

ILLUMINATION REGULATION 2600ESS-293

1.0 PURPOSE

The purpose of this regulation is to establish the levels of illumination recommended at the job sites of the Panama Canal Authority (ACP). Levels which shall allow the employees to dispose of adequate visibility conditions to be able to develop their activities and circulate throughout the work stations without any risks for their safety or health.

2.0 BACKGROUND

The Panama Canal installations operate 24 hours a day reason why inadequate illumination conditions should be avoided at the job sites which may have negative consequences on the safety and health of the employee; the reduction of visual efficiency may increment the number of errors and accidents as consequence of deficient illumination at the circulation ways, stairways and other traffic areas.

3.0 RANGE

This regulation is applicable to all of the labor areas under the ACP's responsibility where the employees the Panama Canal Authority (ACP) or contractors work or carry out their activities.

4.0 LEGAL GROUNDS

This regulation is based on Agreement No. 12 of the Board of Directors of the Panama Canal Authority, Risk Control and Occupational Health Regulation, Chapter 1, Articles 8, numeral 16 and in the Instruction AD 2004-24 of the Administrator of the ACP.

5.0 DEFINITIONS

For the effects of this regulation, the following definitions are stashed:

5.1 Illumination: the luminous flow that incides over a surface divided by the size of said surface.

5.2 Lux: measuring unit of the Illumination International System (SI). Equivalent to the illumination that incides over each square meter of the surface and over which the luminous flow of a lumen is uniformly distributed ($\text{lux} = \text{lumen}/\text{m}^2$).

5.3 Footcandle: illumination unit of measure equivalent to the amount of lumen that incides over a square foot. Equivalent to 10.76lux.

5.4 Contrast: the difference of luminances or glows between objects and background with relation to the luminance of the background itself.

5.5 Luminance: the luminotechnic magnitude which determines the impression from mayor to minor clarity produced by a surface.

5.6 Equivalent Contrast: it's the difference of luminances or glows between objects and backgrounds with respect with the luminance of the background itself.

5.7 Reflectance: it's the relation of the illumination that a surface reflects (luminance) in relation with the one received.

6.0 GENERAL

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6.1 Measurements of the levels of illumination

The Industrial Hygiene Section (ESSI) watches over job sites and posts to identify zones with scarce general or direct illumination. In addition, it carries out periodic illumination measurements or when verification of the levels of illumination are requested.

6.2 Illumination Systems

The systems should provide adequate levels of illumination for the operations that are carried out, and according to the job's level of precision at the working environment.

6.3 Levels of illumination

The different labor sites, hallways, ramps, runways, offices, workshops, storage rooms, should be illuminated with no less than the minimum level of intensity listed in Attachments I & II. In case of emergency situations the minimum levels recommended are contemplated in Attachment III.

6.4 The elaboration of prints of the illumination and the recommended altitude of the lights of the ACP is responsibility of the Engineering Division (IPI), as is the approval of prints submitted by consultants or contractors. IPI may utilize amongst others, guides and practices recommended by the ANSI RP-1-04; RP-2-01; RP7-01; RP-12-97 y the criteria of the Illuminating Engineering Society of North America (IESNA).

6.5 The responsibilities of ensuring the fulfillment of this regulation are described in the ACP's Security Manual, Section 1, numeral 1.5.

7.0 CONSULTATIONS

All information or clarification with respect to the contents or the application of this regulation shall be requested in writing to the ESSI.

8.0 EXCEPTIONS

The temporary deviations or exceptions in the compliance of this regulation shall be requested in writing to the Security Division.

9.0 EFFECTIVENESS

This regulation shall remain in effect until the same is modified or revised.

10.0 BIBLIOGRAPHICAL REFERENCES

10.1 American National Standard RP-7 & RP-1. Industrial Lighting. Illuminating Engineering Society of North America. 120 Wall Street, Fl. 17, New York, New York 10005-4001. 1991

10.2 American National Standard RP-1. Office Lighting. American National Standard Practice. Illuminating Engineering Society of North America. 120 Wall Street, Fl. 17, New York, New York 10005-4001. 1973

10.3 Industrial Hygiene Manual. MAPFR Foundation. MAPFRE Editorial. Madrid, Spain

10.4 Levels of Illumination. Resolution 93-319 of the 04 of March of 1993 MOP