

WORKS:  
POWER ROAD,  
GUNNERSBURY,  
LONDON, W. 4.  
CHISWICK 5786/7/8

MANCHESTER BRANCH:  
407/411, OLDHAM RD.  
MANCHESTER, 10.  
COLLYHURST 2736

HIRE STORES:  
271, KENNINGTON LANE,  
LONDON, S. E. 11.  
RELIANCE 3251.



SIGN DEPT:  
1/4, LANGLEY COURT,  
LONDON, W. C. 2.  
TEMPLE BAR 4444.

DUBLIN BRANCH:  
62, DAWSON ST.  
DUBLIN.  
DUB 74030.

SCOTTISH DISTRIBUTORS:  
STAGE FURNISHINGS LTD,  
346, SAUCHIEHALL ST.  
GLASGOW, C. 2.  
DOUGLAS 6431.

DIRECTORS: J. D. H. SHERIDAN, S. E. EARNSHAW, H. M. COTTERILL, H. W. MYERS, L. G. APPLEBEE.

# THE STRAND ELECTRIC AND ENGINEERING COMPANY

LIMITED

HEAD OFFICE:  
29, KING STREET,  
LONDON, W. C. 2.

YOUR REF:

TEMPLE BAR 4444.  
(16 LINES)

6th February,

19 52.

OUR REF: STL/FWM/5367

Messrs. Bright Enterprises,  
St. Martin's Theatre,  
West Street,  
W.C.2.

Attn. of Mr. T. Cracknell.

ESTIMATE NO: STL/E.1388.

## TO SUPPLY:

### Item 1 Switchboard.

To be a combined switch, fuse and dimmer regulator consisting of a substantial angle iron framework carrying at the top an Ebony Grade Pierrite panel on which will be mounted all necessary circuit switches and fuses and below these and mounted in four rows will be Sunset Element type dimmers wound with nickel copper alloy resistance wire of negligible temperature co-efficient and each dimmer having 100 contacts.

The board to be made with a centre section carrying the master blackout switch, batten pilot switches, etc. and the grand master cross control, and two wing sections containing the dimmers. The dimmers will be mounted behind sheet steel front panels and connected to self-release handles carried on the operating shafts, these shafts being driven from bevel gears connected to the grand master cross control.

By means of the grand master handwheel and reversing levers the dimmers can be taken up or down and will release themselves from their shafts at the end of their travel either up or down, by means of splines and reversing levers the dimmer shafts may travel either up or down irrespective of the direction of travel of any other shaft, the grand master handwheel being turned in one direction only.

The circuit switches will be of the Tumbler two-way-and-off type all insulated pattern so that any circuit can be rendered independent of the blackout switch if desired.

The board will be of the dead front type suitable for connection to a three-phase 4-wire A.C. Supply and the blackout switch will be a Tumbler Switch controlling the coil circuit of a contactor.

Two prices are given, firstly for a Switchboard with clip on dimmer scales and alternatively for a Switchboard fitted with engraved scales and scale lights.

The board will be complete with all necessary internal wiring switch, fuse and dimmer labels, neutral links, and will have a wiring trough at the top to which all incoming circuits can be bonded.

The board will control circuits as detailed overleaf:

-contd.-

Item 1 Switchboard -contd.-

<u>Circuit.</u>	<u>Shaft.</u>	<u>Dimmer.</u>	<u>Switch.</u>	<u>Fuse.</u>	<u>Phase.</u>
<u>COLOUR SIDE.</u>					
Foots	White	975w.±½	1/T.2 W & 0 3/Tumbler	4/15a.S.P.	Red
Batten 1	"	1200w.	1/T.2 W & 0	1/15a.S.P.	White
Batten 2	"	1500w.±½	"	"	Blue
Batten 3	"	1500w.±½	"	"	Blue
Batten 4	"	1800w.	"	"	Blue
Dips Back	"	1500w.±½	"	"	Red
Dips P. Up.	"	750w.±½	"	"	Red
Dips P. Dn.	"	750w.±½	"	"	Red
Dips O.P. Up	"	750w.±½	"	"	Red
Dips O.P. Dn.	"	750w.±½	"	"	Red
Foots	Red	975w.±½	1/T.2 W & 0 3/Tumbler	4/15a.S.P.	Red
Batten 1	"	1200w.	1/T.2 W & 0	1/15a.S.P.	White
Batten 2	"	1500w.±½	"	"	Blue
Batten 3	"	1500w.±½	"	"	Blue
Batten 4	"	1800w.	"	"	Blue
Dips Back	"	1500w.±½	"	"	Red
Dips P. Up & Down	"	2/750w.±½	2/	2/	Red
Dips O.P. Up & Dn.	"	2/750w.±½	2/	2/	Red
Foots	Blue	1050w.±½	1/T.2 W & 0 3/Tumbler	4/	Red
Batten 1	"	1200w.	1/T.2 W & 0	1/	White
Battens 2 & 3	"	2/1500w.±½	2/	2/	Blue
Batten 4	"	1800w.	1/	1/	Blue
Dips Back	"	1500w.±½	"	"	Red
Dips P. Up & Dn.	"	2/750w.±½	2/	2/	Red
Dips O.P. Up & Dn.	"	2/750w.±½	"	"	Red
Spot Bar	Amber	10/1000w.	10/	10/	White
<u>INDEPENDENT SIDE.</u>					
Bridge 1 to 6	Ind. Top	6/1500w.±½	6/T.2 W & 0	6/15a. S.P.	White
2 Spaces	"	-----	2/	2/	White
Pros. 1 to 6	Ind. 2nd.	6/150w.	6/	6/	Red
Perches P. & O.P.	"	2/1500w.±½	2/	2/	Red
Float Spots 1to3	Ind. 3rd	3/ 250w.	3/	3/	Red
Dress Circle 1to 4	"	4/ 375w.±½	4/	4/	Blue
Space	"	-----	1/	1/	Red
Spot 11 & 12	Ind. 4th	2/1000w.	2/	2/	White
Circle Spots 1 to 6	"	6/1500w.±½	6/	6/	Blue

Dimensions: 7'6" high x 10'10" wide x 3'6" projection.

Price with clip on scales ... .. £1540. -- --

Price with illuminated scales ... £1,576. 8. --.

Item 2 Contactors.

1 - 150amp. Triple Pole Contactor D.C. operated A.C. on fingers. Complete in case with rectifier, fuses, 4 incoming and 7 outgoing terminals.

Price ... .. £72. -- --

Item 3 Footlights.

These are at present four colour and we suggest that it should be rewired for three colour left centre and ends. This work has been allowed for in the wiring and erection quotation.

Carried forward: £1612. -- --

Brought forward: £1612. - . -

Item 4 Spot Bar.

This is at present wired for 10 circuits and we suggest it should be rewired for 12 circuits, this work is contained in the Wiring and Erection quotation.

It is, however, suggested that 12 new 1000w. Spots should be supplied as follows:-

12 - Pattern 43 1000w. Spot Lanterns, lantern constructed in sheet steel efficiently ventilated and fitted with 5" dia. Anodised Aluminium Reflector and 6" dia. x 10" focus Plano Convex Lens. Complete with tilting fork, locking wheels, colour runners and tails.	Price ... ..	£9/10/- ea. nett.	£114.	-	-
24 - Empty Millboard Colour Frames.	Price ... ..	9/3 doz. nett.	18.	6.	
12 - Pairs of 3-pin 15amp. Connector Plugs and Sockets.	Price ... ..	7/6 pair nett.	£4.	10.	-
12 - Safety Chains.	Price ... ..	2/3 ea. nett.	£1.	7.	-
35ft. 25-way 70/.0076 Asbestos Covered Multicore Cable.	Price ... ..	10/2 ft. nett.	£17.	15.	10.

Item 5 Battens 2 and 3.

These are not existing and it is not intended to install new Battens at present, although we have included an item in this quotation for the provision of plug type connector boxes so that other types of hanging equipment can be connected thereto.

Item 6 Battens 1 and 4.

We have included in the wiring and erection estimate for the rewiring of these items.

Item 7 Plug Boxes on Lighting Fly for connection of Battens or other Hanging Equipment.

Each to be a sheet steel box fitted inside with a panel on which will be mounted 15amp. 3-pin Plugs and Sockets to which the batten tails can be connected and a separate earth terminal will be provided.

The Boxes to be as follows:

				<u>Phase</u>			
Batten No.1	1 four-way	3 colours	1 Pilot	White	£3.	11.	-
Batten No.2	1 six-way			Blue	£4.	17.	-
Batten No.3	1 six-way			Blue	£4.	17.	-
Batten No.4	1 four-way			Blue	£3.	11.	-
Spot Bar	1 twelve-way			White	£8.	13.	6.
Bridge Spots	1 twelve-way			White	£8.	13.	6.

Please note that the boxes for Battens 2 and 3 are six-way each with the plugs wired in pairs so that a bar with six lanterns can be connected to each of these boxes. For a similar reason the Bridge Spots box is a 12-way plug box so that six lanterns can be used on a boom barrel on P. Side and six more O.P. Side on a boom barrel the lanterns being connected in pairs as the plugs would be in pairs and controlled by a total of six dimmers.

Carried forward: £1,784. 14. 4.

Brought forward: £1,784. 14. 4.

**Item 8 Front of House Spot Lanterns and Housings.**

6 - Pattern 43 1000w. Spot Lanterns, as detailed in Item 4.			
Price ... ..	£9/10/- nett.	£57.	- -
6 - Flange Plate Stands.			
Price ... ..	8/6 ea. nett.	£2.	11. -
12 - Empty Millboard Colour Frames.			
Price ... ..	9/3 doz. nett.		9. 3.
3 - Sheet Steel Cages each of sufficient size to accommodate two of the above lanterns or 2 - Pattern 73 1000w. Mirror Spot Lanterns. Each cage to be finished one coat primer paint externally, matt black internally and to have hinged lids at the top opening from the centre sideways so as to give an unobstructed view of the stage when the lanterns are being adjusted. The price quoted does not include any fixing, erection or builders work. Please note that the erection of these should be carried out by builders and drawings of the method of fixing must be submitted to the District Surveyor and London County Council for approval.			
Price ... ..	£16/-/- ea. nett.	£48.	- -

**Item 9 Dress Circle Spots.**

4 - Pattern 45 250w. Spot Lanterns, lantern constructed in sheet steel efficiently ventilated and fitted with 3½" dia. Anodised Aluminium Reflector and 4½" dia. x 6½" focus Plano Convex Lens. Complete with tilting fork, locking wheels, colour runners and tails. These are to replace those existing and to go on existing suspensions.			
Price ... ..	£6/3/- ea. nett.	£24.	12. -
4 - Safety Chains.			
Price ... ..	2/3 ea. nett.		9. -
12 - Empty Millboard Colour Frames.			
Price ... ..	6/3 ea. nett.		6. 3.

**Item 10 Stage Dips and Traps.**

Each Dip Box to be a sheet steel box with a lid at 45° on which will be mounted 25amp. 3-pin Plugs and Sockets.

Each trap to consist of an aluminium alloy trap with a self closing lid.

6 - three-way Dip Boxes.			
Price ... ..	£3/6/- ea. nett.	£19.	16. -
6 - three-way Traps.			
Price ... ..	£1/10/10 ea. nett.	£9.	5. -

**Item 11 Perches.**

Each to consist of a sheet steel box fitted with 15amp. 3-pin B.S.I. Plugs and Sockets, one two-way Box on each Perch.

2 - two-way Plug Boxes.			
Price ... ..	£2/3/- ea. nett.	£4.	6. -

Carried forward: £1,951. 8. 10.



Brought forward: £1,951. 8. 10.

Item 12	<u>Batten Tail Suspension.</u>				
	5 - one-way Grid Pulleys...	... £1/2/- ea.nett.	£5.	10.	-.
	5 - Cleats ... ..	... 5/3 ea.nett.	£1.	6.	3.
	200ft. Sash Line Cord ... ..	... 14/- nett(100ft)	£1.	8.	-.

Item 13	<u>Auditorium Decorative Dinmer.</u>				
	1 - 8.4 k.W. Single Phase Wall Mounting Lever operated Sunset Dimmer.				
	Price ... ..	... ..	£22.	17.	6.

Item 14	<u>Perch Spots.</u>				
	2 - Pattern 43 1000w. Spot Lanterns, full details given in Item 4.				
	Price ... ..	...£9/10/-ea.nett.	£19.	-.	-.
	6 - Empty Millboard Colour Frames.				
	Price ... ..	... 9/3 doz.nett.		4.	8.
	4 - Single Joint Swivel Arm Brackets, (two on each Perch).				
	Price ... ..	...£1/8/-ea.nett.	£5.	12.	-.
	2 - Safety Chains.				
	Price ... ..	... 2/3 ea.nett.		4.	6.

Item 15	<u>Proscenium Spots.</u>				
	6 - Special fittings consisting of a sheet steel housing in two halves one of which will slide in and out of the other and can be locked in any position desired.				
	Each complete with E.S. Holders, 3"dia. x 6" focus Plano Convex Lens and an external adjustable reflector.				
	Price ... ..	...£10/8/- ea.nett.	£62.	8.	-.

ALTERNATIVELY:

6 - 100w. Studio Spotlights with lens, reflector and built in resistance for use with 115v. 100w. Class A.1. Projector Lamps.					
Price ... ..	...£8/16/-ea.nett.				

£2,069. 19. 9.

Item 16	<u>Lamps for New Lanterns.</u>				
*	20 - 1000w. Class B.1. Round Bulb Projector type Lamps. ... ..	...£1/10/- ea.	£30.	-.	-.
*	4 - 250w. -ditto- ... ..	... 17/6 ea.	£3.	10.	-.
*	1 - 100w. B.C. Pearl Gasfilled type Lamp for Switchboard... ..	... 1/6 ea.		1.	6.
	6 - 100w. Class A.3 Projector Lamps for Proscenium Spots. ... ..	... 10/9 ea.	£3.	4.	6.

ALTERNATIVELY:

6 - 100w. Class A.1. Projector Lamps					
Price ... ..	... 11/6 ea. <u>£3/9/-</u>				

£36. 15. -.

\* Plus 26% Purchase Tax on these items: 18. 7.

£37. 13. 7.

IF Scale Lights are required:

72 - 15w. Pygmy Sign type Lamps... ..	1/7 ea.	£5.	14.	-.
Plus 26% Purchase Tax. ... ..		£1.	9.	8.
		<u>£7.</u>	<u>3.</u>	<u>8.</u>

Item 17 Alternative Switchboards.

Alternative "A".

1 - 72-way Remotely Controlled Dimming Equipment to control circuits as specified for the Grand Master Switchboard.

The equipment to consist of 2 - 36-way Motor Driven Dimmer Banks situated in the existing dimmer room below stage which should be ventilated, these banks being controlled from a desk located on the present Switchboard platform.

The dimmers will be operated by Strand Electric patent magnetic clutches mounted on motor driven shafts each bank being provided with individual motor drive. Each dimmer will be fitted with blackout relay, phase fuse and indicator resistance, and the motors will be capable of providing four different speeds.

There will be provided a busbar and terminal chamber on one of the dimmer banks to which all mains and circuit wiring will be taken and the low voltage control wiring will terminate on a test panel mounted below the busbar chamber. A multicore cable will be provided for connection between the dimmer banks and the control panel and the necessary rectifiers for motors and 15v. control action will be fitted.

The control panel will be constructed in sheet steel finished cream, and will have a sloping panel on which will be mounted the following, laid out as desired, to facilitate operation.

72 - Flush Oak type two-way-and-off Switches with engraved knobs for clutch control giving Up, Down, or Stop.

Stop and Start Master Pushes for colours and independent circuits.

72 - Push Switches for reading dimmer positions from two dials, one for colour, and one for independent circuits.

72 - Flush two-way-and-off Switches with engraved knobs for Blackout control, Independent off or on Master Blackout.

1 - Master Blackout Switch and 1 Dead Blackout Switch.

1 - Motor Speed Controller, four positions and off.

For ease of operation each circuit will have dimmer operating switch, dimmer position indicator push, and blackout switch grouped in three's, the speed selector switches, dimmer position indicator dials and motor stop and start pushes at top of panel the Master and Dead Blackout Switches will be in the centre of the Panel.

Operation is relatively simple as the circuit Blackout Switch is switched on, the dimmer switch moved to Up or Down and put to Stop when dimmer position is reached.

The dimmers are reversed by means of the magnetic clutches and can be operated collectively or individually and can travel in opposite directions either separately or in numbers as desired. Circuits can be blacked out or put on individually or collectively by the circuit Blackout Switch or Master Blackout Switch or can be left independent of the master if required.

Price ... ..NETT: £2,315. - . - .

Item 17 Alternative Switchboards -contd.-

Alternative "B"

1 - Strand Electric Electronic Switchboard consisting of 72-way control desk and 72-way Valve Banks, the former being located on the existing Switchboard platform the latter being housed in the present dimmer room under stage which should be air conditioned to obtain an ambient temperature of 80°F.

There are no wire wound dimmers in this method of control thus obviating the losses always involved with wire resistance dimmers. Control of a circuit is effected by valves which are capable of exercising accurate control over any load from 5 volts to 2000w. without any alteration or ballast loading. There are three valves to each circuit connected to a three-phase A.C. Supply the output being 230v. rectified A.C. this ensuring a balanced load and obviating the attendant risks of high voltage between equipment on different phases of an A.C. Supply. The valve banks are compact, easy to install and maintain, and operate noiselessly.

The control desk is constructed in sheet steel finished cream and has a sloping front and will be provided with two identical sets of 72 dimmer levers which control the valves.

The dimmers are fitted with easy action moulded and engraved knobs and are laid out in rows of 12, each row being provided with a master dimmer and each bank of 72 dimmers with a main master fader and an independent fader. Each circuit has above the dimmer a two-way-and-off switch enabling the circuit to be controlled by the main master or independent fader as desired and can be rendered independent of the panel blackout switch. Also provided is a row Master Switch with one off and two on positions.

In one of these on positions such circuits as have been individually selected may be blacked out by the panel master switch, in the other position all circuits on that row will be blacked out by the panel master switch.

A dead blackout switch is provided, also an electric clock and signal lights.

The duplicate panel is a repeat of the first panel and by means of a changeover fader it is possible to fade from one scene to another the latter having entirely different dimmer settings and then having reset the dimmers on the first panel the operator can, when cued, bring in another scene, in other words, one complete dimmer preset is obtainable, the changeover from one scene to another being carried out instantly or gradually by means of a combined lever for quick action or handwheel for slow action, any desired additions or alterations to the lighting can be made whilst the changeover is being made. If on a preset a number of dimmer settings are repeated transfer switches are provided to avoid duplication of the operators work and obviates the necessity for him to repeat these settings thus saving time in a fast moving show.

The interlocking of dimmer control is entirely electrical and a perfect fade in or out is obtained irrespective of the individual dimmer settings, all lamps going out or reaching full brightness together and the board is exceptionally easy to use and the preset simplifies plotting and lighting rehearsals.

Price Desk and Valves Banks ex valves ... ..NETT: £1565. -. -.  
72 - Sets of three Valves ... ..NETT: £1134. -. -.

£2699. -. -.

Item 18 TOTALS:

"A"	Total cost of Equipment with Grand Master type of Board Item 1 with clip on scales and with special Proscenium Spots ... ..	<u>£2,069. 19. 9.</u>
"B"	Total cost of Equipment with Grand Master type of Board Item 1 with illuminated scales and with special Proscenium Spots ... ..	<u>£2,106. 7. 9.</u>
"C"	Total Cost of Equipment with Remotely Controlled Board Item 17 A and with special Proscenium Spots... ..	<u>£2,844. 19. 9.</u>
"D"	Total Cost of Equipment with Electronic Board Item 17 B and with special Proscenium Spots... ..	<u>£3,228. 19. 9.</u>

These totals do not include Lamps which are detailed in Item 16.

"The prices quoted are based on the cost of material and labour ruling at the present date and are subject to adjustment in the event of a subsequent rise or fall in the cost of material or labour taking place before delivery."

for and on behalf of  
THE STRAND ELECTRIC & ENGINEERING CO.LTD.

F.W. MARTIN.  
SALES DEPT. (THEATRE LIGHTING SECTION).