandstand have permanent shuttering similar in construction to the cladding panels. For both applications, the finish on the planks is of Galway marble aggregate with deeply-ground exposed surfaces. The same finish is used for the precast T-shaped columns and the frames of the colonnade.

(J. Bobrowski)



Leopardstown Grandstand

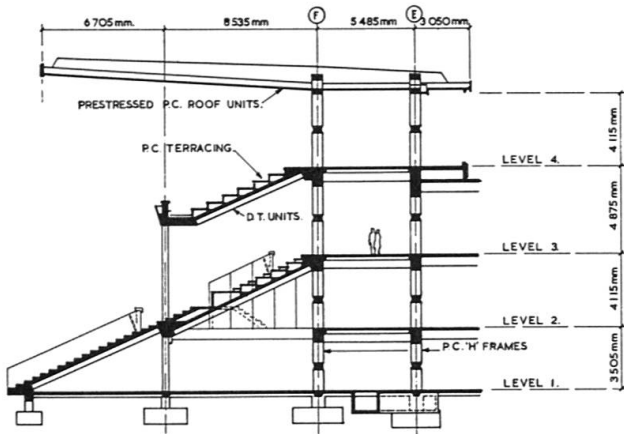


Fig. 1(a) Typical Cross Section

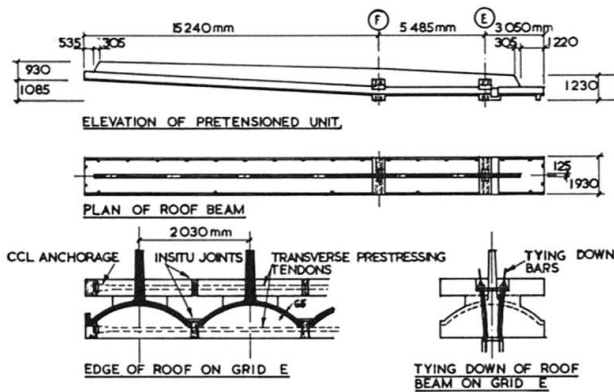
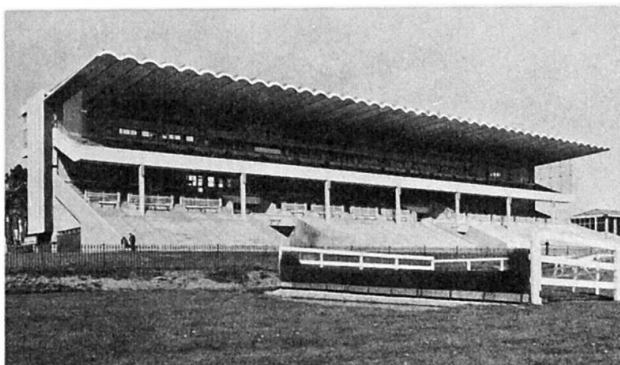


Fig. 1(b)



Leopardstown Grandstand

TABLE – Data for Leopardstown Grandstand

| | |
|--------------------------------|----------------------|
| Overall size of structure | 97.5 m × 55 m |
| Floor area of stand | 9,300 m ² |
| Number of people accommodated: | |
| reserved enclosure | 5,500 |
| grandstand enclosure | 3,000 |

Structure of stand

| | |
|----------------------------------|------------------------|
| H-frames: | |
| centres | 5.5 m |
| cross-section of columns | 610 × 460 mm |
| cross-section of cross member | 460 × 460 mm |
| 28 day cube strength of concrete | 52.2 N/mm ² |

Floors:

| | |
|----------------------------------|----------------------|
| Double tees: | |
| width | 2.42 m |
| centre of ribs | 1.21 m |
| typical depths | 559 mm |
| corresponding spans | 12.24 m |
| corresponding prestressing: | |
| Dyform | six 12.7 mm dia |
| 28 day cube strength of concrete | 63 N/mm ² |

Roof:

| | |
|---|------------|
| length of cantilever | 15.25 m |
| length of roof component | 23.8 m |
| width of roof component | 1.9 m |
| width of in situ joint between components | 100 mm |
| depth of spine beam | 530-925 mm |

Concrete for roof components:

| | |
|---------------------------------------|-------------------------|
| density | 1,873 kg/m ³ |
| aggregate: cement ratio | 1.99 |
| water: cement ratio | 0.4 |
| percentage of sharp sand in aggregate | 39 |
| type of coarse aggregate | Solite (expanded slate) |

| | |
|--|------------------------|
| crushing strength: | |
| 7 days | 42 N/mm ² |
| 28 days | 54.6 N/mm ² |
| typical weight of one component | 15.230 kg |
| typical prestressing of one component: | |
| Dyform | 14 strands |

Hanging cladding panels:

| | |
|--------------|----------------|
| width | 1.22 m |
| thickness | 63 mm |
| length | up to 15.5 m |
| prestressing | 16 × 5 mm wire |

Frames at rear elevation:

| | |
|------------------|-----------|
| number of frames | 15 |
| height | 8.54 m |
| width | 4.04 m |
| weight | 10,680 kg |

T-shaped columns beneath colonnade:

| | |
|----------------|--------|
| maximum length | 4.57 m |
| span | 6.1 m |