SMI - 139

SUBJECT: SAFE CONSIDERATIONS FOR AN APPLICATION OF SPECIAL ELECTRICAL SYSTEMS

I. PURPOSE

To provide basic guidelines for identifying electrical systems required for special installations.

II. REFERENCES

National Electric Code (79)
Environmental and Energy Affairs Office Procedure No. 1-102
Federal and State Occupational Safety and Health Acts
M.T.I. SMI-137, "Safe Electrical Work Practices"
M.T.I. SMI-155, "Guidelines for Safe Use of Extension Cords and Power Strips"

III. FUNCTIONS AFFECTED

Manufacturing Engineering or Functionally Responsible Activity
Facilities Engineering
Employee Safety

IV. OPERATIONS AFFECTED

Chrysler Corporation

V. REFERENCES

MTI-155 Guidelines for Safe use of Extension Cords and Power Strips

VI. INFORMATION AND INSTRUCTIONS

This information is intended for assisting Facilities Engineering personnel in identifying systems that require specific design considerations.

For this purpose of this M.T.I., special electrical systems are defined as those required for specific installation. Some of the special systems normally used are listed below:

* Emergency Systems  * Temporary Wiring
* Hazardous Locations  * Standby Systems and Equipment

SAFETY
SAFE CONSIDERATIONS FOR AN APPLICATION OF SPECIAL ELECTRICAL SYSTEMS

VII. APPLICATION

A. Emergency Systems

1. Emergency systems are required and classed for emergency use by the federal, state and/or local government. These systems are intended to automatically supply power and/or illumination to designated areas in the event of failure of the normal power supply or failure of a system intended to supply, distribute and control power and illumination essential for safety to human life.

2. Emergency systems shall provide power to equipment that must be maintained on-line such as fire pumps, etc. The emergency system shall have adequate capacity to carry the full load.

3. A means of testing the emergency system including the maintenance of batteries under load shall be provided. The emergency system shall be provided with selective load pick up and load shedding.

4. Audible and visual signal devices shall be provided to indicate failure of the system, battery not charging or functioning properly, and a ground fault in a solidly grounded wye emergency system of more than 150 volts to ground.

5. A sign shall be placed at the service entrance equipment to indicate type and location of on-site emergency power source.

6. All boxes and enclosures for emergency circuits shall be marked so that they are readily identified as components of an emergency circuit.

B. Hazardous Locations

1. Locations are classified depending on the properties of the flammable vapors, liquids, gases, combustible dusts or fibers that may be present. Each room, section and area shall be considered individually in determining classification.

2. Class I locations are those where flammable gases or vapors may be present in the air in quantities sufficient to provide ignitable mixtures. This includes locations where flammable liquids are stored.
a. Class I, Division 1 locations are those where hazardous concentrations of flammable gases or vapors exist under normal operating conditions.

b. Class I, Division 2 locations are those where hazardous concentrations of flammable liquids or gases are handled, processed or used, but where the liquids or gases will normally be confined within closed containers.

3. Class II locations are those where combustible dusts are present.
   a. Class II, Division 1 locations are those where combustible dust is in the air in quantities sufficient to produce ignitable mixtures.
   b. Class II, Division 2 locations are those where combustible dust is in the air not in quantities sufficient to produce ignitable mixtures, but where combustible dust may be in the air in large quantities due to infrequent malfunctions of equipment.

4. Class III locations are those where ignitable fibers are present.
   a. Class III, Division 1 locations are those where ignitable fibers are handled, manufactured, or used.
   b. Class III, Division 2 locations are those where ignitable fibers are stored.

C. Temporary Wiring Installations

1. Temporary wiring shall only be used for remodeling, maintenance, repair or demolition purposes.

2. Temporary wiring installations shall not exceed 90 day periods. Wiring shall meet all local and state codes and regulations.

3. Temporary wiring may be of a lesser class than that used for permanent wiring, but must meet all applicable rules and regulations of the N.E.C.

4. All feeders shall originate in an approved distribution center.

5. Branch circuits shall originate in an approved power outlet or panel board.

6. Open runs of conductors shall be run as a multi-conductor cord or cable assembly in
lengths not exceeding ten feet.

7. Lamps shall be protected from accidental contact or breakage by providing lamp guards or by maintaining a seven foot clearance.

8. Flexible cords and cables shall be protected from damage. Sharp corners and edges shall be avoided.

9. Conductors shall be rigidly supported on non-combustible, non-absorbent insulating materials and shall not contact any other objects.

10. Cable trays shall not be used in hoistways or where subjected to severe physical damage.

11. Conductors may be enclosed in flexible non-metallic tubing only when installed in dry locations and where exposure to severe physical damage is avoided.

12. Open runs of conductors shall be installed to avoid walls, floors, wood cross members, etc.

13. Conductors shall be protected from physical damage when crossing ceiling joints and wall studs. Conductors within seven feet from the floor are considered exposed to physical damage.

14. Conductors entering boxes, fittings, etc., shall be protected from abrasion. Openings through which conductors enter shall be effectively closed.

15. All pull boxes, junction boxes, fittings, etc., shall be provided with covers made of the same materials as the walls. Where metal covers are used, they shall be grounded.

16. Refer to MTI SMI-155, "Guidelines for Safe Use of Extension Cords and Power Strips".

D. Standby Systems

1. Legally required standby systems are intended to provide electric power to aid in control of health hazards and equipment essential to human life. These systems are classed as legally required by Municipal, State, Federal or other codes.

2. Legally required standby systems are those required to restore power to the main
circuit within 60 seconds.

3. Optional standby systems are those intended to protect private property or business where life safety does not depend on the performance of the system. These systems are installed to provide an alternate source of electric power to areas such as data processing and communications systems.