

dangerous over-travel in either direction. The fixed speed hoists have simple raise/lower functions operated by constant pressure key switches, positioning being visual only.

All the three-speed units are normally operated between manually adjustable upper and lower "dead" positions at the selected speed. Key switches enable authorised crew to move the winches outside these adjustable limits for rigging or storage purposes. The electrical design allows for the future installation of a control panel at Arena level, providing remote operation of these hoists between their pre set positions, with two group master controls.

### House Curtain

A special DC variable speed driven winch is provided with a maximum rated load of 1200Kg and a speed range of 0-1.4m per second. This is primarily for operation of the house curtain when in the Lyric mode, but may be used for other purposes when the proscenium masking is not in position. This hoist has adjustable upper and lower deads as for the scenery winches, and is provided with a pendant remote control for operation from the stage manager's desk when necessary.

The house curtain hoist has special control and braking functions so that the house curtain may operate as an emergency fire curtain in Lyric mode.

### Lighting Battens

Five fixed speed lighting battens are provided each with a maximum rated load of 700Kg at a speed of 0.125m per second. Each lighting batten is of the self climbing type, consisting of a fabricated aluminium box truss 16m long containing all the drive equipment and switch gear, plus 32 5kW lighting outlets and associated cabling.

Self climbing units are employed so that they may be positioned where appropriate for a given size and style of production and the attachments are such that the units may be hung either at right angles or parallel to the long axis of the stage.

### False Proscenium and Acoustic Reflector Hoists

Three fixed speed hoists are provided for suspension of masking and acoustic reflectors associated with the Lyric mode. One winch of 300Kg capacity carries the fabric false proscenium and side masking, and two 2 line units of 400Kg capacity each carry the front and rear edges of the fabricated acoustic reflector assembly.

All are operated from gallery level, at 0.1m per second. ■

The three groups are

#### Fixed speed hoists.

A total of eight fixed speed hoist sets are provided, intended to enable rapid rigging of fixed stage masking, (generally borders and legs) which are not intended to be moved during a performance. Four of these winches are located over the Lyric Stage, three above the Pop Stage Concert Area and one in the recess under the western plant room. These all have 17m long light alloy gate batten suspended from four lines and have a rated maximum load of 500Kg at a fixed speed of 0.25m per second.

#### Three speed scenery battens.

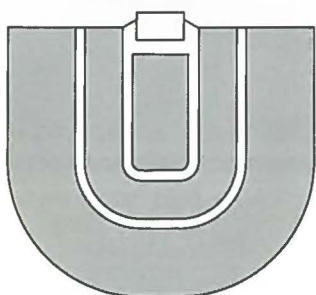
A total of 20 scenery battens are provided, generally similar to the fixed speed winches but having a maximum rated load of 250Kg, and fitted with three speed switched pole motors giving a range of speeds 1.0/0.5/0.25m per second. Seventeen of these batten hoists are located above the main Lyric Stage area, and three just upstage of this area.

#### Three speed Spotlines.

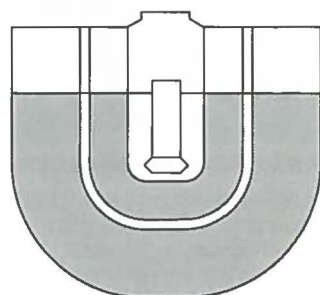
A total of 18 spotline winches are provided. These winches have a maximum rated hoisting capacity of 125Kg and are fitted with switched pole motors giving the same speed range as the scenery battens. Fall blocks can be used with these spotlines to provide 250Kg lifting capacity at 1/2 speed. The spotline winches are located in the centre section of the main box girder above the rear of the Lyric Stage. A range of diverter pulleys and mounting beams is provided, enabling these spotlines to be rigged to lift loads anywhere over the Lyric Stage area. Ten of the units have diverters and drum arrangements enabling their lines to be rigged over the concert stage area.

All the hoists are provided with overload and slack rope safety devices, and limits to prevent

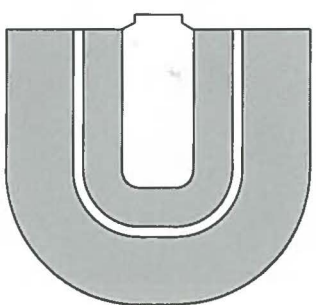
12,000 seat layout



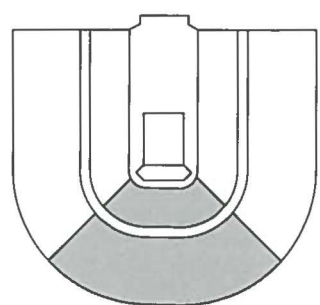
10,000 seat layout



7,000 seat layout



3,500 seat layout



building construction workers and innumerable Government inspectors.

As promised summarised below is the flying equipment schedule.

### Scenery Flying

There are three groups of scenery flying devices, all power driven direct winching units, using AC motors controlled from individual panels in the roof truss catwalks. Provision is made in the design for remote control of scenery hoists to be added at a later date.

and have had to be provided with their own supplementary hoisting.

The whole installation was given a traumatic start to life as the Centre was opened with a television spectacular with a cast of thousands, and a lighting load well in excess of the magic megawatt. As usual, the technical installation was immediately called upon for tasks not included in the design brief so a certain amount of negotiation and modification was necessary before the opening night, but all was completed successfully despite the rather unusual rehearsal conditions created by a mixture of musicians, stage performers, television crew,