3.5 LIGHTING SYSTEM

3.5.1 Lighting Equipment

The lighting equipment is classified into two (2) kinds, indoor and outdoor. The lighting equipment is the combination of light source and body which houses the light, source simply called as luminaire. The choice of luminaire depends on the type of the task, its location, on the size and shape of the space. The degree of comfort required and maintenance requirements.

3.5.2 Maintenance

3.5.2.1 Maintaining System

The long-term effectiveness of any lighting system depends on how well it is maintained. Neglect of lighting maintenance will result in loss of as much one-half the original light level and in poor appearance. Unless the fixtures are kept clean and depreciated lamps changed, a significant portion of the investment in any lighting system is lost. Maintenance that minimizes dirt accumulation, lamp depreciation and burned-out lamps left in sockets. Prevent excessive light loss. This can translate to higher productivity and better appearance and cost could be less than for poor maintenance.

There are three ways we could achieve good maintenance of indoor lighting systems:

(a) Spot Relamping

In spot relamping burn-out or busted lamps are replace instantly or it involved in replacing a lamp or bulb once it burn-out.

(b) Group Relamping

Group relamping involves replacing all lamps (and usually cleaning the fixtures) at one time or all lamps are replaced prior to the time in their rated life when burn-out begin to occur and lamps are greatly depreciated in light output.

(c) Cleaning

Cleaning is the simplest way of maintaining the system but this does a lot in providing good lighting appearance particularly to their luminaries fixtures. Even in offices where air is well-filtered, enough dirt accumulates on lamps, lenses or louvers ad reflector thus reduces light significantly.

For outdoor lighting such as flood light, road light, etc, effective maintenance can be done as follows:

1. Flood lights of all types should either be locked into position once properly aimed or else equipped with that automatically reposition them when they are moved for maintenance.

2. Fixtures should be cleaned regularly according to the manufacturers instruction.

3. Lenses on enclosed flood lights should be inspected and cleaned even though the reflector may not need attention. This is especially important on narrow beam flood light aimed straight up. It takes very little dirt to diffuse the beam pattern and significantly reduced lighting power.

4. Occasionally conduct test of insulation resistance on their feeder and ballast as well.

3.5.2.2 Maintenance Frequency

There are several ways of achieving good maintenance of the lighting system. But how often is another sense. If one could take a look, lamp manufacturer(s) usually specify rated life of each specific type or model of lamp, this is in term of running hours or just simply hour. By looking onto these specified value(s) it could now be easily establish time schedule of lamp replacement considering group relamping method. However, there are other factors that have significant effect on the light of lamp considering also brightness which require proper cleaning of accumulated dust deposited both on the lamp and luminaire due to air current resulting to poor illuminance.

Table 4.3.5
Frequency of Lamp Replacement

Type	Replacement Period	Cleaning Period
1. Fluorescent (standard)	Once a year	Every 3 months
2. Fluorescent (compacted)	Every Two (2) years	Every 3 months
3. Incandescent	Spot relamping	Every 3 months
4. Halogen	Spot relamping	Every 3 months
5. High Intensity Discharge (HID)	Spot relamping	Every 3 months

3.5.2.3 Maintenance Checklist

a. Functionality Check – This can be achieved by simply doing an ON and OFF switching of light or group of lights of a given circuit or loop. With this kind of TEST we could determine the operation condition of part of the lighting fixture and their starting capability.

b. Insulation Resistance Check – Good insulation resistance of cables or wire must be deserved at all times otherwise circuit interruption will almost likely to happen. Drop of insulation resistance will cause short circuit and if the circuit protection devise does not function this will cause fire. Periodic insulation resistance check or test must be conducted at least once a year both on the feeder and brands.

c. Coil Resistance Check – The test of coil resistance can be used only to the lamp(s) associated with ballast and transformer. However, this is done very seldom and usually not at all.

d. Check of Brightness – As you see as lamp(s), it get dimmer considering also the dust being accumulate or the lamp surface due to air current particularly on the outdoor lighting fixtures. The brightness can be achieved by simple cleaning of the bulb itself and the luminaire reflection and diffusion.

e. Physical Check – Appearance of the entire lighting fixture must be check, its mounting and alignment for proper and balance light reflection.

3.5.2.4 Maintenance Equipments and Tools

1. Electrician Tool Kit
2. Electronic Multi-Tester
3. Wheatstone Bridge Coil Resistance Tester
4. Earth or Ground Resistance Tester
5. Megger or Insulation Resistance Tester
6. Clamp Ammeter
7. High Voltage Tester
8. Ladder, Trouble Light, Extension Cord, Allen Wrench, Globes, etc.

3.5.3 Preparing Inspection Report

Refer to **Part II, Chapter 3, - Preparing Inspection Documentation**.

Figure 4.3.3
Standard Lighting System Inspection Report Form

LIGHTING SYSTEM INSPECTION RECORD		
Location	Date	Inspector
Building Name		

Item	Level of Inspection	Comments