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Management of the network design under Name 01 in Mexico

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Abstract: *In the present, the parameters of the NOM-001-SEDE-2012 (use) were used in order to carry out a quality installation that is safe, reliable, accessible and is reflected in a lasting installation. Initially, said project began to be designed in a safe way without losing the objectives of the NOM because, being reliable and safe for users, they can feel safe in the event of an accident caused by a fire due to a bad electrical installation. Currently, the use of the NOM for electrical installations is fundamental in the design of electrical installations throughout the Mexican Republic, since one of the main problems of a bad electrical installation was that the parameters established in the NOM were not applied, as well as shows a calculation memory where the formulas used in the different cases are described in detail in order to be able to determine the correct and adequate conductors that are capable of withstanding the electric current in extreme conditions such as the summer season. In accordance with what was previously mentioned, this project will serve as a guide for people interested in carrying out similar projects that comply with the provisions of the current NOM.*
Materials and Methods*: Methodology of documentary research*
The method is qualitative-descriptive
Conclusion:
With regard to lighting equipment, the replacement of 39 Watt slimline lamps is recommended instead of 75 Watt lamps due to the energy savings mentioned in the thesis, in addition to the fact that said equipment must have the characteristics and parameters required. corresponding in NOM-025-STPS-2008 for lighting in order to guarantee lighting in optimal conditions.
Likewise, the use of electrical material is recommended as one of the suggested equipment, in order to guarantee better performance and greater efficiency in the use of electrical energy. It is necessary to mention that similar equipment as material to be used must meet the requirements according to what is established in NOM-063-SCFI, on the other hand, predictive and corrective maintenance of said facilities is recommended.
Key Word*: Management, work, rules.*

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I. Introduction

The use of electricity dates back to ancient times where the Greeks observed that by rubbing a resin with wool it acquired the property of attracting light bodies, this approximately in the year 600 B.C.; Later, with the passage of time, he gave an amazing change by inventing the incandescent lamp, the product of the experimental development of Tomas Alba Edison.

At present, the use of electrical energy is becoming increasingly important both in the generation of electrical energy, transmission and distribution systems, as well as electrical installations, whether industrial, commercial, residential, etc. All of them can have a level of complexity depending on either their location or depending on the function they perform.

That is why, nowadays, the use of standards (NOM-001-SEDE-2012) has been implemented more and more, the purpose of which is to implement the correct use of both planning and maintenance in everything related to the use of the electricity in order to provide greater reliability, safety, efficiency, quality, etc.; among users, all due to the large number of accidents caused by poor planning in electrical installations, mainly causing economic losses to human losses.

This is how this thesis consists of five chapters in which the basic concepts are explained, the parts that constitute an electrical installation, the importance of using the NOM, even the calculations for planning an electrical installation, all of this. attached to the corresponding articles of NOM-001-SEDE-2012.

At present, the great demand for the supply of electrical energy by users, which has increased with their electrical devices, in addition to the realization of electrical installations by people with unqualified empirical knowledge and that these projects are also carried out without a technical study, are the main cause of fires in electrical installations.

It is worth mentioning that electrical installations can become a danger due to the use of low-quality materials, overloads in the installations which were not contemplated and that lead to electrical failures, which, combined with other factors, can trigger a risk for both users and properties.

The main causes of fire failures are:

ϖAn incorrect determination of the protections.

Damaged electrical conductors.

ϖPoor quality material.

ϖExcessive electrical energy demand.

ϖLack of periodic reviews in electrical installations.

ϖLack of physical ground.

According to information compiled by the National Institute of Geography and Statistics (INEGI), in 2009 there were 560 deaths from electrical electrocution in the country, of which 31.4% occurred at home; Thus, it was also recorded that only in 2013, 150.4 tons of carbon dioxide emissions were emitted according to the sector: electricity and heat production in Mexico.
It is necessary to mention that according to investigations carried out previously, it was found that the main influencing factors were mainly those mentioned previously, since the lack of electrical maintenance to the wiring together with low-quality and deteriorated materials is a symbol of danger and electrical risk.

II. Material And Methods

In accordance with the 2008 electrical installation design guide, the methodology to carry out our system was carried out through the following stages:
Stage 1.- General design – Regulations – Total installed power
During the design of the electrical installation at Federal School 3 in the city of H. Cárdenas Tabasco, a very detailed study of NOM-001-SEDE-2012 was carried out, since this thesis involves the immediate application of the same. It should be noted that NOM-001-SEDE-2012 was studied, as it is the most current in the field of design of electrical installations.
On the other hand, in order for us to calculate the total energy demand, the authorization of the director of the institution was essential, so that we could carry out visits to the facilities: the objective of our visit was to take the data of the current equipment and lighting, in order to know their nominal power of each one, with this it was possible to record this information in a database created in Excel and thus facilitate its organization.
Stage 2.- connection to the distribution network (Medium voltage)
According to what was studied during our investigation, it was proposed to build a transformation center inside federal school number 3, with 13.2 KV in the primary and 220-127 V in the secondary.
Stage 3.- architecture of the electrical installation
Because the institution did not have plans for its infrastructure, we proceeded to take measurements directly, for this, a schematic plan was made that allowed us to know the dimensions that were essential, but to obtain these measurements, used a tape measure with a range of 20 meters with which it was possible to take the measurements and capture them on the schematic plan.
Subsequently, this information was captured in the Autocad-2013 software, in which the design of the electrical installation was carried out, that is, the previously calculated luminaires and equipment were placed in the correct places, this includes: meter, transformer , board, load boxes, switches, lights, fans, air conditioning equipment, motors and circuit connections and registers.
Stage 4.- protection against electric shocks
A grounding gauge was selected by safety standard according to NOM-001-SEDE-2012.
Stage 5.-circuits and switches
Each circuit was studied in detail. From the nominal current of the loads, considering the level of the short-circuit load current and the type of protective device, in this way the selection of the circuit conductors was determined.
But before that we take into consideration the following points.
¬ The voltage drop complies with NOM-SEDE-2012.

¬ That the starting of the motors are satisfactory.
¬ Make sure you have protection against electric shocks.
Once the above was completed, the short-circuit current was determined, then the thermal resistance capacity of the circuit was verified.
Conductor sizes may vary based on the above requirements.
Stage 6.- technical feasibility analysis
In the development of this methodological phase, the point was reached where our observations result in the installation that is in force at the Federal Secondary School number 3, is of poor quality, so it was proposed to make a new design of the electrical system with the purpose of avoiding short circuits and preventing risks to teaching staff.

III. Discussion

When carrying out the present, it served to reaffirm the theoretical knowledge acquired in the classroom, as well as to put said knowledge into practice,

Regarding the design of the electrical installation, it is necessary to mention that the electrical installation of Federal School No. 3 was designed, under the parameters established by NOM-001-SEDE-2012, in order to provide greater security. to users, properties that sometimes become significant economic losses, likewise it was possible to update the original architectural plans and the current single-line diagram. They included both the location of new electrical equipment in the future and the air conditioners that will provide greater comfort in summer times in order to be able to carry out the corresponding calculations for greater safety on the part of users, as well as updating of the single-line diagram and based on the new total load that will be implemented in said school, thereby benefiting all the students who study there as well as parents and future generations.

It is important to mention that recommendations were also made regarding the proposed equipment and material, since these in turn will help reduce the cost of electrical energy, provide better energy efficiency and greater durability of electrical wiring in terms of to the electric charge product of the locked rotor amperage of the air conditioners mainly, as well as the environment for which said installation was designed.

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