

**Section 1413**

**SECTION 1413  
PORTABLE CONSTRUCTION LIGHTING**

**1413-1 DESCRIPTION**

Furnish, operate and maintain everything necessary to provide lighting for compliance with Article 105-14 Night Work requirement for artificial lighting.

**1413-2 MATERIALS**

Furnish all lighting equipment as required and retain after the work is completed. Material and/or equipment is not required to be new but shall be in good operating condition and in compliance with applicable safety and design codes.

Submit, for the review and approval catalog cuts giving the specific brand names, model numbers and ratings of the lighting equipment. Include in the submittals power ratings and photometric data. Allow 40 days for review of the submittals. Do not begin night work without approval of the equipment and/or materials.

**1413-3 TOWER LIGHT**

Use tower lights which consist of mercury vapor, metal halide, high pressure sodium or low pressure sodium fixtures mounted on a tower approximately 30 ft in height. Use tower light fixtures which are heavy duty flood, area, or roadway style with wide beam spread, have an output of 50,000 lumens minimum, have the combined outputs of all fixtures on each tower light not exceed 460,000 lumens, and are weatherproof and supplied with attached waterproof power cord and plug. Use a sturdy tower which is freestanding without the aid of guy wires or bracing. Provide sufficient capacity in the power supply to operate the light(s) and locate it for the shortest safe routing of cables to the fixtures. A tower light consisting of the combined fixture(s), tower and power supply is preferred.

Provide tower lights of sufficient wattage and/or quantity to provide an average maintained horizontal illuminance greater than 20 footcandles over the work area.

Aim and position the lights to illuminate the area for construction work. Make sure that there is not any disabling glare to the motorist. In no case should the main beam of the light be aimed higher than 60° above straight down. The lights should be set as far from traffic as practical and aimed in the direction of, or normal to, the traffic flow.

**1413-4 MACHINE LIGHTS**

Use machine lights which have mercury vapor, metal halide, high pressure sodium or low pressure sodium conventional roadway enclosed fixtures mounted on supports attached to the construction machine at a height of approximately 13 ft. Use fixtures for machine lights which have light output between 22,000 and 50,000 lumens. Use a power supply with sufficient capacity to operate the light(s) and securely mount on the machine. Perform electrical grounding of generators to frames of machines on which they are mounted in conformance with the NEC.

Use machine light fixtures with sufficient wattage and/or quantity to provide an average maintained horizontal illuminance greater than 10 footcandles on the machine and the surrounding work area. Machine lights are in addition to conventional automotive type headlights which are necessary for maneuverability.

Balloon lights are an acceptable alternate luminaire for machine lights.

**1413-5 CONSTRUCTION METHODS**

Use tower lights when the night work is confined to a fairly small area and is essentially a stationary operation. Space tower lights no closer than 100 ft apart and no further than 300 ft apart. Actual spacing will be determined by approved equipment. At any spacing, the required 20 footcandles of light will be the determining factor.

## Section 1413

1 Use machine lights when the night work is not confined to a small area and is essentially  
2 a continuous moving construction operation.

3 Tower lights may be provided instead of machine lights upon approval by the Engineer. Use  
4 of tower lights instead of machine lights will be considered when the number of machines,  
5 type of work, or need for inspection justify their use as decided by the Engineer.

6 Illuminate the work area where traffic control devices are being set up or repositioned at  
7 night.

8 The work areas to be illuminated are the areas where construction equipment and labor are in  
9 operation and may be different from the work areas shown in the plans.

10 Illuminate a large enough work area so that the movements of all personnel and equipment  
11 engaged in the work will be contained in the area.

12 Provide sufficient fuel, spare lamps, generators and personnel qualified to operate the lights to  
13 assure that they will be maintained in operation during night work.

14 Existing streetlights do not eliminate the requirement for the Contractor to provide lighting.  
15 Consideration may be given to the amount of illumination provided by existing lights in  
16 determining the wattage and/or quantity of lights to be provided.

### 17 **1413-6 MEASUREMENT AND PAYMENT**

18 *Portable Lighting* provided by tower and machine lights will be paid only when a significant  
19 amount of nighttime work is explicitly required and a pay item for portable lighting has been  
20 included in the contract. Otherwise, portable construction lighting will be incidental to other  
21 contract items and no direct payment will be made.

22 The aggregate amount to be paid on each partial payment estimate will be equal to the  
23 percentage that the item of *Portable Lighting* is complete as estimated by the Engineer.

24 Payment will be made under:

<b>Pay Item</b>	<b>Pay Unit</b>
Portable Lighting	Lump Sum