

SHIPPENSBURG UNIVERSITY

MASTER PLAN FOR SITE LIGHTING IN THE CAMPUS HISTORIC AREA

PREPARED BY:



**ENTECH ENGINEERING, INC.
4 SOUTH FOURTH STREET
P.O. BOX 32
READING, PA 19603
PHONE: 610-373-6667
FAX: 610-373-7537
ENTECH PROJECT #2184.16**

SHIPPENSBURG UNIVERSITY

MASTER PLAN FOR SITE LIGHTING IN THE CAMPUS HISTORIC AREA

In the late fall of 2001, Entech was commissioned by Shippensburg University to provide professional design services for improvements to the lighting along certain walkways leading from the area of Old Main; one to a location beyond Gilbert Drive and one to the area of the intersection of Prince Street and Adams Avenue. Realizing that any improvements to this area could necessarily establish a precedent for other areas of the campus, Entech suggested that a conceptual or study phase precede the walkway lighting design. With this study a general master plan could be established so that as many campus improvement projects are completed over time, the site lighting can be installed with a cohesive strategy that will improve the safety and appearance of this portion of the campus. This narrative is intended to summarize a presentation of Entech's recommendations delivered to the Facilities Department and to the University President on February 19, 2002.

The primary focus of our study was the exterior illumination of the "historic" portion of the campus, which includes buildings designated as National Historic Landmarks by the US Department of the Interior: Old Main, Stewart Hall, Horton Hall, Gilbert Hall and the Martin House. It should be mentioned that, while not so designated, the Little Red School House is an important adjunct to the historic area. Although the walkways through the green space south of these buildings comprised the original scope, this study has been expanded to consider areas surrounding these buildings and incorporates a general understanding of the recommendations proposed in the Facility Master Plan, completed in September, 1998 by the professional consultants, Baker and Associates and GWSM Landscape Architects.

The Master Plan notes that a "Gateway" is formed where Prince Street enters the campus from the south. In fact, we understand that there are plans to erect a monument at this location in the near future. It is upon entering the campus from this location that one has a striking view of the "arc" of buildings comprising the Landmark, which was once the Cumberland Valley State Normal School, situated on the highest elevation on campus at 700 feet. This area from Earl Street to Old Main is identified as one of four warranting recognition for its aesthetic image with its views and vistas.

Future plans to create a main entrance where Old Main Drive intersects Earl Street and to direct traffic to Adams Drive will enhance the Loop Road concept identified in the Master Plan as necessary to promote a pedestrian oriented campus. As the concept of a loop road is developed, *the arc of buildings on the hill* will become even more of a focus for one entering the campus by motor vehicle. It is interesting that opposite the location of the arc on the hill is another arc, which is illuminated with high pressure sodium lighting to a level approaching 5-8 footcandles, which is quite high. This arc is that of the curved intersection of Prince Street and Adams Drive.

As it was developed 30-40 years ago, the orange, high pressure sodium lighting was recognized as being quite efficient and one that offered better visual properties than other sources. This was one of the few High Intensity Discharge (HID) lighting sources available at that time to compete with the original HID source, mercury vapor. The orange color property, or chromaticity, has in some circles been unpopular; however, there is evidence that one's vision is improved when lighting temperatures are increased at lower lighting levels; therefore, the color temperature of sodium (1,900-2,000 k) rendered it a cost effective solution for many security applications where low lighting levels are concerned. Its color has been found to be quite complementary to certain masonry materials, such as brick.

Although the efficiency (lumens /watt) is significantly less (60% - 70%), in recent years studies have indicated that the higher Color Rendering Index (CRI) of metal halide lamps have rendered this white HID lighting source a preferred solution to sodium by many designers. The metal halide lamps were introduced with similar properties to mercury vapor lamps, but with significant improvements to the old mercury type. The mercury type lighting is seldom considered for new lighting applications. To summarize, contrary to the chromaticity research originally suggesting sodium lighting for improved visibility, there is now research indicating that at low lighting levels for exterior applications, one's vision may be better (an improved judgment of equivalent brightness and visual clarification and satisfaction) with an improved CRI metal halide application.

As noted previously, Entech measured a lighting level of 7-8 footcandles at certain locations along the section of roadway where Prince Street and Adams Drive extend along the south perimeter of the campus, across from the arc on the hill. The Illuminating Engineering Society

(IES) in their guidelines for roadway lighting recommends values of less than two footcandles. This unusually higher lighting level that exists along Prince-Adams tends to compete with the existing walkway lighting on the green space in front of the arc and with the view of these landmark buildings. Care must be given to the lighting solutions proposed for this important "front lawn" area that will undoubtedly form a first and lasting impression to those visiting the campus.

In order to preserve the green space and to create a separation of the campus from the loop road, it is suggested that the white metal halide lamps be used as the source to illuminate the green space walkways and the orange, high pressure sodium source be used to illuminate the facades of the buildings. It is believed this application of lighting sources could provide a dramatic lighting effect, particularly for the arc on the hill, offering a warm, inviting glow to the red brick.

Today the site lighting in the historic portion of the campus is poor. Walkways and roadways are dark, resulting in the safety problems the University has identified. To help alleviate some of the problems in the past, fixtures have been added, mostly spot lights mounted on the side of some of the buildings. Little attention has been paid to the aesthetic, or visual impact, of fixture selection and placement. There is a tremendous opportunity to enhance the visual impact of this important area of the campus by installing proper architectural lighting.

Lighting fixtures could be installed in certain building features at locations that are generally concealed from view. The fixtures should be directed so that the light source is totally concealed from all pedestrians and directed at the building elevations. Locating fixtures behind columns and within recessed entrances and porticos, will tend to create a silhouette effect and will further promote the interesting architectural features of these historic buildings. The tower of Old Main, which is clearly visible for miles, should be illuminated in the same way. While the tower is presently lit by two large spotlights, the impact can be more dramatic with a better lighting strategy.

Two primary types of lighting fixtures should be seriously considered for illuminating the walkways of the green space. These are a 14-foot high "candy cane" or "bishop-crook" roadway type with a 19th century style, and bollard style lights. As previously noted, this lighting should be with metal halide lamps. The IES recommended light levels is ½ to 1½ footcandles. Because

this source of illumination will to some, psychologically appear to be less bright than the high pressure sodium source at the loop road, a slightly higher level of light is suggested. The same style bishop-crook type fixtures can be used on roadways in front of the buildings, and in the mall area extending from Memorial Auditorium to Henderson Gym.

For walkways close to the buildings it is suggested that a bollard type lighting fixture be considered. There are many types from which to choose. Some styles are very ornate, and consequently have a more historic appearance. Generally these fixtures are significantly higher in price. There are more contemporary fixtures that can also be considered. In addition to having a lower cost, modern designs have better light disbursement characteristics. This simple, low (often 36" high) fixture does not have a substantial visual impact, so it is possible to select a fixture with a more contemporary appearance that can blend in with the landscape.

In addition to the bollards and the bishop-crook fixtures suggested for walkways through the green space, pools of light should be created with landscape fixtures. Although there are a variety of fixtures that can be installed at ground level and directed towards an object, this type of equipment, when located in open spaces is subject to unintentional abuse and can be a maintenance difficulty. They should be considered for areas that are closer to building foundations and somewhat protected.

A more durable approach is to install lighting wells that are flush with the finished grade, allowing mowers to pass overtop without damaging the fixture. While the adjustments are more limited than those that are above ground, these fixtures can be located beneath or slightly ahead of an object, thus effectively providing lighting through or on shrubbery, trees and flagpoles. Creating pools of light can be a very effective way to contribute to the overall lighting levels of an area and should be considered for areas in the green space, especially the fountain, flagpole and selected foliage near the walkways. Although the lamp life is significantly shorter than that of an HID source, halogen lighting produces a brilliant white light and can create interesting effects on art objects and vegetation.

With the exception of the Martin House and the Little Red School House, the approach to providing illumination around the sides and rear of the arc on the hill is quite different than from the front. By design, Gilbert, Horton, Old Main and Stewart all offer a more functional rear entrance with fewer architectural lighting opportunities. Some minimal architectural lighting

can be used at the rear of the buildings in key locations. The lighting should not compete with the mall lighting and the front of the buildings, which border the mall. This is not to suggest that lighting for these building elevations does not warrant the same consideration as the front. One has to only briefly view any of these buildings, with the existing harsh glare and imposing light sources to understand that any treatment of new lighting must be sensitive to pedestrians within the Auditorium-Henderson mall area that is in close proximity.

Security lighting around the rear of these buildings is extremely important and can be readily achieved with a series of lighting components, which includes brick lights, down lights and wall fixtures that effectively shield the light source from the pedestrian. It should be intentional that an area of illumination surrounds the rear and sides of the building a distance of eight or ten feet from the perimeter. This should be achieved with components that are mounted to and blend with the building walls. Consideration should, however, be given to architectural features of the sides and rear of the buildings that are worthy of special lighting. As with the front, this lighting should be high pressure sodium (orange) to contrast with that of the walkways and mall areas.

In the attachment section of this report we present examples of fixtures that can be selected for the various applications described above. While it is possible to get similar fixtures from various manufacturers, we recommend the University select a manufacturer and style that will be used throughout this section of the campus.

The architecture and landscaping of Shippensburg University offers numerous lighting opportunities. Although this study is limited to the Administration (historic) Area of the campus, it would seem that the approaches outlined herein could be extended to many other areas. As the goals of the Facilities Master Plan are gradually implemented, care should be given to provide lighting solutions that will articulate features while providing a feeling of warmth and security to everyone choosing to access this pedestrian oriented campus atmosphere.

G:\PROJECTS\2184.16\wp\report.doc

Historic walkway lighting

1. Sternberg #1910/508/RE3GSM/175MH208 - 3900RFP4-14' AG-
 - a. Price \$2200
 - b. Refer to page 114 for standard colors (Sternberg catalog)
 - c. Refer to spec sheets for pole accessories (ie flag pole holder, banner arms)
2. Sentry Electric #SAV/TD/175MH/208QT - SAL/4H/F14/H36/
 - a. Price \$2500
 - b. Refer to Tiger Drylac color swatches.
 - c. Refer to spec sheets for pole accessories (ie flag pole holder, banner arms)
3. Sun Valley Lighting # 32-6030-14/LCADN-PG-3/XPK-1/175W-MH-208
 - a. Price \$1500
 - b. Refer to Suncoat Finish Selection swatch
 - c. Refer to spec sheets for pole accessories (ie flag pole holder, banner arms)

Note: Prices above are for standard finishes and **no** pole accessories

Above fixtures have similar optics and construction

Bollards

1. Kim Lighting #VRB1-100MH
 - a. Price \$575
 - b. Best optics
2. Hadco Lighting #TB36-100H
 - a. Price \$600
 - b. Good optics
3. Sternberg #3901/MH70/MED/208
 - a. Price \$800
 - b. Poor Optics

Wall Wash

1. Kim Lighting #SW1/50MF208/BL-P
 - a. Price \$300
 - b. Low wattage for lower mounting heights
2. Kim Lighting #WD18
 - a. Price \$450
 - b. Can be used as up or down light
 - c. Various wattages and optic patterns for different applications and mounting heights
3. Gardco Lighting #102 round wedge downlight
 - a. Price \$315
 - b. Various optic patterns for different applications
 - c. Wattages up 175 watts



SHIPPENSBURG UNIVERISTY PROPOSED HISTORICAL LIGHTING IMPROVEMENT



ENTECH

Entech Engineering Inc.

4 S. Fourth Street

Reading, PA 19603

ph: 610.373.6667

fx: 610.373.7537

www.entechneg.com

500 N. Centre Street

Portsville, PA 17901

ph: 570.628.5655

fx: 570.628.5097

DATE: 2/19/2002