

SAFETY CODE



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Plant Department

NO JOB IS SO IMPORTANT
AND NO SERVICE IS SO URGENT
THAT WE CANNOT TAKE TIME
TO PERFORM OUR WORK SAFELY.

BELL SYSTEM

NEW ENGLAND TELEPHONE AND TELEGRAPH CO.

FOREWORD

This Safety Code has been prepared as a guide and is presented to you to assist in the prevention of accidental injuries to yourself, fellow employees and the public.

It is your responsibility to plan and carry out job assignments in a safe manner, and I urge you to take every reasonable precaution to insure your safety and that of your fellow men.

A handwritten signature in cursive script that reads "Albert Palmer". The signature is written in black ink and is centered on the page.

Vice President

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GENERAL

1. INTRODUCTION

1.01 The precautions and safety rules included in this Safety Code and in **the** Bell System Practices are to be observed by all employees in preventing accidents to themselves, their fellow employees and the public.

1.02 Accident analysis records show that a majority of all Plant Department accidents are caused by the use of non-standard or short-cut methods rather than the safe and proper ways learned by experience which are outlined in the Safety Code and in the Bell System Practices.

1.03 In addition, an appreciable percentage of accidents are attributable to faulty supervision and poor planning of the job.

1.04 These accidents will not happen if all plant forces cooperate in the elimination **of** unsafe **work** habits and in the proper planning of the job with safety as the first consideration.

1.05 In this section are outlined the general duties and responsibilities of workmen and supervisors **in** accident prevention.

2. WORKMEN'S DUTIES AND RESPONSIBILITIES IN ACCIDENT PREVENTION

2.01 It shall be the first duty of each employee to exercise the utmost caution and to perform all work operations in such manner as to avoid accidents. If **an** employee persistently disregards safety instructions

after all reasonable effort has been made to train him to follow safe practices, special consideration should be given to the question of his usefulness in our organization. This is for his own good and for the protection of others.

2.02 He should study the precautions and safety rules in the Safety Code and in the Bell System **Practices** and apply them in the performance of his work.

2.03 He should understand and obey instructions. If in doubt he should consult his Supervisor.

2.04 He should use the right materials, tools and equipment correctly and see that they are in proper condition.

2.05 He should **avoid** horseplay, wrestling **and** practical jokes. They are prohibited.

2.06 He should warn others if their safety is in doubt. Particularly he should look out for children.

2.07 He should be alert to recognize situations where an element of danger exists and exercise unusual care under such conditions as when:

- (a) **Working in the vicinity of electric light and power wires and apparatus.**
- (b) Working where there is danger **from highway or railway traffic.**
- (c) Working on or about plant weakened or wrecked by storms, etc.
- (d) Working in trenches, elevator shafts or near machinery.

2.08 He should not stand or allow others to **stand** where there is danger from falling objects. Working aloft, he should avoid carelessness in handling tools and materials.

1.09 In lifting he should observe the following precautions :

- (a) Get sufficient help if the object is too heavy or cumbersome.
- (b) Before attempting to lift, see that the footing is secure. Avoid awkward positions. Do not separate the feet unnecessarily.
- (c) Bend the knees. Keep the back straight and upright as possible.
- (d) Take a firm grip on the object and straighten the legs slowly. This allows the strain to come on the strong muscles of the arms, shoulders, back and legs.

2.10 In handling heavy or bulky materials or equipment such as derricks, poles, cable, etc. he should take every precaution for the protection of his fellow workmen, the public and himself.

2.11 He should protect his eyes not only by using goggles where specified in the instructions, but also by using good judgment as to his working position.

- (a) In all work operations the use of tools or the handling of materials at eye level should be avoided.
- (b) When wind is blowing, work should be done with the wind at employee's back if practicable so that dust, flakes of galvanizing and particles of all kinds will be blown away from the eyes.
- (c) Working with tools and materials directly overhead should be avoided whenever possible.

2.12 He should keep his first aid kit in good condition and replace used items promptly. He should know first aid practices.

2.13 He should report promptly to his supervisor every accident, even though the injury at the time may seem trivial.

2.14 He should report promptly all plant or equipment which appears to be unsafe or defective or any other conditions which might become a hazard to employees or the public.

3. SUPERVISORS' DUTIES AND RESPONSIBILITIES IN ACCIDENT PREVENTION

3.01 It shall be the first duty of each supervisor to analyze and plan the work with safety as the first consideration.

3.02 He should train his men in the precautions and safety rules in the Safety Code and in the Bell System Practices. To this end he should observe the requirements of the "Safety Observation Plan" (Bell System Practices) which provides for observations of workmen while work is in progress so that corrective measures can be taken prior to the occurrence of accidents. All unsafe practices shall be discussed at the time with the employee or employees involved. These discussions shall include a reference to or, if necessary, a review of the instructions in the Safety Code and the Bell System Practices, or other related instructions.

3.03 He should see that proper tools, equipment and materials in good condition are available at the time and place needed.

3.04 He should issue definite and specific instructions on how particular features of work involving a hazard are to be performed.

3.05 He should check continuously to see that safety instructions **are** carried out. In no case should unsafe or improper practices be passed over.

3.06 He should assign employees to work only for which they are fitted by strength, training and experience.

3.07 He should be alert to recognize situations where an element of danger exists and see that unusual care is exercised under such conditions. In this connection the following precautions shall be observed:

- (a) The general public shall be warned if their safety is in doubt.
- (b) Adequate approved guards, signs, flags; barricades and lights shall be used as required. If necessary men should be stationed to warn traffic.
- (c) All excavations shall be properly back-filled.
- (d) All necessary steps shall be taken to protect the public from serious hazards found outside the telephone plant. The office shall **be notified** promptly so that those responsible may be **notified**.

3.08 He should be familiar with the Accident Reporting Routine and see that all accidents are promptly reported even though the injury at the moment may seem trivial.

3.09 He should be familiar with the Hazardous Plant Routine and report promptly all plant or equipment which appears to be unsafe or defective or any other conditions which might become a hazard to employees or the public.

4. SAFETY TRAINING

4.01 New employees shall be given thorough instruction in safety practices and first aid before being given their first assignment.

4.02 Present employees changing their occupation or assignment to any work with which they are not familiar shall be given specific instructions in the precautions to be observed in connection with the work at the time the assignment is made. This instruction shall be given by a supervisor or competent instructor.

ELECTRICAL HAZARDS

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1. GENERAL
2. PRECAUTIONS
3. PROTECTIVE DEVICES

1. GENERAL

1.01 THIS PART INCLUDES GENERAL PRECAUTIONS AND SAFETY DIRECTIONS TO BE OBSERVED WHEN WORKING NEAR CURRENT CARRYING EQUIPMENT OF THIS OR OTHER COMPANIES.

2. PRECAUTIONS

2.01 All employees shall use extreme care when working on plant in close proximity to or which may come in contact with electric light and power wires, transformers and associated equipment.

2.02 The approved electrical protective devices as listed in this part shall be used on all occasions where an employee may be exposed to any electrical hazard, including possible power surges and static discharges.

2.03 Supervisors in all departments shall see that employees in their vocational groups who work on outside plant have been instructed and thoroughly understand the specifications as stated in Bell System Practices relative to Clearance for Aerial Plant and Foreign Wires.

2.04 The attention of all employees is particularly called to trolley feeders, trolley contact or suspension wires. All wires and equipment associated with trolley systems, because of the type of construction used, are frequently below or in close proximity to the telephone wires, cables or terminals. Therefore, the same precautions shall be observed to avoid contact with them as is followed in the case of other power wires. Insulation on these circuits and all other foreign wires must not be depended upon for protection.

2.05 CIRCUITS CARRYING 110 VOLTS ARE DANGEROUS AND REQUIRE THE USE OF RUBBER PROTECTIVE EQUIPMENT WHEN AN EMPLOYEE MAY BE EXPOSED TO THEM.

2.06 When it is necessary to perform work where there is not a safe clearance from trolley or other electric current carrying wires the condition shall be reported, if possible it shall be corrected before proceeding with the work. If it cannot be corrected promptly then the supervisor shall decide the action to be taken.

2.07 Foremen shall personally supervise or detail an experienced workman to supervise the movements of all members of a crew working in close proximity to trolley and other electric current carrying wires.

2.08 Poles, derricks and winch lines shall be considered as conductors, and if they should come in contact or be in a position to come in contact with electric light or power wires shall be treated as "alive." Rubber gloves shall be worn by the person or persons who may come in contact with any of this equipment. The chauffeur shall not leave the cab of the truck, nor shall any person touch the truck or derrick under the above condition without using electrical protection.

2.09 Employees in ascending, descending, or while working on poles which will expose them to possible contact with electric light or power wires through any

part of their body or clothing, shall use rubber gloves and take every possible precaution to keep from coming in contact with wires.

2.10 When it becomes necessary to erect or remove wires, suspension strand, guys, or any other like parts of the telephone plant over or in close proximity to foreign wires and associated apparatus, proper guards shall be used to hold them clear of contact and the necessary protective devices used by all workmen so engaged.

2.11 When using steel fish wire, all precautions shall be taken to prevent the fish wire from coming in contact with exposed bus bars, light or power wires, or associated equipment.

2.12 The attention of all employees is directed to the fact that electric light and power wires, electric railway contact wires and "third" rails carrying currents of high voltage, often exist near the wires of the Company. Contact with these wires or leakage of current from them is liable to occur by reason of storms, sagging or breaking of wires, defective insulation, dampness of poles and crossarms and insulators, and other causes. Guy wires, span wires, and other wires used by electric light, power or trolley systems, even though they are equipped with insulators, may be dangerous because of defective insulation or leakage of current through insulators. Employees shall not subject themselves to possible injury by working on exposed plant during electrical storms.

2.13 The handling of electric light or power wires, associated switches or fuses on outside plant by employees is forbidden, with the following exceptions:

1. When done to prevent serious injury or loss of life. In such cases the standard protective devices shall be used.
2. To make certain connections to the vertical run of the multi-grounded neutral wire when this can be done within the telephone space on the pole. The exact

details of the methods should be followed as outlined in the Bell System Practices. These practices along with any local agreements with the Power Companies shall be fully adhered to in every respect.

Employees shall not handle electric light or power wires or any associated equipment inside any building unless authorized to do so by their supervisors.

2.14 Broken wires hanging from poles and other aerial supports shall not be handled without taking proper precautions, although they may not appear to be carrying current. When such wires are discovered and are the property of the Company, they shall be removed by an employee experienced in the work. When discovered by employees not experienced in the work, the condition shall be immediately reported to the Wire Chief or Repair Service and the location guarded to keep others away until the condition is removed. Wires of other companies should be reported to the Wire Chief or Repair Service at once.

2.15 Workmen, when riding along suspension strand, shall keep a close lookout for electric light wires passing over, under and along the route of the strand which may come in contact with their body or the material or tools they are carrying. Special care shall be taken that the cable car or anything in contact with it shall not touch any power, light or trolley wire. In case there is a possibility of this occurring due to the added weight of the workman riding the strand and thereby changing the normal clearance, the workman shall at once return to the nearest pole and arrange for completing the work in another manner, as for example, from a ladder.

3. PROTECTIVE DEVICES AGAINST ELECTRICAL CONTACT

3.01 Approved insulating protective devices against electrical contact furnished by the Company are as follows:

(a) Lineman's Rubber Gloves.

TOOLS AND MATERIAL-GENERAL

CARE AND UPKEEP

1. GENERAL

1.01 Tools and safety devices are provided according to an approved standard and each employee is required to use such tools and devices and to see that they are kept in good condition. When they become defective or unfit for use, they shall be exchanged for tools and devices in good condition. In general, local repairs shall not be made except as specified in current Tool Instructions and Bell System Practices.

1.02 All employees shall be constantly mindful that their liability to accidents is decreased by the use of proper tools in good condition.

1.03 Each employee shall inspect such tools and protective devices upon which his personal safety, or that of others, depends each time before they are used.

1.04 Supervisors are required to make monthly inspection of all tools and protective equipment and to determine their fitness for use. They shall jointly with the workman examine the tools and protective equipment in the possession of each workman and arrange for the immediate replacement of any that are defective. The details of inspection and tests to be made in connection with any particular tools are described under their respective heading in this code and in current Tool Instructions and Bell System Practices.

TOOLS AND MATERIALS
WAXES, COMPOUNDS, LIQUIDS AND GASES

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1. **GENERAL**
2. **IMPREGNATING WAX**
3. **PARAFFIN**
4. **TERMINAL COMPOUND**
5. **PRESSURE PLUG ASPHALT**
6. **PRESSURE PLUG WAX**
7. **COLD STRIPPING OIL**
8. **PRECAUTIONS**
9. **PRESSURE TESTING EQUIPMENT**
10. **CARBON TETRACHLORIDE & TRICHLOROETHYLENE**
11. **BOTTLED GAS: PROPANE & ACETYLENE**
12. **CHEMICAL BRUSH KILLER**
13. **C RESIN**

1. GENERAL

1.01. THIS PART DESCRIBES THE HANDLING OF THE VARIOUS WAXES, COMPOUNDS, LIQUIDS AND GASES.

2. IMPREGNATING WAX

2.01. Impregnating wax is used for impregnating textile cables.

2.02. Overheated impregnating wax will ignite. When heating impregnating wax for use outside, if a temperature of 375° F. is required, the wax thermometer shall be used to determine the temperature during the heating process.

2.03 When impregnating wax is being heated for use in rooms containing central office equipment where the tempera-

ture should not exceed 285° F., a wax thermometer shall be used to determine the temperature.

3. PARAFFIN

3.01 Close attention shall be given to paraffin while being heated to prevent overheating. Temperature shall be checked with a standard wax thermometer to see that the temperature does not exceed 390° F. Fire may result if this temperature is exceeded. Care should be taken to see that no foreign material is allowed to fall into hot paraffin. Always keep covered.

4. TERMINAL COMPOUND

4.01 Terminal compound is used for making insulating joints and filling terminal chambers. It is of inflammable character and requires that extreme care be exercised in its use.

4.02 Compounds shall be heated in a compound kettle. This is a jacketed sheet-steel kettle having an open steel tube placed diagonally from center of base to top.

4.03 Use a wax thermometer, 20° F. to 440° F., to determine the temperature.

5. PRESSURE PLUG ASPHALT

5.01 Pressure plug asphalt is used in the construction of pressure testing plugs. Asphalt shall be heated in a paraffin pot, taking care not to overheat it. An armored thermometer, No. 3532, shall be used to determine the temperature of the asphalt.

6. PRESSURE PLUG WAX

6.01 Pressure plug wax is used in the construction of pressure testing plugs and will ignite if overheated. An armored thermometer, No. 3532, 30° to 500° F., shall be used to determine the temperature during the heating period and also to determine the temperature of the wax in the sleeve.

7. COLD STRIPPING OIL

7.01 Cold stripping oil shall never be heated.

8. PRECAUTIONS

8.01 The following **shall** be observed in connection with heating and handling hot waxes, paraffin, etc.:

- (a) Waxes and paraffin shall be heated in standard paraffin pots.
- (b) The lids shall be on the pots during the heating process of waxes and paraffins.
- (c) Only standard heating appliances shall be used.
- (d) Extreme care shall be exercised when removing molten solder or waxes from a furnace.
- (e) Persons shall never be permitted to stand or pass below where molten materials are being used.
- (f) When used aloft, take precautions, particularly on windy days, that the hot liquid material does not fall on pedestrians, buildings, or vehicles.
- (g) A furnace shield shall be used about the pot or kettle when heating materials.
- (h) Thermometers shall be inspected each time before using to determine their condition. The inspection shall include split mercury, broken glass, or loose scale glass.

8.02 Molten solder and waxes shall be removed from a furnace while any adjustments are being made to the furnace.

9. PRESSURE TESTING EQUIPMENT

9.01 Pressure testing equipment shall be handled with care, particularly nitrogen tanks, testing gauges, pressure hose, etc. When using this equipment, the employee entering man-holes shall be alert for excess leakage of nitrogen as this may cause suffocation.

9.02 Cylinders shall not be dropped or struck violently. When stored, they should be preferably laid in a horizontal position. If vertical, the tank shall be securely fastened.

9.03 If upon inspection, any part of the equipment appears defective, it shall not be used; but shall be replaced immediately.

9.04 No changes or repairs in the equipment shall be made in the field.

9.05 The metal cap of nitrogen cylinders shall be in place when the tank is not in use.

10. CARBON TETRACHLORIDE

10.01 Carbon Tetrachloride shall be used in small quantities only, and it shall never be poured into open containers. The quarters where it is in use shall be well ventilated and employees shall avoid inhaling its fumes.

11. BOTTLED GAS: PROPANE & ACETYLENE

11.01 Extra care should be used to see that all precautions called for in the practices are followed to avoid bad burns and accidents. Carry only one tank of gas on the truck at one time. Store at room temperature or lower. Be very careful of torch flames and leaks in the equipment.

12. CHEMICAL BRUSH KILLER

12.01 Care should be taken to see that Brush Killer is not used near cultivated crops, shrubs and especially tobacco as light drift of spray or vaporized fumes may damage some plants. Avoid contact with full strength Brush Killer as irritation of sensitive skin may occur. Be sure a permit to spray has been obtained.

13. RESIN CABLE PLUGGING COMPOUND

13.01 Gloves should be worn while working with this material. If contact is made with the skin it should be washed off immediately to avoid a rash developing on sensitive skins. If the resin is used in close quarters ventilation should be provided.

TOOLS AND MATERIALS

ELECTRICAL PROTECTIVE DEVICES

CONTENTS

1. GENERAL
2. RUBBER GLOVES
3. CARE OF RUBBER GLOVES

1. GENERAL

1.01 Electrical protective devices in the form of rubber gloves are available for the use of all employees regularly engaged on or temporarily assigned to work on aerial plant construction, rearrangement and maintenance.

1.02 These rubber gloves are provided for the protection of employees against contact with electrical wires and apparatus.

2. RUBBER GLOVES

2.01 Each employee at all times assumes the responsibility for determining that his rubber gloves are in good condition and that their appearance indicates neither deterioration nor injury sufficient to affect their strength, either from an electrical or mechanical standpoint.

2.02 INSPECTION AND TESTS. Gloves shall be given a visual and stretch test to determine their condition each time before used. If any of the following defects are found to exist, or if the condition of the gloves is such that there is doubt as to their safety they shall not be used and must be exchanged at once in

accordance with the established routine, for a pair in good condition,

2.03 The principal conditions to look for in making an inspection are : Cuts, cracks or nicks that could tend to cause the rubber to tear, or the rubber worn sufficiently to affect its strength.

2.04 AIR TEST. This test shall always be made on rubber gloves immediately before they are used :

- (a) Hold the glove at each side of the edge of the gauntlet.
- (b) Revolve the glove about the edge of the gauntlet as an axis, thus rolling it toward the palm and confining the air in the palm and fingers.
- (c) Hold the rolled up gauntlet tightly in one hand to prevent the air from escaping.
- (d) Squeeze the palm of the glove with the other hand so as to put the confined air under pressure. If any puncture exists the escape of air will indicate the fact, and the hole in the glove will be made evident.

3. CARE OF RUBBER GLOVES

3.01 Inspection stamps indicating a dielectric test of ten thousand (10,000) volts together with the Western Electric Company's inspection "O. K." and date shall appear on all new rubber gloves used for electrical protection.

3.02 The electrical testing laboratory's stamp shall appear on all rubber gloves which have been retested in accordance with the routine for periodic electrical tests.

3.03 Each employee is individually responsible for the safe condition of rubber gloves and if he is in doubt as to his safety in their use, they shall not be used.

3.04 Six months after gloves have been electrically tested, they shall be returned to be retested.

3.05 Employees are responsible for exchanging rubber gloves as specified above in order that they may be electrically checked.

3.06 The Supplies Department is responsible for seeing that electrical tests are made periodically for all rubber gloves which are in their possession in accordance with the established routine.

3.07 Gloves issued by the Supplies Department to the field forces shall be placed in sound containers. These containers shall show the following information :

Size

Date Electrical Test....."

3.08 Before issuing rubber gloves to employees, the Supplies Department shall make the same visual **air** and stretch test **as** specified to be made by the employees before using gloves.

TOOLS AND MATERIALS
BODY TOOLS

CONTENTS

1. **GENERAL**
2. **BODY BELTS AND SAFETY STRAPS**
3. **CLIMBERS**

1. GENERAL

1.01 THIS PART LISTS THE BODY TOOLS WHICH ARE PROVIDED FOR THE USE AND PROTECTION OF WORKMEN WHILE PERFORMING DUTIES ALOFT.

2. BODY BELTS AND SAFETY STRAPS

2.01 No employee shall use a body belt and safety strap until familiar with the Bell System practices covering their use. Body belts and safety straps shall be examined each time before they are used. In addition to this examination, A DETAILED inspection of these tools shall be made by a supervisor at least once a month to determine if any fault or defect has developed through use of handling. If any defect is noted the tools shall be removed from service at once.

2.02 The supervisor shall see that the inspections are thoroughly made and at the intervals stated above. If, after an inspection, there is any doubt as to whether the body belt or safety strap is safe, it shall not be used and it shall be exchanged for one in good condition.

2.03 The safety strap shall be placed around the pole so that it rests flat against the surface without turns and twists.

2.04 EMPLOYEES SHALL NEVER RELY ON THE CLICK OF THE KEEPER IN THE SNAP HOOK WHEN ATTACHING A SAFETY STRAP TO A "DEE" RING AS

INDICATION THAT THE FASTENING IS SECURE; IN ALL CASES WORKMEN SHALL MAKE SURE THAT THE SNAP HOOK AND "DEE" RING ARE PROPERLY ENGAGED BEFORE THE WEIGHT OF THE BODY IS PLACED ON THE STRAP.

2.05 The keeper of the snap hook on a safety strap shall face away from the body when engaged in the "DEE" ring.

2.06 The snap hooks shall not be attached to the same "DEE" ring when a safety strap is in use.

2.07 Improvised substitutes of rope, wire, etc., shall never be used for safety straps.

2.08 When working on ladders safety straps shall not be attached to the ladder unless the ladder is secured against falling.

2.09 When not in use, both ends of a safety strap shall be snapped into the same "DEE" ring and care shall be exercised to see that the safety strap does not catch on poles, steps, etc., while ascending or descending.

2.10 Safety straps shall never be used as a means of riding suspension strand.

2.11 THE BODY BELT OR SAFETY STRAP shall not be used to assist in piking poles.

2.12 The ends of all straps shall always be placed in keepers.

2.13 Avoid placing the safety strap around the crossarm wherever possible and under no circumstances shall it be placed around a pin or crossarm brace.

2.14 Safety straps shall not be placed around the pole within a foot of the top of the pole.

2.15 When climbing past a fellow employee who has his safety strap in place around the pole, special care should be exercised to avoid striking the employee's safety strap with spurs.

2.16 A safety strap or body belt shall never be dropped or thrown from aloft.

3. CLIMBERS

3.01 Climbers are furnished for ascending, descending, and working on poles and shall be used only for that purpose.

→ 3.02 Climbers are adjustable in length to properly fit the employee.

3.03 Employees shall wear climbers only when engaged in climbing poles as a continuous operation. They shall not be worn going to or from the job, or when performing work where their use is not required.

3.04 When it is necessary to wear climbers in the regular course of their duties, employees shall be careful not to gaff either themselves or others.

3.05 Climbers shall be examined each time they are to be used and a detailed inspection made by a supervisor at least once a month.

3.06 Climbers having non standard gaffs or any other indication of weakness shall not be used, but shall be properly tagged and exchanged for a pair in good condition.

3.07 Climber straps shall be carefully inspected to determine their condition for wear, frayed, unstitched or other unsafe conditions and shall not be used if there is a question of safety.

→ 3.08 The points of climber gaffs shall be kept in conformance with the Bell System Practices covering lineman's climber inspection. Serious accidents may result from the use of improperly sharpened gaffs as they are liable to cut out while the employee is climbing or working on the pole.

→ 3.09 A file shall never be used for shaping or sharpening climbers. The stone, honing, as listed in the Catalogue of Supplies, should be used to maintain climber gaffs in the field. This honing stone should be in the possession of each crafts-

man whose work assignment involves the use of climbers. An emery wheel shall never be used as the steel may be heated sufficiently to draw the temper and soften the point.

→ 3.10 When the climber gaffs can no longer be satisfactorily maintained by the use of the honing stone, the climbers shall be returned to the Supply Department and a new or reconditioned pair secured.

→ 3.11 "C" Gaff Guards shall be placed on climber gaffs at all times except when climbers are being used for ascending and descending poles.

→ 3.12 The inspection and measurement of climbers and the sharpening of the gaffs by use of the honing stone shall be made in accordance with current Bulletins and Bell System Practices.

TOOLS AND MATERIALS
TOOLS FOR WORKING ALOFT

CONTENTS

- 1. GENERAL**
- 2. EXTENSION LADDERS**
- 3. STEP LADDERS**
- 4. LADDER PLATFORMS**
- 5. AERIAL PLATFORM**
- 6. CABLE CARS**

1. GENERAL

1.01 THIS PART PRESCRIBES THE PRECAUTIONS TO BE FOLLOWED IN THE USE OF TOOLS FOR CLIMBING AND WORKING ALOFT.

2. EXTENSION LADDERS

2.01 Ladders shall be inspected each time before using.

2.02 A routine inspection shall be made of ladders by a supervisor at least once a month.

2.03 When used to work on aerial cable, ladders shall be securely lashed to the strand or guarded by a workman at the bottom of the ladder. Where strand hooks are used and the ladder is not being used as a scaling ladder, no lashing is necessary.

2.04 A ladder of sufficient length should always be selected for the work to be done. The length of the

ladder (ladders equipped with strand hooks for span work excepted) shall be such that the work can be performed from at least the fourth rung from the top of the ladder.

2.05 Ladders shall be placed so that the bottom is extended one-fourth of the length of the ladder **from** the object supporting it.

2.06 When working on a straight or extension ladder, employees shall increase the security of their position by passing one leg between the adjacent ladder rungs, and shall not lean with the body more than twelve inches beyond the side rail. When the work cannot be done without overreaching, the ladder shall be moved to the proper location.

2.07 Ladders shall never be placed against window sashes.

2.08 The use of defective ladders is prohibited.

2.09 When a ladder is being transported on the shoulder of a workman, the spurs shall be forward and pointed toward the ground.


2.10 When ladders are cradled, a rope sling shall be used. The rope sling shall pass once around each side rail of the ladder and between the rungs.

2.11 Ladders shall be kept clean and free from dirt, paraffin, etc.

2.12 Workmen should not throw or heave ladders into the hangers, but ladders should be replaced carefully to prevent splintering and crushing side rail.

2.13 When ladders are used in locations where there is a possibility of interference from traffic of any sort, an employee shall be assigned to act as guard.

2.14 Employees shall always face the ladder in ascending or descending.



2.15 Ladders shall not be ascended or descended without free use of both hands.

3. STEP LADDERS

3.01 Step ladders that are incomplete, such as steps missing, spreaders missing or broken, or otherwise found to be in a defective condition, shall not be used.

3.02 Care shall be taken to see that the spreaders are fully extended and locked before climbing.

3.03 Employees shall not stand on the top step of a step ladder. When a ladder is not of sufficient height to reach the work, a longer ladder shall be procured to complete the job.

3.04 Ladders should not be placed at doorways, particularly when the door opens toward the ladder. Where it is necessary to place a ladder at a doorway, the door shall be locked, barricaded or guarded by another employee.

3.05 Tools or materials shall not be placed on the steps of ladders.

3.06 Boxes or similar objects shall not be placed on ladders to gain additional height.

3.07 The maintenance of step ladders is the same as described for straight and extension ladders.

4. LADDER PLATFORMS

4.01 Ladder Platforms shall be securely attached to the ladder before working from them.

4.02 Ladder Platforms shall be inspected for possible defects each time before they are used.

4.03 The use of improvised platforms on ladders in place of ladder platforms is prohibited.

4.04 The ladder platform is intended for the use of one man. Under no circumstances shall two men be supported on one ladder platform.

5. AERIAL PLATFORMS

5.01 Splicers' Platforms shall be in good condition and free from defective parts. Great care shall be exercised in placing them in position for work, and the necessary guy lines used to hold them in a fixed position. The guy lines shall be so arranged as to avoid any possible accident due to slipping of knots and fastenings, or interference from other sources such as passing vehicles or pedestrians.

5.02 Splicers' Platforms shall not be attached to a suspension strand supported on buildings.

5.03 Splicers' Platforms shall not be attached to a 2,200 lb. strand.

5.04 When guy lines are attached to steps of a pole, two complete turns around the pole shall be made before attaching to the step.

5.05 Guy lines shall not be attached to fire plugs, movable objects, such as motor vehicles, etc.

5.06 If left unattended day or night the guy lines shall be attached high enough to be out of reach of children and unauthorized persons and the loops and ends of excess rope securely fastened. The correct method of inspection, placing and guying splicers' platforms on suspension strand will be found in current Bulletins and Bell System Practices.

5.07 Boxes or other articles shall never be placed on platforms to be used as seats.

6. CABLE CARS

6.01 Cable cars shall be used for riding suspension strand.

6.02 Cable cars shall not be used without cable car **straps properly secured to** the body belt and cable car.

6.03 A careful inspection of each cable car shall be made each time before it is used. When found defective or in doubtful condition, it shall not be used, but shall be tagged and returned to the Supplies Department and one in good condition secured.

TOOLS AND MATERIALS
GUARDS AND OTHER PROTECTIVE DEVICES

CONTENTS

1. **GENERAL**
 2. **GUARDS**
 Sharp Tools
 Manhole
 3. **WARNING SIGNS**
 Cones, Traffic Warning Lanterns,
 Red Sign, Warning
 4. **SAFETY GOGGLES AND SPECTACLES**
1. **GENERAL**

1.01 THIS PART DESCRIBES THE VARIOUS GUARDS PROVIDED FOR THE PROTECTION OF EMPLOYEES AND THE PUBLIC.

2. **GUARDS**

2.01 Guards for sharp edged tools should always be kept on the tool whenever the tool is not in use. This includes such items as axes, shave hooks, bits & augers, climbers, saws, chisels, test pikes and pike poles, chipping knives, bush hooks, cable cutters, etc.

2.02 Manhole guards should be placed around all four sides of the manhole whenever the cover is removed. Splicing pits and other excavations should be guarded by timber, rope, or other barricades suitable to the occasion.

2.03 **MANHOLE GUARDS.** The manhole guard is used to keep persons or objects from falling into the manhole after the cover has been removed. Other guards built of timber, metal, or rope constructed to meet the special conditions shall

be used as the occasion requires. Where this is done, care shall be exercised to see that they are properly designed and adequate for the purpose.

2.04 SHAVE HOOK GUARD. A leather guard designed to protect the cutting edge of shave hooks.

2.05 TEST PIKE GUARD. A piece of rubber hose used to cover the point of test pikes when they are not in use.

3. WARNING SIGNS

3.01 Care should be taken at any work location on or near a public way or private passage to see that the work area is clearly marked out and that sufficient guards, signs and barricades are placed to force traffic to divert completely outside the work area. During periods of darkness sufficient lighting should be provided so that travelers may quickly appraise the situation in time to protect themselves and our workmen from danger.

3.02 Warning flags should be used during daylight hours to assist in calling attention to dangerous circumstances. They may be used in conjunction with other warning devices or attached to ladders, pikes material on the back of trucks, etc.

3.03 Lanterns, or lights with red globes or open flame flares should be substituted for flags at night.

3.04 Warning signs indicating MEN WORKING should be used to alert traffic to what kind of situation may be ahead of them.

4. SAFETY GOGGLES & SPECTACLES

4.01 Safety goggles and spectacles are provided as a protection for the eyes against foreign particles or objects.

4.02 Employees furnished with safety spectacles shall be required to wear the spectacles at all times while on the job with the exception of when driving a motor vehicle.

4.03 Although safety spectacles protect against the majority of injuries, which are caused by frontal blows, it will still be necessary to wear goggles when performing certain work operations, such as those listed below. However, the following work operations are not all inclusive and safety goggles should be worn as other work operations necessitate.

- (a) Handling acids and alkali solutions or working around batteries.
- (b) Recharging chemical fire extinguishers.
- (c) When drilling by hand or using compressor.
- (d) While using grinding wheels.
- (e) Cleaning with compressed air or steam or wire brushes.

4.04 In the craft and non-craft groups that are not furnished safety spectacles other suitable eye protection as provided by the Company shall be worn as required.

4.05 Goggles returned to the Supplies Department by employees shall be sterilized before being reissued.



REMEMBER!

**DISCOMFORT DUE TO GOGGLES IS ONLY TEMPORARY
LOSS OF SIGHT IS PERMANENT
PROTECT YOUR EYES**

I

TOOLS AND MATERIALS
MISCELLANEOUS TOOLS

I

CONTENTS

1. GENERAL
2. ACETYLENE TORCHES
2. AUGER EARTH BORING
4. BAR DIGGING
5. BITS & DRILLS
6. BLANKETS, LINEMAN'S
7. BRACKETS, POLE
8. BREAKDOWN TEST SETS, KS14103
9. COPPER, SOLDERING
10. DRILL, ELECTRIC
11. FURNACE, PROPANE
12. HAMMERS
13. HORSE PLAY
14. HOUSEKEEPING
15. ICE & SNOW
16. KNIFE, POCKET
17. POLES, PIKE
18. POWER, PORTABLE, PUMPS, BLOWERS, GENERATORS, ETC.
19. REEL, PAY OUT
20. ROPE & TACKLE
21. SAW, HACK
22. SCREWDRIVERS
23. SEAT, SPLICERS
24. WIRE, FISH

1. GENERAL

1.01 This part covers subjects which are not of sufficient volume to warrant separate practices and where additional precautions not covered in the practices should be taken.

2. ACETYLENE TORCH

2.01 Acetylene shall be stored in well ventilated places if possible. If the shutoff valve leaks the accumulation of gas in a closed place may become explosive. Be sure valve is completely closed when torch is not in use. Remove torch hose when not in use.

2.02 Greatest care should be taken while using a lighted torch to see that it is not directed at any object except the work at hand. Damage can very easily occur if the lighted torch is held near or laid down on any object while the work is being inspected or between work operations.

3. AUGER EARTH BORING

3.01 When using the Auger in heavy soil, use care not to accumulate too heavy a load which might cause a back strain.

3.02 Use care when telescoping the handle so that the hand will not be caught between the handle and the first section.

3.03 When the auger is not in use, lay flat on the ground or place on the truck. Do not lean it against a fence or tree where it can fall.

4. BAR, DIGGING

4.01 Keep firm grasp on the bar when using and store so it cannot possibly fall when not in use.

4.02 Investigate underground objects encountered to be sure 'damage will not be done to sewer tiles, drains, ducts, water pipes, power cables, etc.

4.03 When bars are used as anchorage for temporary guys, do not stand between the bar and the pole or in the direction of strain.

5. BITS, DRILLS AND WOOD AUGERS

5.01 Keep these in proper sharpness. Use them with care, working below eye level if possible and store in their proper

places when not in use. Be sure **drill** heads are not mushroomed.

6. LINEMEN'S BLANKETS

6.01 Use linemen's blankets in accordance with practices when voltages require it. If voltages are not known, be sure to use them.

7. BRACKETS, POLE

7.01 Nail brackets on the pole before placing the insulators. This will avoid breaking **the insulator**.

8. BREAKDOWN TEST SET KS14103

8.01 Be careful not to cross the test set cord terminals when using or battery terminals when replacing batteries in the set. Severe burns can result.

9. COPPER SOLDERING

9.01 Always wear goggles when soldering at or above eye level.

9.02 Test the heat of the copper with solder, never by touching it with the hand or by holding it near the face.

9.03 **Do** not flip or knock the solder from the copper. Wipe it off.

9.04 Keep copper in approved holder. Disconnect electric coppers when not in use.

9.05 Be sure tips of electric soldering coppers are tight before using.

9.06 When carrying a hot electric soldering copper, make sure the extension lead does not snag and pull the hot iron into the hand.

10. DRILL, ELECTRIC

10.01 Use a center punch to start the hole when **drilling** metal.

10.02 Keep drills sharp and clean. Use a brush for cleaning.

11. FURNACE, PROPANE, B AND ASSOCIATED PROPANE CYLINDER

11.01 Keep propane away from combustible material and heat whether in use or in storage.

11.02 Be sure gas is completely shut off when not in use. Remove regulator and carefully replace screw plug to seal the cylinder and prevent the escape of gas in storage. An accumulation of gas may become dangerously explosive. If it is necessary to store gas in an enclosed space over night, this space should be tested with the Explosimeter first thing in the morning. If gas is found the area should be ventilated and the cause corrected.

12. HAMMERS

12.01 Use the type of hammer designed for the task at hand. Use only hammers with striking faces and handles in good condition with handles firmly fastened in the head.

12.02 Use claw hammers for carpentry work, driving nails, small drive screws, etc.

12.03 Drilling hammers are for small drills and hammer drive anchors.

12.04 Riveting hammers, striking hammers, sledge hammers and stone sledges should be used where appropriate.

13. HORSE PLAY

13.01 Horseplay is prohibited, because it can lead to injury.

14. HOUSEKEEPING

14.01 Neatness and general orderliness are part of any good plan and contribute very materially to safety. Big accidents grow from little careless thoughts. Have a safe place for everything and keep it there.

15. ICE AND SNOW

15.01 Remove it or cover it with sand if work is to be performed in a reasonably small area. Sand is cheaper than accidents. Keep it available in sufficient quantity where needed during cold weather.

16. KNIFE, POCKET

16.01 Pocket knives have no place in our work, their use is prohibited.

17. POLES, PIKE

17.01 Use only pike poles in good condition and free of splinters.

17.02 Do not rest the butt of the pike on the stomach, leg or body belt. Push with the hands with gloves on.

17.03 Do not wear climbers while using pike poles.

18. POWER, PORTABLE; BLOWERS, GENERATORS, PUMPS; ETC.

18.01 Provide an outside exhaust for any gasoline engine which must be operated indoors or in an enclosed space. The exhaust gasses may become toxic if allowed to accumulate.

18.02 Stop the engine before adding gas or oil. If gas has to be added in the field, locate the machine so that if gas is spilled it will not flow into the manhole.

18.03 Use an outlet hose on pumps to prevent water from splashing on pedestrians.

19. REEL, PAY-OUT

19.01 Pay-out reels should be grounded while running open wire to minimize the bad effects of contact with high voltage. Rubber gloves should always be worn by the reel-tender when running wire near or on joint lines or power lines. The running end of the wire should always be equipped with a dry rope lead under similar circumstances for the same reasons, i.e., to insulate the workman from the conductor.

20. ROPE AND TACKLE

20.01 Rope, tackle and snatch blocks, lashings, slings, and chains shall be carefully inspected each time before being used. They shall be selected to meet the requirements of the job with respect to their size, strength and condition.

20.02 Inspection shall be made in accordance with current Tool Bulletins and Bell System Practices.

20.03 The strength of tackle blocks is governed by the hooks with which they are equipped, that is, the hook is so designed as to indicate signs of opening when the maximum working stress is exceeded before any part of the block will fail; thus the hook acts as a visible safety link to warn against overstressing before complete failure. The hook will start to open at about 70 per cent of the maximum load it is designed to carry.

20.04 Hooks which show signs of being over-stressed shall not be used nor repaired by hammering them back into their original position nor replaced by a hook made locally. New hooks shall be ordered for the corresponding size block and the damaged hook replaced or the block sent to a designated place for the roper repairs. Damaged hooks and blocks shall be tagged with the defects described upon the tag.

20.05 A load shall never be placed on the point of any hook.

21. SAW, HACK

21.01 Use safety glasses or goggles when using hack saws. Keep work operation below eye level where practicable.

21.02 Be sure saw is fitted properly in the frame. Do not force so that it may buckle and break.

21.03 Hold material to be sawed securely, and keep hands away from cutting edge when starting the cut.

22. SCREWDRIVERS

22.01 Inspect and repair screwdrivers in accordance with the practices. A proper tool is a safe tool.

22.02 Make a lead hole for the screw in hard surfaces. Do not apply heavy pressure while fingers are near the screwdriver point.

22.03 Keep screwdrivers away from eyes-wear eye protection.

23. SEAT, SPLICER'S

23.01 Fasten splicer's seat securely with approved fasteners when using an aerial platform.

24. WIRE, FISH

24.01 Wear eye protection when handling fish wire so the end will not cause eye injury.

24.02 Use particular care when using fish wire around electric circuits. Keep excess wire wound on reel.

**OUTSIDE PLANT CONSTRUCTION
AND MAINTENANCE**

GENERAL

I. GENERAL

1.01 All employees engaged in performing outside plant construction or maintenance operations shall at all times observe all precautions to prevent accidents to themselves, their fellow employees and the public.

1.02 Each employee whose duties require him to perform work operations and inspections, etc., aloft, shall use the approved body belts, safety straps, safety slings and other tools and materials supplied by the Company for the purpose.

1.03 An employee shall not climb a pole at any time unless it is known that the climbers, climber straps, body belt, and safety strap are in good condition and that the pole is either in good condition or is properly safeguarded.

1.04 Each employee shall make a careful inspection of the tools, apparatus and plant upon which he is about to work or depend upon for support, to satisfy himself that they are sound and in a safe condition.

1.05 High shoes, leggings, or other proper protection should be worn when working in snake-infested districts.

1.06 In storing tools and material over night, they shall be placed where they will not interfere with the public, and the necessary danger signals placed.

1.07 Ladders, other tools, or material shall not be left on private property without permission from the owner.

1.08 Ladders shall not be left unattended or stored in a vertical position, or attached to a pole, or to a messenger strand.

1.09 When ladders are left on private property, they shall be secured to a fixed object by chain and padlock unless they are locked up or guarded.

1.10 Where it is necessary to erect a ladder on a street or highway, it shall be properly guarded and, where possible, securely fastened.

1.11 All tools and materials not normally carried in the body belt shall be raised or lowered by means of a handline and a canvas bucket. Tools too large to fit in a canvas bucket shall be raised or lowered by means of a handline.

1.12 Children and unauthorized persons shall be kept away from close proximity to places where work is being done. They shall not be permitted to touch moving parts such as ropes and blocks, and they shall be kept away from Company vehicles, open manholes, pole raising and lowering operations, places where men are working aloft, kerosene furnaces, hot solder and paraffin, and similar conditions and locations.

1.13 When loads of any character are suspended with the use of a derrick, dead man, rope, blocks, etc., care shall be taken to see that no person or vehicle is permitted to stand or pass under, or in close proximity to the suspended load.

1.14 When a single employee is assigned to a job, and he finds traffic or other conditions are such that he cannot complete the work with safety, he shall obtain assistance before proceeding with the work.

**OUTSIDE PLANT CONSTRUCTION
AND MAINTENANCE
TESTING, SAFEGUARDING, CLIMBING
AND HANDLING POLES**

CONTENTS

1. GENERAL
2. TESTING AND SAFEGUARDING
3. CLIMBING AND WORKING ON POLES
4. HANDLING POLES

1. GENERAL

1.01 THIS PART PRESCRIBES THE PRECAUTIONS TO BE TAKEN BY OUTSIDE PLANT MEN IN PERFORMING WORK ON OR WITH POLES.

1.02 Because of the hazards associated with work on or with poles, all precautions shall be taken to guard against possible accidents. Supervisors and workmen shall at all times observe the precautions outlined in this Safety Code and in the Bell System Practices, and take any other necessary steps to perform the work in a safe manner.

2. TESTING AND SAFEGUARDING POLES

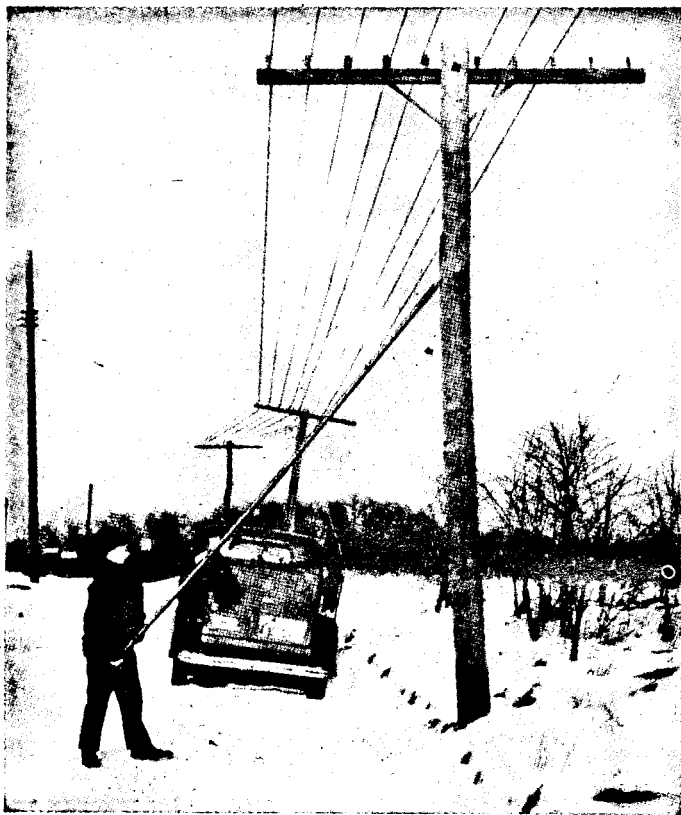
2.01 Falling poles are due to:

- (a) Deterioration.
- (b) Unbalanced loads.
- (c) Not set to sufficient depth.
- (d) Damaged poles.

2.02 Bell System Practices describe in detail the precautions which shall be taken before working aloft

as to testing, guying, bracing, and lashing poles. These practices shall be consulted and the precautions therein adhered to at all times by all employees engaged in work of this nature.

2.03 An employee, before climbing any pole, shall make absolutely certain that it is safe to climb or work upon. If the condition of the pole is not known, it shall be tested by the pike test method and if found unsafe



it shall be safeguarded. Poles marked with the letter "C" have been tested and shall be safeguarded before working on them.

2.04 The effectiveness of the pike pole test depends upon the pole being vigorously rocked back and forth. This is accomplished by the use of an approved pike pole, held at an angle of about 45 °.

2.05 In cases where the pike test cannot be applied effectively on poles to which are attached wires, guys, push braces, etc., or those which are set in a bank or against obstructions in such a manner as to take the thrust of the pike and thus prevent rocking, the pole shall be safeguarded unless :

- (a) The attachments are sufficient to support the pole throughout the job.
- (b) The work that is to be done on the pole will not change the attachments in a manner as to create unbalance of such extent as to cause the pole to fall.

2.06 If there is any doubt that poles are not set to a depth at least equal to that provided for by standard practice, or if the depth of setting may have become decreased by the washing away of earth from embankments or by excavations alongside of the poles, etc., temporary supports shall be placed before climbing.

2.07 Many poles are marked with the supplier's brand located ten feet from the bottom of the pole. This mark shall be used as an aid in determining the depth of the pole in the ground.

3. CLIMBING AND WORKING ON POLES

3.01 Employees whose duties require them to perform work on poles shall apply the safety precautions prescribed for this type of work.

3.02 NO EMPLOYEE shall be permitted to climb a pole by means of climbers for the first time except under the direction of a Supervisor or a competent

instructor. The learner shall not be allowed to climb alone until he has satisfied the instructor as to his ability to do so safely.

3.03 The instructor shall see that all tools used are of the proper size and in good condition. The instruction shall be done at a location having a minimum of hazard to the learner, who shall not be allowed to ascend to heights or perform tasks beyond his ability.

3.04 Climbers shall not be worn when working on stepped poles unless the work on the poles requires their use. Missing or defective steps shall be replaced at once, and in every instance steps in place shall be used in going up or down the pole. When poles are so equipped, detachable steps shall be placed before climbing. Workmen shall not grasp or place the foot upon the head of a metal step.

3.05 Workmen when climbing poles with climbers and particularly when descending, shall be continually on the lookout for cracks, knots, metal number plates, nails, splinters, etc., as they may cause a gaff to cut-out or otherwise cause an injury. When taking the last step from the pole to the ground, the weight should be let down slowly and the foot placed on firm, even ground.

3.06 Employees shall not grasp a crossarm, extension fixture, brackets or other fixtures or fastenings for support until, by proper examination and testing, it is determined that they will safely support the weight. The use of a pin in a crossarm or a pole bracket as a support shall be avoided.

3.07 Care shall be taken when ascending or descending stepped poles to avoid slipping, catching safety strap, or other tools on pole steps or attachments.

3.08 Uncoiled handlines shall not be securely attached to the person when climbing, as the rope may be caught or pulled by passing vehicles or pedestrians

3.09 Handlines dangling from aloft may be blown into traffic. They shall in all cases be pulled up or attached securely to the pole or other object when not in use.

4. HANDLING POLES

4.01 The handling of poles embraces the following operations :

- (a) Placing and removing poles.
- (b) Unloading poles from cars and trailers.
- (c) Loading trailers.
- (d) Transporting poles.
- (e) Storing poles at yards or on the job.

4.02 To insure a maximum of safety in the performance of these work operations, Supervisors and workmen shall first select the proper method ; and second, apply every precaution set forth in the practices covering the particular operation to be performed.

4.03 Creosote-treated poles and other creosot-treated wood products may cause skin irritation. Each employee should be familiar with the preventive measures and first-aid practices.

4.04 When loading or unloading poles from cars or trailers, the use of approved equipment and methods shall be followed.

4.05 When a pole or poles are placed at rest, temporarily or permanently, in any location, they shall be properly blocked to prevent slipping or rolling.

4.06 When pulling a pole or pole butt from the ground with the derrick in the ground position, the pole or pole butt shall be snubbed to the vertical leg of the derrick with a loose sling. This will prevent the butt from flying should it break, and also the pole f from falling due to an unbalanced point of attachment.

4.07 when placing or removing a pole in a location where it may come in contact with light or power wires, precautions shall be taken against electric shock.

**OUTSIDE PLANT CONSTRUCTION
AND MAINTENANCE**
STRAND AND WIRE

1. GENERAL

1.01 THIS PART PRESCRIBES THE PRECAUTIONS TO BE FOLLOWED IN STRINGING, REMOVING AND HANDLING STRAND AND WIRE.

1.02 Work operations involving the handling of strand and wire present certain outstanding hazards, for example :

- (a) Contact with electric current **carrying wires and** associated equipment.
- (b) Interference to automobile **and pedestrian traf-**
- (c) Unbalanced loads caused by adding or removing equipment.
- (d) Handling strand **and wire.**

1.03 Each Supervisor and workman shall make himself familiar with and apply all precautions outlined for the particular operation involved, to insure the job being performed without accident to employees and to the public.

1.04 Electrical supply lines and equipment shall always be considered as alive, and proper precautions taken against contact.

1.05 Ropes shall be dry and free from metallic strands or threads. If conditions require the use of a damp rope in the vicinity of electric light or power wires, rubber protective equipment shall be used.

1.06 In stringing or removing strand or wire where there are electric circuits of any voltage present, all men handling or who may come in contact with the strand or wire shall wear rubber gloves while the work is in progress.

1.07 In no case shall 2200 pound strand be ridded by a workman.

1.08 When riding strand in a span where a cross-over clamp carrying another strand, electric wires or other objects is encountered, the workman shall either return to the nearest pole and arrange to resume the work from the opposite side of the cross-over clamp or complete the work from a ladder.

1.09 In no case shall the workman attempt to ride over the cross-over clamp nor get out of the car onto a pole unless the pole can be reached from a sitting position in the cable car.

1.10 When a ladder is placed against a suspension strand, unhooked or unguarded by a workman, it shall be securely lashed to the strand.

1.11 Where the work operation involves the removal or slackening off of strand, wires or guys in such a manner as to create an unbalanced load on a pole or crossarm, compensating guys shall be placed before proceeding with the work.

1.12 When strand is being transported, or when it is to be stored in coils, the ends shall be taped to the coil.

OUTSIDE PLANT CONSTRUCTION AND MAINTENANCE TREES

CONTENTS

1. GENERAL
2. PRECAUTIONS

1. GENERAL

1.01 THIS PART TREATS WITH WORK INVOLVING TREES AND OTHER TRIMMING OPERATIONS.

2. PRECAUTIONS

2.01 Accidents resulting from operations involving trees or underbrush are caused by:

- (a) Breaking and falling limbs.
- (b) Improper climbing and working methods.
- (c) Swinging branches and underbrush.

2.02 Precautions against injury to employees, to the public or damage to property are of first importance in any tree pruning job. Therefore, all employees shall take the necessary safeguards applicable to tree pruning or associated operations.

2.03 Employees shall be sure that a limb is strong enough for support before placing weight upon it.

2.04 An employee severing a limb shall **see that** he and all others are in such a position that no one will be struck should the limb swing or fall when cut free.

2.05 A butt rope, top rope and guide rope shall always be used to lower large limbs or sections of the trunk.

2.06 Care shall be taken that the swinging space is clear when using axes or bush hooks. Stray branches or brush may deflect the blow and cause injury.

2.07 Employees shall not throw the end of a hand-line to which a weight or a snap hook is attached.

2.08 Employees shall not use axes, hatchets, and tools of similar nature while working aloft in trees. Saws and tree pruners are the proper tools for performing this work.

2.09 Climbers shall not be used to climb trees.

OUTSIDE PLANT CONSTRUCTION
AND MAINTENANCE
CABLE

CONTENTS

1. GENERAL
- 2 . PRECAUTIONS

1. GENERAL

1.01 THIS PART PRESCRIBES THE PRECAUTIONS TO BE FOLLOWED BY CABLE MEN AND OTHERS IN PROTECTING THEMSELVES AND THE PUBLIC AGAINST ACCIDENTS.

1.02 Accidents in connection with cable splicing, cable placing, and cable **removal** result from:

- (a) Failure to test for **presence of gas and deficiency** of oxygen in manholes.
- (b) Failure to properly guard work operations.
- (c) Contact with Electric Light and Power wires.
- (d) Lack of proper care in handling and working with heated materials and tools.
- (e) Improper handling of manhole covers.
- (f) Lack of proper precaution **in** climbing and working aloft.

1.03 Because of the variation of hazards presented through work operations aloft, on the street and underground, it is essential for the protection of themselves and the public that all employees engaged in such operations know and apply the proper precautions.

2. PRECAUTIONS

2.01 Before entering any manhole the workman shall determine the presence of gas by making the necessary tests as outlined in Bell System Practices.

2.02 No torch or any lighted object or open flame shall be taken into any manhole unless specifically authorized in each case by the Splicer's Foreman, Supervising Foreman or District Construction Supervisor and then only after the authorizing supervisor has made a separate test for gas, and has otherwise satisfied himself as to the propriety of the use of the torch.

2.03 All open manholes shall be protected with approved guards and warning signs.

2.04 When pulling in or removing underground cable, rope guards or wooden barriers shall be placed around pulling line for protection of employees and the public as required.

2.05 When the open manhole is located on a highway, approved warning signs shall be placed in the direction of approaching vehicular traffic and far enough from the manhole to permit safe divergence of traffic.

2.06 When artificial light is necessary in a manhole, an electric light operated by an approved lighting outfit shall be used. Batteries shall be located outside of the manhole.

2.07 When removing underground cable, all workmen shall leave the manhole before the initial or test pull is made or at other times when the tension in the pulling line is abnormally high.

2.08 When removing and placing manhole covers they shall be placed or removed in the approved manner and with the standard tools provided for the purpose.



Removing Round Manhole Cover Using Manhole Bar
and Manhole Hook

2.09 When a manhole cover cannot be safely handled by one man, he shall secure assistance.

2.10 Care shall be taken to keep the feet clear of the cover and frame.

2.11 Place the removed cover in a location where it will cause the least interference to the workman and traffic.

2.12 Workmen when entering or leaving a manhole shall use the ladder provided for that purpose and shall avoid stepping on cable or cable hooks.

2.13 Before lowering or raising tools or material in a manhole, employees working below shall be notified of the operation. In "passing" a hot solder or paraffin pot, the ladle or other tools shall be handled separately.

2.14 When using manhole shields, caulk muslin, paper or other approved material between manhole casting and shield to prevent material from entering the manhole. During wet weather, seal around the manhole shield with duct seal or other approved equivalent.

2.15 Locate splices so that they may be worked on conveniently. They should not be placed over cellar steps, driveways, doors, etc.

2.16 When placing splices and terminals, avoid locations near electric circuits, cut-outs, switches, moving machinery, hoists, doors, shutters, etc.

2.17 Because of the uncertainty of the holding power of masonry attachments, ladders shall be used for working on all spans terminating on building walls, regardless of the size of the suspension strand. Where practicable, ladders shall be placed so that they will tend to push the wall straps or brackets toward, rather than away from, the building walls.

2.18 When placing house cable, all the necessary precautions shall be used to avoid injury from electric light or power circuits, moving machinery, belts, elevators, counterweights, etc.

2.19 Where possible, avoid placing cable in elevator and dumb-waiter shafts.

2.20 When working in buildings, if gas or electricity is available, use approved heating appliances. If not available, when practicable, use a kerosene furnace on the outside of the building. When necessary to use a kerosene furnace in a building, a fire extinguisher and a bucket of sand shall be provided and the furnace guarded by a workman at all times when in operation. Use solidified alcohol for preheating the furnace burner.

2.21 Furnaces when in operation shall under no circumstances be placed inside splicers' tents, on splicers' platforms, on ladder platforms, or taken into manholes; and they shall at all times be so located that if upset, solder or paraffin will not enter the manhole opening or otherwise cause injury to an employee. Where practicable, the furnace shall be placed approximately ten feet from the manhole opening on the downgrade side and out of the path of traffic. Furnaces when in operation shall never be left unattended.

2.22 When furnaces are in use extreme care shall be taken to prevent leaks, and persons not experienced in their use shall not attempt to operate them.

2.23 Furnaces when in operation shall be level and placed on a secure footing or base to prevent tipping or upsetting.

2.24 Standard folding furnace shields may be used to keep furnaces operating properly and sparks from blowing around.

2.25 Before filling a furnace, the flames shall be extinguished and the air pressure released. A funnel shall be used and care exercised that kerosene does not overflow.

2.26 Catch pans which have been used for paraffin shall be heated and the paraffin removed before the pan may be used to catch solder drippings.

2.27 Care shall be taken in "passing" solder and paraffin pots so that no water will come in contact with the heated contents or container. If this is not done, an explosion is liable to occur or the contents may splash over the side.

2.28 After using solder and paraffin pots, they shall be placed in a safe location to prevent their being tilted or upset. Molten solder, waxes and paraffins shall be properly guarded at all times.

2.29 Before using catch pans, solder or paraffin ladles, etc., they should be heated to remove moisture.

2.30 Pots and kettles shall be removed from the furnace before pumping air into or making other adjustments.

2.31 When paraffin pots and solder pots are removed from the furnaces, care shall be taken to extinguish any flame **or** sparks adhering to the bottom of the pot or kettle. **A** wiping cloth may be used for this purpose.

2.32 When removing compound kettles or paraffin pots from the furnace or moving them about, care shall be taken to avoid spilling and possible ignition. Molten solder, paraffin or wax shall be removed from the furnace before any adjustments are made.

2.33 Heated kettles and pots shall be located **away** from combustible material and where minimum fire risk will be incurred.

2.34 When using hot compound, solder or paraffin, or doing other work aloft, employees are cautioned against standing or allowing others to stand beneath.

Place warning signs and safety guards. The helper shall, if necessary, reroute pedestrians and traffic.

2.35 The authorizing supervisor (see paragraph 2.02, above) shall only authorize the use of the torch for unwiping joints and then only on sleeves larger than $3\frac{1}{2}$ inches, and in such other special cases where, in the judgment of the authorizing supervisor, the hot metal method is impracticable.

2.36 Before wiping or unwiping joints or doing **any** other solder work on a cable under pressure, a hole should be drilled in the lead sleeve with the cable-boring tool, or if there is **a valve on the sleeve, the valve core shall be released so that gas may escape.** The manhole or cable vault shall be ventilated immediately after this operation.

2.37 In making resistance measurements by means of a megger, the conductors become charged and shall be discharged to prevent **shocking the Tester or Splicer.** The resulting arc **at the** time of discharge is sufficient to ignite an explosive mixture of gas, and therefore, the conductors shall not be discharged **in** the manhole.

2.38 Goggles shall be worn when using the welding tool to make repairs on aerial cable. The welding tool method must not be employed in manholes.

2.39 Workmen shall inspect platforms, associated ropes and hooks each time before using and replace them when found to be in an unsafe condition.

2.40 To avoid slipping, Splicers' platforms, pole seats, pole steps, ladders, etc., shall be kept free from paraffin.

2.41 When it is necessary for the workman to stand on the pole to place or remove a Splicers' platform, he shall be supported by a body belt and safety strap.

2.42 Workman shall make sure that platforms are properly supported and guyed before starting to work.

2.43 Workmen shall keep manholes free from paper and other inflammable material.

2.44 Upon the completion of each job, the manhole shall be left free of materials, boards, boxes and other objects, and the street surface around the manhole shall be cleared of melted paraffin and other materials.

CENTRAL OFFICE MAINTENANCE

CONTENTS

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2. **POWER EQUIPMENT**
3. **CENTRAL OFFICE EQUIPMENT**
4. **FIRE EXTINGUISHER EQUIPMENT AND FIRE PREVENTION**
5. **TOOLS, PRECAUTIONS**
6. **MISCELLANEOUS**

1. GENERAL

1.01 This section contains a list of Safety Precautions to be associated with operations being performed under Bell System Practices covering Central Office Maintenance.

1.02 Other precautions applicable to Central Office Forces contained in the Bell System Practices applying to specific work operations including those listed in this Safety Code shall be strictly adhered to.

1.03 While it is the purpose of this section of the Safety Code to outline safety practices for personnel engaged in Central Office Maintenance work, no attempt is made to set down rules to cover every case. Such comprehensive rules have not been formulated because the adequate achievement of safety objectives requires that a detailed study be made in many instances, depending on the equipment and circuits involved.

1.04 The following are Safety Precautions covering some of the equipment and conditions found in Central Offices and should, be referred to by those employees whose duties require them to work on such equipment.

**DO NOT OVERLOOK THE NEED TO BE EVER ALERT
TO ALL POSSIBLE HAZARDS.**

2. POWER EQUIPMENT

2.01 Batteries, Storage

- (1) Avoid creation of sparks, including those from static electricity, or the use of an open flame near batteries, since the gas is explosive when sufficiently concentrated.
- (2) Before removing or replacing a vent plug or inserting a hydrometer or thermometer in a vent hole, firmly touch the instrument or hand to an intercell connector or terminal on a cell near the grounded end of the battery so as to discharge whatever static electricity may be on the instrument or your body.
- (3) It is important that the battery rooms be properly ventilated.
- (4) Rubber gloves, rubber apron, goggles and glass or glazed earthenware battery filling utensils shall be employed in the handling of the electrolyte and cells containing electrolyte.

2.02 Counter E.M.F. Cells

- (1) Normal operation of C.E.M.F. cells under load causes explosive gas to be given off.
- (2) Avoid creation of sparks, including those from static electricity or the use of an open flame near the cells.
- (3) Observe all precautions outlined in the Bell System Practice covering C.E.M.F. cells when working on or near the cells and use only insulated tools. Cells being worked on shall be shorted out of the load circuit, and, to the extent possible without exceeding the associated equipment voltage limits, adjacent C.E.M.F. cells shall be shunted from the load circuit to reduce the exposure to gas. (Temporary readjustment of the associated battery voltage will be necessary to accomplish this.)
- (4) Be sure that the work area is adequately ventilated.

2.03 Generators and Motors, Stationary and Portable

- (1) In general, before performing maintenance operations on generators, motors and other rotating machines, which are at rest or in motion, the power supply for the machine shall be turned off. If the machine is in motion, after turning off the power supply, wait until it comes to rest.
- (2) The only exception to this rule is when commutator cleaning or dressing operations are required on generators and ringing machine drum type interrupters. In these cases care should be exercised to keep hands and wearing apparel from contact with the moving parts. Avoid the danger of loose clothing, especially loose sleeves and flowing neckties around generators and motors.
- (3) If work is performed on an energized machine, care should be taken to avoid electrical shock from exposed lugs, terminals and brush studs.
- (4) Never attempt to test Duplex or other frame motor fuses that are in the fuse box; there is the possibility of painful burns or severe shock from the 220 Volt A.C. supply. Fuses can be removed with safety, only after the 220 Volt A.C. and 48 Volt D.C. currents have been turned off. Remember, the fuse boxes are small, they are solidly grounded; and that it is a simple operation to turn off the switch.
- (5) Power men and other employees when working around generators, motors, ringing machines and other rotating electrical equipment shall observe every precaution to prevent the crossing or short circuiting of different potentials which would cause flashes or severe burns.
- (6) Before starting portable gasoline driven generators, inspect the starting rope to insure it being in good working condition.
- (7) Care should be exercised to keep the rope from striking the face or eyes when starting portable generators not equipped with an automatic rope retractile device. Portable generators shall be stopped for fueling or when

necessary to make any adjustments on moving parts or to work on the electrical wiring and associated equipment.

- (8) When moving or transporting portable generators, have sufficient help to prevent undue exertion or strain in lifting or carrying the generators.
- (9) If the engine is hot from running, use care to avoid burns from mufflers and exhaust pipes.
- (LO) Whenever possible, the standard test battery and ground binding posts or terminals shall be used for testing purposes. Never use heavily fused battery feeders as a test battery supply.
- (11) Before repairing permanently connected commercial power supply leads outlets, or receptacles, remove the circuit fuse.
- (12) When repairing power supply cords for portable electric equipment, disconnect the cord plug from commercial power supply outlets.
- (13) Synchronous motors, when started, generate a high voltage in the field coils; therefore, no part of the machine, except the starting mechanism, shall be touched during the starting operation.

2.04 Bus Bars and Connectors

- (1) When testing or tightening bolts or nuts on the bus bars, storage battery or C.E.M.F. cell connectors, fuse or power switch terminals, all tools shall be insulated to prevent crossing or short circuiting tools with live leads.

2.05 Transformer Vaults

- (1) Whenever it becomes necessary for any employee to enter the transformer vault, he shall be accompanied, where possible, by another employee. Due to the personal danger of being exposed to high voltage equip-

ment, the Commercial Power Company's apparatus shall not be handled except as specified. Use only standard protective devices.

2.06 Rectifiers

- (1) Before work is performed on any rectifier, consult the appropriate Bell System Practice for safety precautions listed therein. Voltages inside the rectifier units are sometimes higher than those usually encountered in telephone power plant.
- (2) The commercial power supply shall be disconnected and fuses removed, where furnished, prior to performing operation tests and inspections on rectifiers.
- (3) Hot rectifier tubes shall be carefully handled to avoid burns.

2.07 Guards

- (1) When it is necessary to remove the guard from any moving part of the equipment, extreme care shall be used and the guard replaced before leaving the job.

2.08 Repair of Cords-Proper Poling

- (1) When light leads are used they shall be arranged in a safe manner. When repairing portable electric light leads, receptacles or soldering irons, they shall be checked for proper poling.

3. **CENTRAL OFFICE EQUIPMENT**

3.01 Bench, Work (Wooden)

- (1) Wooden work benches shall be kept free of rough and badly worn surfaces.
- (2) When using a portable work bench to stand on and perform various work operations; care should be exercised that the bench is setting on the floor in a level and firm manner and it shall be placed in such a manner so as not to block passageways. While working on' this type of bench, one should never over-reach.

3.02 Carrying, Lifting

- (1) Remember that your leg muscles are stronger than your back muscles. Always lift with your leg muscles.
- (2) If load is too heavy or cumbersome, get help.
Make sure that your footing is secure and path unobstructed.
Always have clear forward vision when carrying articles.

3.03 Cleaning-Compressed Air

- (1) Heavy leather gloves shall be used -when handling glass wool filter cells from D-97067 exhausters sets.
- (2) Goggles shall be worn when using compressed air cleaning equipment.
- (3) A respirator properly equipped with filters, shall be worn while working inside the curtain enclosure during compressed air cleaning operations.
- (4) Due to the relatively high pressure and velocity of the air at the air nozzle, it is imperative that the air stream shall not be directed toward the eyes, ears, nose or mouth, or any other portion of a person's body. Horseplay is prohibited.
- (5) Defective air hose and couplings are dangerous, therefore, make sure that the hose, hose connections and all tools and material associated with the cleaning operations are in satisfactory working condition.

3.04 Clutches-Panel Offices

- (1) Caution shall be exercised when placing or removing clutches.

3.05 Cork Rolls and Vertical Shafts

- (1) Particular care shall be exercised when working about cork rolls and vertical shafts. When cleaning cork rolls, use the approved tool wrapped with an approved cloth. When cleaning oil from vertical shafts and driving discs that are in motion, the cloth shall not be wrapped

about the hand in such a manner that if caught, the fingers will be pulled between the discs. In case the cloth becomes caught, no attempt shall be made to release it but the motor shall be stopped and the roller reversed by hand.

3.06 Copper, Soldering

- (1) Extreme caution shall be used when soldering operations are being performed.
- (2) Always wear goggles when soldering at or above eye level.
- (3) When the soldering copper is not in use, it shall be placed in an approved holder. Leaving or laying down a soldering copper, momentarily or otherwise, in other than the approved holder is prohibited.
- (4) Test the heat of a soldering copper with solder only. Keep the heating element away from the face and hands.
- (5) Excess solder or foreign material on the tip of the soldering copper shall be removed in the approved manner. "Whipping" the iron to remove excess solder is prohibited.
- (6) Soldering coppers shall be checked to insure that the tip is tight in the shell before using.
- (7) Electric soldering coppers should be inspected and tested, sufficiently often, to insure that the heating element is not crossed with the shell and that the cord or plug is not defective.
- (8) Soldering coppers in the holders shall not be left in an aisle or passageway.
- (9) Where it is the intention to mount a ladder seat and then perform soldering operations, locate the iron in its holder in a convenient location before climbing onto the ladder seat. Do not carry the iron while climbing onto the seat.

3.07 Electrical Hazards-Wiring and Equipment.

- (1) In making circuit measurements or working on apparatus such as Amplifiers, Oscilloscopes, Electrolytic Capacitors, etc., always be alert to the possible presence of abnormally high voltages and high voltage charges on capacitors. Extreme care shall be exercised to guard against personal contact with such potentials.
- (2) Whenever removing or replacing cartridge type fuses regardless of potential or current capacity the standard fiber fuse extractor shall be used.
- (3) Heat coil pliers, per KS-2827, shall be used to remove and replace heat coils at distributing frame protectors to guard against possible contact with unknown high voltages. Observe for operated heat coils. Extreme care should be taken when replacing a heat coil in cases where the heat coil removed, was found operated.
- (4) Rubber gloves shall be worn when working on distributing frame protectors where high voltages are known or suspected to exist, due to such items as electrical storms, Aurora Borealis, Commercial Power Feeder Crosses, etc.
- (5) Use caution when working at or near all power boards. Treat all power circuits as conductors of dangerous voltages.
- (6) Since, under certain conditions, high voltage capacitors may retain their energy after the primary source has been de-energized, always discharge these capacitors in accordance with the approved procedures as outlined in the appropriate Bell System Practices before any work is done on this equipment.
- (7) Whenever possible, the standard test battery and ground binding posts or terminals shall be used for testing purposes. Never use heavily fused battery feeders as a test battery supply.

3.08 Gear Cases

- (1) Constant vigilance is required when working with gear cases. They shall not be opened while the motor is running except to remove filler or drain plugs for the purpose of flushing or refilling. In case of trouble, *stop the motor.* To avoid the danger of slipping wrenches, replace all plugs that have round or defective heads.

3.09 Keyboards

- (1) When working on keys, forms or other equipment requiring the raising of the keyboard, care shall be taken to see that the keyboard brace is securely locked. The practice of bracing the keyboard with any tool is forbidden. When the keyboard is not equipped with a brace an assistant should be used to hold the keyboard open.

3.10 Ladders

- (1) Be sure a ladder is not in use or that there is no workman on it before moving the ladder.
- (2) A ladder shall not be placed in a doorway, unless the door is locked, barricaded or guarded by another employee.
- (3) Always face the ladder when ascending or descending.
- (4) Do not overreach from a position on the ladder. Move the ladder closer to the work.
- (5) Do not step from one ladder to another one.
- (6) Keep rolling ladder brakes in good condition. A ladder with a defective brake is more dangerous than a ladder which is not equipped with a brake.
- (7) Defective or missing ladder parts or defective track shall be repaired before the ladder is used.

- (8) Where rolling ladders are not equipped with brakes, rolling ladder blocks shall be used in accordance with Bell System Practices in the A500 and A700 Series.
- (9) Employees shall not stand on the top step of any ladder. When a ladder is not of sufficient height to reach the work, a longer ladder shall be procured to complete the job.
- (10) Do not stand with one foot on ladder and other foot on equipment, frames, racks, or other structure.
- (11) When working on rolling ladders, caution shall be used when it is necessary to move them.
- (12) Do not at any time use nearby equipment, frames, racks, or other structures to assist in ascending or descending, or changing position on ladders.
- (13) Do not climb frames, stand on motors, equipment **or** other objects that are not designed for that purpose. Use a ladder, bench or stool, whichever is appropriate.
- (14) Do not leave tools, materials and apparatus on ladders or ladder seats, when unattended, unless securely fastened.
- (15) Tools, materials and apparatus, when no longer **re-**quired, shall be cleared from the ladders.
- (16) No oil or grease shall be permitted to remain on ladder steps on handrails.

3.11 Ladder Seats

- (1) Defective or missing parts shall be repaired before the ladder seat is used.
- (2) Before mounting ladder seat, test the ladder seat by hand to check that the seat is firmly secured in place.
- (3) Keep both hands free to tools or test equipment when mounting or dismounting from the seat.

- (4) When getting on or off ladder seat, the weight shall be kept well balanced to prevent tilting the ladder seat
- (5) Standing on ladder seats is prohibited.
- (6) Do not use the ladder seat as a resting place for tools or material except where a tool container or tray is used.
- (7) Remove all tools, equipment, etc., from the ladder seat and ladder before removing the seat.
- (8) Remove the ladder seat from the ladder and place it in its assigned location when leaving for lunch, going off duty, or when the particular job is completed.

3.12 Metal Parts

- (1) Replace burred screw heads and replace or repair metal equipment which has hazardous sharp edges.

3.13 Oscillographs and Oscilloscopes

- (1) Operation of this equipment involves the use of high voltages which are dangerous to personnel. Do not change tubes or make adjustments inside the equipment with the high voltage supply "ON". Do not depend upon the safety switch for protection, but always remove the power cord from the line outlet. Under certain conditions dangerous potentials may exist in the circuits with power controls in the "OFF" position due to charges retained by capacitors. To avoid shock and severe burns always discharge and ground circuits prior to touching them. Never service or adjust the instrument without the presence or assistance of another person capable of rendering aid.
- (2) Do not operate oscillographs or oscilloscopes with the case removed due to the presence of high potentials.

3.14 Plugs, Switchboard and Appliance

- (1) When removing plugs from jacks or receptacles, grasp the plug and remove it slowly.

3.15 Receivers, Head

- (1) Do not use head receivers to test commercial power circuits or high voltage telephone equipment, except as covered by specific instructions in the appropriate Bell System Practices.
- (2) Do not wear receiver clamped to ear when testing unknown leads.
- (3) Exercise care when removing receivers from the head to prevent the head band from striking the eyes.

3.16 Sequence Switches

- (1) When removing or replacing sequence switches, a piece of approved cloth shall be used to insulate the hand from the switch.

3.17 Test Equipment, Portable

- (1) Use care in moving portable test equipment. Associated cords shall be placed in a safe position before attempting to move the equipment. Extra precautions shall be taken when moving metal test wagons and test equipment while passing battery terminals and fuse panels. In moving small test sets use the handle provided for that purpose. When using test sets on ladders the test set shall be properly strapped to the ladder.

3.18 Vacuum Tubes

- (1) Use tube extractor when removing a tube from service. Exercise care to avoid burns when removing hot tubes.
- (2) Use tube cartons to store goods or defective tubes to avoid breakage.
- (3) In handling or storing cold cathode tubes it is imperative that the instructions contained in Bell System Practice A502.053 be carefully followed to avoid personal injury from radiation of the radioactive material

within the tube as well as the danger of inhaling radioactive gas from broken tubes.

3.19 Wedges, Multiple

- (1) When raising switchboard multiple, caution shall be exercised to prevent wedges from slipping. Then tendency of a wedge to slip may be overcome to a large extent by slightly moistening the slanted surface of the wedge before inserting it between the cables. Stand away from the front of a wedge that is in use. Splintered wedges shall be replaced or repaired.

3.20 Wire Reels

- (1) Keep crosswire reels in good condition, free from sharp edges on metal parts.
- (2) Keep fingers away from the sides of the rotating drum while it is in motion. Do not insert fingers in openings in sides of rotating drums to spin the drum.

3.21 Wooden Parts

- (1) Keep any wooden parts free from splinters and properly finished.

4. FIRE EXTINGUISHER EQUIPMENT AND FIRE PREVENTION

4.01 Fire Extinguishers

- (1) When inspecting or recharging fire extinguishers containing acid, rubber gloves and goggles must be worn.
- (2) Gas fire extinguishers contain carbon dioxide gas under 800 to 900 pounds per square inch pressure at ordinary room temperatures. These extinguishers should be kept away from radiators and other heat sources as the pressure increases rapidly with increase in temperature.
- (3) On old style hand wheel operated carbon dioxide extinguisher employees shall not turn the hand wheel

operating the release valve unless the extinguisher is to be discharged. Once started, the gas cannot be shut off and will continue to discharge until completely exhausted. Should the valve be accidentally opened, the horn shall be turned so that it is discharged toward the floor and away from the equipment, but not too close to floor as this would cause a dangerous recoil forcing extinguisher upward.

- (4) On trigger operated carbon dioxide extinguishers it is necessary to pull locking pin and press trigger. This operation starts the discharge of CO₂ gas, but action can be stopped instantly by simply releasing trigger. Pressing the trigger breaks the thin wire seal which is attached to prevent tampering.
- (5) Employees shall under no circumstances permit the hands or face to come in contact with the gas. This is important because during the discharge carbon dioxide snow is formed, the temperature of which is so extremely low that contact with it may result in severe frost bite.

4.02 Fire Prevention Precautions

- (1) Insist on good housekeeping with regular disposal of rubbish kept in metal containers with metal covers while awaiting collection.
- (2) "Don't Give Fire A Place to Start".
 - (a) Always use ashtray, never waste basket, paper towel basket or floor.
 - (b) Never put ashtrays on divans or chairs.
 - (c) Never put paper in ashtrays.
 - (d) Never put waste baskets under curtains and drapes, wooden tables or desks or under fire extinguishers and waste baskets should never be placed in contact with or close to equipment frames.

- (3) Fire doors into corridors and stairways should be kept closed, never blocked or tied open.

4.03 Furnace, Gas

- (1) Soldering iron gas furnaces shall be kept clean. To eliminate fire hazards a standard "spark" igniter is installed with all gas furnaces. When used improperly an accumulation of gas may occur with danger of explosion. Goggles shall be used when lighting gas furnaces. The proper method is to place the point of the igniter in the gas burner, turn on the gas, and then snap it clear. If gas does not light at once, the valve shall be closed and the above operation repeated. Keep the face at a safe distance.

4.04 Gasoline, Cans, Safety

- (1) Standard Bell System approved containers shall always be used to transport and store gasoline. Smoking or the use of open flames near these containers, is prohibited. When gasoline is stored in these containers, always abide by local fire ordinances governing the storage of inflammable liquids. Partially filled containers and even empty containers that have held gasoline, contain explosive gases.

4.05 Smoking

- (1) Smoking, or permitting others to smoke in terminal, test, power, operating or other similar equipment rooms is forbidden.

5. TOOLS, PRECAUTIONS

5.01 Pocket Tools

- (1) Employees shall carry pocket tools, with the sharp points downward, in the approved leather carrying case.
- (2) Pocket tools shall not be carried loosely in the pockets.
- (3) Employees shall always use the proper tools, and in the manner as prescribed in the sections of the appropriate

Bell System Practices. Defective and worn tools shall be replaced.

- (4) Do not leave tools on the floor, mezzanine platform or ladder steps.
- (5) If possible, avoid using tools at eye level.
- (6) Remember these simple rules for tools:
 - (a) Select the right tool for the job.
 - (b) Be sure that it is in good condition.
 - (c) Use it in the proper manner.
 - (d) Put it away when job is completed.

5.02 Chisels

- (1) Do not use chisels with split or defective handles. Always wear goggles when cutting with a chisel.

5.03 Special Precautions

- (1) When testing or tightening bolts or nuts on the bus bars, storage battery or C. E. M. F. cell connectors, fuse or power switch terminals, all tools shall be insulated to prevent crossing or short circuiting tools with live leads.

6. MISCELLANEOUS

6.01 Gloves (Leather or Rubber)

- (1) Be sure gloves are in good shape, free from tears or holes and are kept at readily accessible locations,
- (2) Rubber gloves shall be worn when handling storage battery electrolyte, cells containing electrolyte, when inspecting or recharging fire extinguishers containing acid, and when working on equipment or wiring where high voltages are known or suspected to exist. Heavy leather gloves shall be worn where there is a probability that injury to the hands might otherwise result.

- (3) Examples of where leather gloves shall be worn is when it is necessary to handle glass wool filter cells used in certain air filtering units, or handling or removing scrap wire from scrap wire bins. When in doubt, be safe, wear gloves.

6.02 Goggles

- (1) Eyesight is priceless. Protect it by wearing the proper goggles when performing any operation where it might cause an eye injury.
- (2) Some typical cases where goggles shall be worn are given in the following:
 - (a) When performing soldering operations at or above eye level.
 - (b) When using compressed air cleaning equipment.
 - (c) When handling acids or alkalies.
 - (d) When grinding or sanding commutators.
 - (e) When performing work operations requiring the use of a chisel.
 - (f) When inspecting or recharging fire extinguishers containing acid.
 - (g) When igniting gas furnaces.

6.03 Floors

- (1) Keep floors free of oil and grease to avoid slipping and other hazards.

6.04 Housekeeping

- (1) Good housekeeping is a material aid to safety. Make sure everything is in a safe condition before leaving a location. Replace covers, pick up loose material and be sure appliance cords are not draped across a passage-way.
- (2) Aisles and mezzanine platforms shall be kept clear of all tools and materials.

ISOLATED STRUCTURES

CONTENTS

1. **GENERAL**
2. **PRECAUTIONS**
3. **Electrical CONTACTS**
4. **ELECTRICAL STORMS**
5. **POWER EQUIPMENT**
6. **ELECTRONIC EQUIPMENT**
7. **WORKING ALOFT**
8. **HOUSEKEEPING**

1. GENERAL

1.01 Isolated structures house non-attended equipment and vary in size from relatively small terminal boxes to sizeable buildings.

Typical isolated structures are underground or pole mounted carrier repeater stations; remotely located radio transmitting and receiving stations; micro-wave repeater towers; and non-attended community dial offices or repeater buildings.

1.02 Because isolated structures usually have limited communication facilities consideration should be given to the assignment of more than one employee especially where weather, accidents, disasters, etc., may have created unusual hazards.

1.03 While isolated structures have been treated here as a separate section, other sections of the safety code should be strictly followed where they apply.

1.04 Often times it is necessary to dispatch to an isolated structure an employee not regularly assigned a company motor vehicle. The employee's unfamiliarity with the vehicle's operation plus the urgency of the visit combine to create a potential accident hazard. For this reason employees subject to this

assignment should he kept thoroughly familiar with the Company's Safe Driving Practices through regular instruction and current review.

1.05 "No job is so important and no service is so urgent that we cannot take time to perform our work safely" must be followed regardless of the urgency of the assignment.

1.06 Many isolated structures are not located on a traveled way and because of snow, ice or mud, safe access to them by vehicle throughout the year is not possible. Employees should be quick to recognize the point beyond which driving would become hazardous.

1.07 Follow local operating instructions in regard to notifying the control station of your arrival-and also departure.

2. PRECAUTIONS

2.01 When carrying tools, equipment, material, etc., the vision should not be obscured. Low growing vines and brush and uneven terrain can easily cause a serious fall.

Do not attempt to carry more than a safe load -- make a second trip rather than chance it.

2.02 Watch out for poison ivy, thorns, and brush scratches. Electric fences may be carrying a dangerous voltage; treat them as high voltage.

2.03 Upon arrival at the site employees should be alert to detect any structural weakness caused by present or previous storms.

2.04 If the visit is because of equipment trouble the situation is abnormal. Be prepared for the unexpected.

2.05 Where there is a possibility of bees, hornets, bats, etc., concealed in the structure tap it from a safe distance with a tree pruner handle or similar pole before opening the door or cover.

Be prepared for flying dirt, dust, or insects and if possible take a position with back to the wind.

2.06 If the isolated structure is in a manhole follow all procedures for testing and working in manholes as covered in other sections of this safety code.

2.07 Observe smoking restrictions and precautions.

2.08 Do not use open flames such as matches, candles, etc., for illumination.

2.09 Protective measures must be considered for the public as well as employees where operations are near area of mobile or foot traffic.

3. ELECTRICAL CONTACT

3.01 At isolated structures there is a far greater possibility for electrical shock due to employee being wet and grounded.

Low voltage shock may cause surprise and consequent humping of body or even a fall.

3.02 Treat all voltage as dangerous and do not allow your body to create an electrical circuit.

3.03 Interlocking systems and safety switches are provided for employee's protection. They should not be by-passed or disabled.

3.04 Assume nothing.

Know the equipment and circuits.

Be sure.

3.05 Whenever the slightest doubt exists wear your rubber gloves.

4. ELECTRICAL STORM

4.01 Whenever there is evidence of an approaching electrical storm, work involving contact with open wires, cable strand, cable conductors, antennas, and micro-wave towers should be suspended until after the storm has passed.

5. POWER EQUIPMENT

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5.01 Emergency engines should be operated only by trained men.

Insure good ventilation at all times.

Do not allow gasoline fumes to accumulate in confined spaces.

5.02 Watch out for automatic power equipment which may start without warning.

5.03 When working around rotating equipment avoid possibility of being drawn into machine by loose clothing such as neckties, sleeves, and cuffs.

5.04 Review precautions covered in other sections of this Safety Code when working on storage batteries.

5.05 Cartridge type fuses, regardless of potential, shall be removed with approved fuse pullers.

6. ELECTRONIC EQUIPMENT

6.01 Use tube pullers on vacuum tubes- they may be hot and are subject to breakage.

6.02 Radio, television, carrier equipment, and other electronic circuits require voltage above normal. Keep this in mind and avoid contacts with energized equipment.

6.03 Exposed high voltage points should be covered by a plastic shield or grid.

If it becomes necessary to remove a shield to effect repairs, the equipment should be turned off and the charge on any power supply capacitor removed.

6.04 Radio frequency burns can be serious. Avoid contacts with energized transmission lines.

6.05 Never look into the open end of an energized wave guide.

6.06 When working on trouble remember you have an abnormal condition and an otherwise innocent wire can be dangerous.

7. WORKING ALOFT

7.01 If it is necessary to use an extension ladder at an isolated structure care should be taken to see that the ladder has an even footing; has the proper angle of elevation; and has a secure top lashing.

When climbing both hands should be kept free for use on the side rails. Test sets, material, etc., should be raised or lowered with a hand line.

7.02 Test sets when used aloft shall be made secure by use of straps or rope.

7.03 When working on antennas make sure that they are isolated and cannot be energized except under your personal control.

7.04 Make sure antenna system is clear of hazards from other sources.

7.05 Do not attempt to work aloft when winds are strong enough to **be** considered hazardous.

7.06 When working aloft on tower structures the body belt and safety strap should be worn at all times.

7.07 If loads are to be raised or lowered at tower structures, inspect hoisting gear for safe operation.

Stay out from under suspended loads.

7.08 Do not use hoisting lines to raise or lower men.

8. HOUSEKEEPING

8.01 Do not strew materials or tools about on floor or ground.

8.02 Don't leave booby traps 'for yourself or others.

8.03 Check location both inside and outside and leave no condition which could possibly cause injury or fire.

8.04 Correct or report all hazardous conditions found.

STATION INSTALLATION AND MAINTENANCE

CONTENTS

- 1. GENERAL**
- 2. CUSTOMER'S PREMISES**
- 3. TOOLS AND MATERIAL**
- 4. MISCELLANEOUS**

1. GENERAL

1.01 THIS PART INCLUDES SAFETY PRECAUTIONS APPLYING TO INSTALLATION OR MAINTENANCE WORK OPERATIONS ON CUSTOMER'S PREMISES.

1.02 When working on customer's premises, every precaution shall be taken to prevent possible injury to employees and the public or damage to property. Permission shall be obtained from an authorized person before work is begun.

2. CUSTOMER'S PREMISES

2.01 The utmost care shall be exercised while working in new buildings under construction or in old buildings under reconstruction or removal. Temporary stairways or ladders shall not be used unless they are known to be safe. When there is insufficient lighting, a flashlight shall be used to guide the way. Care shall be used to avoid loose boards, temporary guards, scaffolding, etc. Workmen shall not ride in material hoists.

2.02 Obstructing doorways, passage, or stairways with tools or material shall be avoided wherever possible. When such obstructions cannot be avoided,

proper precautions shall be taken, using danger signals, barricades, or a watchman, as the condition requires.

2.03 Employees shall not climb over fences if it can possibly be avoided.

2.04 WATCH FOR DOGS. If one is encountered, the owner or someone in authority shall be requested to confine the dog until the work is completed. In case of vicious dogs, the test desk shall be notified and the record made on the line card so that employees can be warned on subsequent visits.

2.05 THE USE OF OPEN FLAMES, such as matches, candles, etc., for illumination in buildings is strictly prohibited. A flashlight or standard extension lights shall be used where necessary. Particular care shall be taken when working in dark basements, to avoid pipes, wiring, beams, pits, debris, etc.

2.06 Shafts are dangerous places; guards, signs, or watchmen shall be placed for protection as the condition requires.

2.07 Employees shall not work upon roofs **OR** about skylights when it can be avoided. When it is necessary for employees to walk over or work upon roofs or skylights, they shall be carefully inspected to be sure they are of sufficient strength to bear the weight.

2.08 When it is necessary to perform work on sloping roofs every precaution shall be taken against slipping and materials, tools, trap doors, etc., shall be so placed that they will not slide off.

2.09 Before working on roofs, employees shall inspect the attic ceiling for flush type skylights which may be overlooked from the outside when they are covered with soot or snow.

2.10 Employees, while working in industrial plants, railroads, etc., shall be constantly on the watch

for and **observe all danger signals, warnings, and caution signs.**

2.11 **INSPECT DESKS, etc., for projecting nails and splinters before starting work. If a defect is found, the customer shall be informed before any work is begun. Work shall never be done over top of furniture unless suitable protection is provided.**

2.12 When it is necessary to work in close **proximity** to unguarded moving machinery, belts, pulleys, shafts, etc., defer working until machinery is either guarded or shut down.

3. TOOLS AND MATERIAL

3.01 Tools or materials strewn about the floor or on the ground is a menace and shall be avoided. When there are children about, employees shall be continuously on the watch to see that they do not pick up tools or materials with which they may be injured.

3.02 The skinned ends of wire shall be clipped off before coiling. The ends are of no use and may possibly cause serious infection from a slight scratch.

3.03 When cutting or coiling wire, care shall be taken that the flying ends do not strike the eye or cause other injuries.

3.04 Wire clippings, etc., shall immediately be disposed of in a safe manner.

3.05 Employees shall carry edged or pointed tools in such a manner as to avoid injury to themselves or others or damage to property. Tool **rolls and** plier pockets shall be used to carry small tools.

3.06 Open flame station soldering copper heater shall not be used close to inflammable materials or **furniture.** An open flame heater shall not be moved while it is burning. The flame shall be extinguished by

using a cover. A burning heater shall never be left unguarded.

3.07 Standard holders and guards shall be used for soldering copper to avoid contact with persons or inflammable objects.

3.08 Solder shall not be flipped from soldering copper.

3.09 Terminal lids, covers, and doors shall be properly secured when opened or closed.

3.10 When using tools, employees shall place themselves in a position that injuries will not result if the tool slips.

3.11 When removing a bit from hole after boring, it shall be turned all the way out. Pulling a bit may cause loss of balance and a fall.

3.12 Employees shall not use a borrowed ladder if it can be avoided and under no condition shall a borrowed ladder be used unless an inspection and test indicates it to be in safe condition. Ladders supplied by the company shall be used in every case possible.

3.13 Boxes, barrels, and other objects shall not be used as a substitute for ladders.

3.14 The mouth shall never be used as a receptacle for nails, staples, tacks, etc. The installer's apron or material bag is provided with pockets for this purpose.

3.15 When handling booths, care shall be used to prevent hands being caught in doors. Doors shall be secured against swinging.

3.16 Employees moving booths shall obtain sufficient help to insure their safe handling.

3.17 Booths shall not be moved until the top has been inspected for loose objects.

3.18 Care shall be exercised when working around gears or moving parts of teletypewriter sets. Where guards are provided for gears employees should make sure the guards are in place. Neckties and loose clothing shall be secured so as to prevent their being caught by moving parts.

3.19 Power shall be turned off before removing or placing teletypewriter or distributor unit. Where control arrangements are provided, it will be necessary to insure that machine will not be started while work is being done.

3.20 Employees placing wires, strand, cable or any heavy equipment shall be sure there is sufficient help to safely perform the work, and care shall be taken to insure proper clearances and to see that the public is properly guarded.

3.21 When furniture, material, or equipment on a customer's premises obstructs the work and must be moved, the workman shall inform the customer or his representative of the condition, and if the objects are of such a nature that the employee cannot safely move them he shall request the customer to furnish assistance or refer the matter to his supervisor.

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4. MISCELLANEOUS

Add the following:

4.01 ATTICS AND CEILINGS — Jobs should be surveyed and planned so that if possible the wiring can be run in other locations in the building.

Workmen shall not enter unfinished attics without the specific approval of the Supervisor. The Supervisor shall make a survey of conditions at such locations and no work shall be started until the survey is complete and necessary safeguards provided. Boards used for catwalks shall be secured to the joists and no walking across open rafters shall be permitted.

No work shall be done unless adequate lighting and ventilation is provided.

4.02 POCKET KNIVES — Pocket knives have no place in telephone work, and their use is prohibited.

4.03 PIPES AND HOT PLACES — Before working around hot pipes place insulating coverings over them to avoid being burned.

If necessary to work in close quarters be sure to have another person with you, or- have someone check frequently in case you are overcome with heat.

Avoid working too close to hot pipes since toxic flue gases may be present.

BUILDINGS

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1. **GENERAL**
2. **WOMEN CLEANERS**
3. **JANITORS**
4. **LADDERS**
5. **SCRUBBING & WAXING FLOORS**
6. **LIFTING & CARRYING**
7. **MOVING FURNITURE**
8. **HANDLING SUPPLIES**
9. **ELEVATOR OPERATORS**

1. GENERAL

1.01 THIS PART PRESCRIBES THE PRECAUTIONS TO BE TAKEN BY ALL EMPLOYEES WHILE WORKING IN OR AROUND COMPANY BUILDINGS.

1.02 While in the performance of their duties, all employees shall observe the condition of doors, floors, windows, stair treads, mats, and all other property of the Company and make reports of any conditions which may cause an accident or damage to persons or property.

1.03 Tools or materials shall not be placed in aisles, passageways, stairways, stairway landings or near doors where they will cause tripping hazards.

2. WOMEN CLEANERS

2.01 Wear low heeled shoes when working.

2.02 Be careful when working or walking on stairways and wet or newly waxed floors.

2.03 Do no dusting or cleaning that would require climbing on desks, chairs, radiators, window stools, etc.

- 2.04 Do not use ladders for any reason.
- 2.05 Make certain all cleaning tools are in good condition.
- 2.06 Watch out for glass or other sharp objects when handling contents of waste baskets.
- 2.07 Watch out for wood splinters or sharp edges when dusting furniture.
- 2.08 Do not lift or try to move heavy objects.
- 2.09 Do not walk through dark rooms or corridors. Turn on lights.
- 2.10 Be careful in moving tool and motor trucks -through doorways and on or off elevators. Tools should be made secure on trucks to avoid tipping.
- 2.11 Be careful not to hit low light globes with mop or broom handles.
- 2.12 Be watchful for objects falling from cabinet or locker tops when dusting.
- 2.13 Be alert for hot soldering irons when working in equipment rooms.
- 2.14 In order to avoid cut or scratched hands. do not use discarded tin cans for dispensing cleaning powder. Use standard shaker top cans.
- 2.15 Do not use bare fingers to comb out mops.
- 2.16 Extreme care should be taken when cleaning in vicinity of telephone equipment, power machinery, or power boards.
- 2.17 Do not handle or disturb wires of any kind.
- 2.18 Open all doors slowly.

3. JANITORS

- 3.01 Do not use defective tools.

3.02 Do not carry sharp pointed tools, such as screw drivers in rear pockets of pants with tool points outward.

3.03 Be careful when working or walking on stairways and wet or newly waxed floors.

3.04 Rubber gloves and safety goggles shall be used by employees when recharging fire extinguishers.

3.05 Care should be taken not to come in contact with poison ivy when cutting or trimming lawns or shrubs.

3.06 Do not ride on ash or delivery hoists.

3.07 When in use sidewalk lifts should never be left unguarded. When not in use, outside hatch covers or doors should be closed and locked.

3.08 Be careful to watch for burred screw heads or sharp edges when polishing brass or cleaning metal signs.

3.09 Use gloves on all operations of waste paper disposal, burning, bagging, or placing in press.

3.10 Open all doors slowly.

3.11 Do not climb or stand on radiators, window stools, desks, chairs, or cabinets, etc., in order to perform work at higher levels. Use a ladder.

4. LADDERS

4.01 Be sure ladders are in good working condition.

4.02 Never go higher than the second step from the top when using a step ladder. The top of the ladder is not considered a step.

4.03 Before using a step ladder be sure that the braces are extended and locked in position and that the ladder is on a sound level footing.

4.04 Avoid as far as possible placing ladders near doors or in passageways where they may get jarred or moved out of position while in use.

4.05 When on a ladder, do not reach out of balance and do not have one foot on ladder and the other foot on some adjacent object. Do not take chances. In both cases move ladder.

4.06 Do not leave tools or material on steps, shelf, or tops of ladders.

4.07 Never use step ladder shelf to stand on.

4.08 A step ladder is designed to be self-supporting and its use as a straight ladder should be avoided except where the feet can be securely braced or the ladder lashed in position.

4.09 Have sufficient help when raising or lowering a long extension or straight ladder.

4.10 Ladder should be placed about one-quarter its extended height out from the base of its support.

4.11 Be sure ladder is on a firm level footing at bottom and even bearing at top with locks properly engaged on extension ladders before climbing.

4.12 Go up and down ladder slowly. use both hands for support and always face toward ladder.

4.13 Using ladders that are too short is a common cause of accidents. Be sure to select a ladder of adequate length.

4.14 When getting off ladder avoid stepping on loose debris.

4.15 Never step from one ladder to another without first descending.

4.16 When working on ladders tools should not be carried in pockets if there is any possibility that the tools may fall out.

4.17 A workman holding a ladder for another should give it full attention. The safety of the man on the ladder is dependent upon the holder's vigilance.

5. SCRUBBING AND WAXING FLOORS

5.01 Never replace a blown-out fuse with a fuse of a higher ampere ratings than that for which the circuit is designed (usually 15 amperes). Overloading polishing machines frequently blows fuses. Over-fusing circuits frequently causes fires. In the interest of safety, overloading and overfusing should be rigidly avoided.

5.02 When scrubbing or waxing floors (in quarters where occupants are present) warning signs should be placed or area should be closed in order to guard against employees' slipping.

5.03 Be sure that electric cord to polishing machine is disconnected from power supply socket (shutting off a switch on machine is not sufficient) before changing brushes or making other adjustments to moving parts.

5.04 Use of polishing machine requires a forward and backward motion. Care should therefore be taken to see that space at rear of operator is clear.

5.05 When using a polishing machine in the vicinity of electric power entrance panels, telephone power panels, or telephone power machinery, extreme caution should be taken to avoid accidents, disruption of service, or damage to equipment. Electric cord to polishing machine should never be draped on power boards or motor generator sets. When polishing near power boards, the operator should always face toward the power board and always remove the polishing machine from the vicinity of power equipment when not in use.

6. LIFTING & CARRYING

6.01 Test lift object before attempting to lift them. The following procedures should be observed before attempting to make any lift:

- a. If object is too heavy or cumbersome get sufficient help.
- b. Face the object with feet far enough apart to give a good base of operation without placing too much strain on abdominal muscles. The length of a shoe is a good guide.