

University of Glasgow: Bower Building

Exterior Lighting Design Proposal

Version 1 October 2003

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Version 1.0, 21/10/03

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1.0 Concept

The core concept for the proposed lighting of the Bower Building involves the use of scenic projections as a light source.

The projections, although from photographic material, will appear figurative, broken across the University Avenue facade, giving the building a beguiling and textured light that will match well with the mottled appearance of the stonework at that elevation.

The projections may be suggestive of sunlight through a canopy; they may resonate with the trees that used to grow outside the Bower Building for many years; they may simply remind the observer that the building exists for the study and experience of botany.

The skeletal nature of trees without leaves may also be seen as an allegorical link to the origins of the Botany Department at the University of Glasgow, where botany began as a part of the study of medicine, initially taught by the Professor of Anatomy.

Some of the visuals could come from images of plant specimens or drawings held in the collections of the University, or those that may have perished in the fire of October 2001.

The projections will have a temporal flow, changing with the seasons, giving variation to the facade as the year goes by.

The images may be of trees, but should be thought of more as sky, where the light passes through branches. It is this light that will at times illuminate the building.

2.0 Operation

During normal running, the Bower Building would be lit with elegant floodlighting.

This would incorporate additional treatments for some of the architectural features and details on the buildings various elevations.

Area amenity lighting is also considered in this design, as care must be taken to avoid stray light from striking the building and reducing the efficacy of the projected images.

The projections would be introduced on top of this design for planned periods, to maximise their impact and reduce wear and tear on the projection system.

It is suggested that the projections are used for the hour after sunset each day, as day gives way to night.



3.0 North Elevation

The North Elevation floodlighting will begin with in-ground floodlighting to shadow and sculpt the facade, which is then taken over from by a second set of floodlights located at the cast iron fence along University Avenue. These floodlights would light the upper stories from the top of the level three windows onwards.

The carved details on the facade will be selectively lit with small LED light fittings, which will have minimal power consumption and should not require maintenance through-out their useful life.

The turrets and pediments at the North Elevation will also be lit with careful detail.

General illuminance will be provided by wall lanterns similar to the existing units, and emphasis will be given to the main entrance of the building. This would be supplemented with low-level lighting during projection periods.

The projection system will be mounted in a purpose built housing located on the corner of the flat roof at the Mathematics building.



Floodlighting at the North Elevation.

3.1 In Ground Floodlights

Reference A: 6 x Sill buried linear projector 032, 35W Ceramic Metal Halide, 3000K Colour Temperature, IP67.

Mounted in recessed housing, die cast aluminium, stainless steel cover, safety glass to withstand 1000kg compressive load.

3.2 Façade Floodlights

Reference B: 4 x Meyer Superlight compact rotationally symmetrical medium wide beam. 70W Ceramic Metal Halide lamp, 3000K Colour Temperature. IP65. Colour Black. With radial louvre to reduce glare.

Mounted in a special arrangement fitted to fence piers, with the luminaire lens heights at around 1.95 metres, and obscured from general view at University Avenue by the fence itself.

3.3 Façade Detailing

Reference C: 12 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67.

Mounted on the string course at the angular projections to cross-light the diamond shaped carvings/patera.

Reference D: 8 x AC/DC Lighting Systems Spek LED spotlight. White light output. Colour black. 24V DC requires remote transformer. IP67.

Mounted on window cornices at positions shown to light vertical moulding details.

3.4 Turrets

Reference E: 4 x Philips LEDline 1175mm length, integral driver, IP65, warm white tuned LED's (3000K colour Temperature).

Mounted vertically in parallel pairs behind the top pediment, lighting across to end turrets.

3.5 Doorway

Inground floodlights to up-light rusticated side columns.

Reference F: 2 x Holophane LED.3 recessed uplighters. IP68. White light output. Square stainless steel bezel. 25 degree optic, clear lens. 240V 50Hz, integral LED driver.

Mounted in recessing kit into step.



3.6 University Coat of Arms & Doorway Pediment

Reference G: 2 x (New Product Not Specified) with Philips CDMR111 lamp, 35W metal halide 10 degree beam.

Mounted in special arrangement at fence piers, to accurately spotlight the Coat of Arms.

A long life Metal Halide version of the popular AR111 lamp is in existence, and luminaires for outdoor use with this lamp will soon follow. At the time of writing, there are no known products suitable for outdoor applications, but they are expected to arrive within the next six months.

Reference C2: 2 x ACDC Lighting Systems LED Artemis. White light output. Colour black. 24V DC requires remote transformer. IP67.

Mounted at the corner of the doorway lintel to uplight tympanum sculpture.

3.7 Glasgow Coat of Arms and Top Pediment with obelisks.

Reference H: 2 x Meyer Superlight compact Rotationally symmetrical narrow beam floodlights, 35W Ceramic Metal Halide lamp, 7 degree beam angle.

Mounted in a special arrangement at fence piers above the doorway pediment lights.

Reference J: 1 x Philips LED-line, 885mm length, integral driver, IP65, warm white tuned LED's (3000K colour Temperature), frosted lens.

Mounted above sculpted doorway broken pediment, uplighting the top window section and the Glasgow Coat of Arms.

Reference D2: 2 x AC/DC Lighting Systems Spek LED spotlight. White light output. Colour black. 24V DC requires remote transformer. IP67.

Mounted at the edge of the curved broken arch to light the face of St. Mungo.

3.8 Area Lighting

Reference K: 5 x wall lantern, as existing unit located far East on the North Elevation drawings. Lamped with warm white colour lamp.

Mounted at the positions shown, with the centre lantern mounted above the main doorway to give light for the entrance.

Reference L: 6 x Bega 2043 recessed location luminaire. Special clear front glass.

Mounted at the fence pier base to give low-level area lighting when the wall lanterns are switched off during projection periods.

The front glasses of these units would be changed to clear safety glass and transparencies inserted internally, allowing the fixture to act as a light box displaying images similar to the façade projections, as well as providing a useful and pleasant light.



3.9 Projections.

Reference M: 2 x E\TC Audiovisuel PIGI S700 4Kw HMI Scenic Projector. With facility to change slides for seasonal image variation and preservation of slide lifespan.

Housed in a purpose built cabin located on the flat roof at the Mathematics Building opposite the North Elevation of the Bower Building.

Exact specification of lens and slide change mechanisms and accessories to be developed with E\TC UK and by site testing.

Images supplied by Nich Smith.



The Mathematics Building, and its relationship to the Bower Building.



4.0 East Elevation

The East Elevation will be lit with a similar floodlighting and spotlighting technique to the North Elevation.

4.1 Floodlighting

Floodlighting for general illumination of the East Elevation.

Reference N: 3 x Meyer Superlight Compact Asymmetrical, Wide Beam floodlights. 70W Ceramic Metal Halide, 3000K Colour Temperature. IP65. Colour Black. With Barn Doors.

Mounted on the flat roof of the laboratory building in locations to be determined by testing on site with lighting designer.

Reference P: 1 x Meyer Superlight Compact Rotationally Symmetrical Medium Wide Beam floodlight. 35W Ceramic Metal Halide, 3000K Colour Temperature. IP65. Colour Black. With radial louvre.

Mounted on flat roof of laboratory building in locations to be determined by testing on site with the lighting designer.

4.2 Spotighting

Two special fixtures designed to highlight the sculpted projection on the chimney breast of the North East Gable, and the carving above the southern window.

Reference G2: 2 x (New Product Not Specified) with Philips CDMR111 lamp, 35W ceramic metal halide 10 degree beam.

Mounted on flat roof of laboratory building in locations to be determined by testing on site with the lighting designer.

4.3 Chimney

The chimney should be up-lit with several LED uplighter fittings placed on the moulding near the chimney base.

Reference C3: 3 x ACDC Lighting Systems LED Artemis. White light output. Colour black. 24V DC requires remote transformer. IP67.

Stirrup mounted on moulding at base of chimney.

4.4 Turrets

The centre and southern turrets at the South East Gable should be side lit using LED fittings mounted on the crow step of the gable. The Northern turret will be back-lit by lamps already in the scheme for the North Elevation.

Reference C4: 4 X ACDC Lighting Systems LED Artemis. White light output. Colour black. 24V DC requires remote transformer. IP67.



4.5 Centre Sculpted Detail

The carving above the centre window of the East Elevation should be lit in the manner of similar details at the North Elevation.

Reference C5: 2 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67.

4.6 Landscaping

The existing pathway to the East of the Bower Building should be lit along its Western edge with low level bollards.

Reference Q: 5 x Deltalight King Teak 218, lamped with 2 x TCT 18W fluorescent lamps, 3000K Colour Temperature. IP65.

The new tree plantings should be up-lit with in-ground luminaires. The existing mature Sycamore should be deliberately left unlit and will appear in silhouette against the Bower Building.

Reference R: 4 x Holophane Hydrel M9400 series in-ground luminaire, 35W Metal Halide lamp, 3000K Colour Temperature. Exact Optic to be confirmed. IP68. Mounted flush and level with surrounding surface in pre-cast concrete mowing slab.

The trees along the Eastern edge of the existing pathway could be up-lit with in-ground luminaires, providing an interesting foreground to the projections at the Bower Building, and adding more ambient light for the pathway area.

Reference R2: 6 x Holophane Hydrel M9400 series in-ground luminaire, exact specification to be advised.

5.0 West Elevation

The West Elevation will be lit with techniques complimentary to the lighting of the North Elevation, with the addition of special lighting at the new entrance to the Undergraduate School.

5.1 North Gable End.

Up-lighting in a similar style to the North Elevation should be continued at the North West Gable end.

Reference A2: 2 x Sill buried linear projector 032, 35W Ceramic Metal Halide, 3000K Colour Temperature, IP67.

Mounted in recessed housing, die cast aluminium, stainless steel cover, safety glass to withstand 4000kg compressive load.

The up-lighting should be augmented at the upper levels with a line of LED fittings attached to the string course.

Reference S: 4 x ACDC Lighting Systems Lucina LED strip light, 1800mm lengths. Bright white light output. IP65.



Supplied with transformer trimmed on site to balance the light output level with the in-ground up-lighters.

The sculpted detail above the upper window should be spot-lit from the flat area of Estates & Buildings opposite.

Reference G3: 1 x (New Product Not Specified) with Philips CDMR111 lamp, 35W ceramic metal halide 10 degree beam.

5.2 Corner Tower with Turret.

The tall corner tower with turret beside the new entrance to the Undergraduate School should be up-lit from the base.

Reference F2: 15 x Holophane LED.3 recessed uplighters. IP68. White light output. Round stainless steel bezel. 10 degree optic, frosted lens. 240V 50Hz, integral LED driver.

Mounted in recessing kit .

The up-lighting should be continued at the upper levels by small LED fittings on the string course.

Reference C6: 8 x ACDC Lighting Systems LED Artemis. White light output. Colour black. 24V DC requires remote transformer. IP67.

The turret roof should follow in the same lighting style, with up-lighting shining along the roof slates and catching the finial at the top.

Reference C7: 8 x ACDC Lighting Systems LED Artemis. White light output. Colour black. 24V DC requires remote transformer. IP67.

5.3 Area Lighting

The new entrance to the undergraduate school should have a lantern of the same type used at the North Elevation, mounted on wall brackets above the doorway.

Reference K2: 1 x wall lantern, as existing unit located far East on the North Elevation drawings. Lamped with warm white colour lamp.

The lantern located at the South West corner should be reinstated.

Reference K3: 1 x wall lantern, as existing unit located far East on the North Elevation drawings. Lamped with warm white colour lamp.

The existing amenity lighting from the Estates and Buildings offices at this elevation should be changed for luminaires with similar light-colour appearance to those used in the floodlighting of the new scheme.

The sodium floodlight located at the Estates and Buildings offices which provides area lighting should be removed and will be redundant in the new scheme.



5.4 Façade Detailing

The features at the upper stories will be lit in the style established at the North Elevation.

Reference C8: 6 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67.

Mounted on string course at angular projections to cross light the diamond shaped projected carvings/patera.

6.0 South Elevation

The South Elevation should be lit in a combination of area and landscape lighting, together with spotlighting from the Kelvin Building.

Gentle floodlighting from the Kelvin Building could be used, but should be checked onsite for light trespass into the windows of the Bower Building, which may cause a glare nuisance.

6.1 Floodlighting

Reference T: 2 x Meyer Nightscape A Axially Symmetrical Medium Wide Beam Floodlight, 150W Ceramic Metal Halide lamp, 3000K colour temperature. Colour Black. With horizontal louvre.

Located at high level on the Kelvin Building.

6.2 Façade Detailing

The carvings above the South West Gable end window and the carving at the top of the centre bay window should be spot-lit from the Kelvin building.

Reference V: 2 x Hunza Wall Spot Low Voltage Halogen Spotlight. Lamped with Philips 30W 12V 8 degree Masterline ES lamp (5000 Hour life). Colour Black. With Glare Guard. Requires transformer.

The three patera/carvings to the East side of the south Elevation should be lit in a similar style to those at other elevations.

Reference C9: 6 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67. Mounted on the string course.

The turret at the South West corner should be lit as turrets at the other elevations.

Reference C10: 2 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67. Mounted on the stepped gable.

6.3 Centre tower with turret

The centre tower with turret should be treated in a similar way to the tower with turret at the West Elevation, including a fitting at the string course height.

Reference F3: 1 x Holophane LED.3 recessed uplighters. IP68.



White light output. Round stainless steel bezel. 10 degree optic, frosted lens. 240V 50Hz, integral LED driver.

Mounted in recessing kit .

Reference C11: 1 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67. Mounted on the string course.

The top level turret should be lit, with special attention to the sculpted figure.

Reference C12: 4 x ACDC Lighting Systems Artemis LED fittings. White light output. Colour black. 24V DC requires remote transformer. IP67. Mounted on the string course.

6.4 Roof Vent with Weather Vane.

The roof vent with the weather vane should be spot-lit from the high level of the Kelvin Building. This should only be incorporated in the lighting design if a complementary position from the North East direction at roof level can be found.

Reference Z: 1 x Meyer Superlight Compact, rotationally symmetrical, medium wide beam. 150W Metal Halide lamp, 3000K Colour Temperature. Colour Black. With radial louvre accessory to reduce stray light.

6.5 Area Lighting

Area lighting should be incorporated into a landscaping arrangement between the Bower Building and the Kelvin Building.

This could include lit street furniture, and geometric shaped fixtures attached to the Kelvin Building that would provide diffuse light for both the walkway and for the Bower Building façade. The existing tree should be up-lit with in-ground luminaires.

The existing floodlighting, located at high position on the Kelvin Building, is currently supplying area lighting and should be removed in the new scheme.

7.0 Control System.

The lighting as proposed will require a control system capable of simple DMX commands to run the projection system.

This could also be used to switch the other parts of the lighting scheme.

