COMMONWEALTH OF KENTUCKY

BEFORE THE PUBLIC SERVICE COMMISSION

In the Matter of:

BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION	)	
	)	
	)	CASE NO. 98-033
ALLEGED FAILURE TO COMPLY WITH ADMINISTRATIVE REGULATION 807 KAR 5:006, SECTION 26, AND 807 KAR 5:041, SECTION 3	)	

O R D E R

Big Sandy Rural Electric Cooperative Corporation ("Big Sandy RECC"), a Kentucky cooperative corporation which engages in the distribution of electricity to the public for compensation for lights, heat, power, and other uses, and which was formed pursuant to KRS 279.010 to 279.220, is a utility subject to Commission jurisdiction. KRS 278.010; KRS 279.210.

KRS 278.280(2) directs the Commission to prescribe rules and regulations for the performance of services by utilities. Pursuant to this statutory directive, the Commission promulgated Administrative Regulation 807 KAR 5:041, Section 3, which requires electric utilities to maintain their plant and facilities in accordance with the standards of the National Electrical Safety Code (1990 edition) ("NESC"). It also promulgated Administrative Regulation 807 KAR 5:006, Section 26(2), which requires a utility to submit a summary written report of a utility-related accident within 7 calendar days of such accident.

Commission Staff has submitted to the Commission a Utility Accident Investigation Report dated December 12, 1996, appended hereto, in which Commission Staff alleges:

1. On November 5, 1996, James Adams was injured as he installed Big Sandy RECC electric distribution facilities in Floyd County, Kentucky.

2. At the time of the incident, Adams was installing a new 7620 volt electric distribution line. While installing a mechanical hot line jumper to energize the new distribution line, Adams moved a section of line hose back on an energized distribution line and came into contact with that line.

3. At the time of the incident, Adams was not wearing the rubber gloves which had been provided to him.

4. At the time of the incident, Paul M. Perkins was in charge of the work site and supervising the construction activity.

5. At the time of the incident, Adams and Perkins were employees of Long Ridge LLC ("Long Ridge") and were acting within the scope of their employment.

6. At the time of incident, Long Ridge was acting within the scope of a contract with Big Sandy RECC to construct and install certain utility plant.

7. Big Sandy learned of the incident at 3:55 p.m., Eastern Time, on November 5, 1996.

8. Big Sandy did not file a written summary report of the incident with the Commission until November 16, 1996.

9. NESC Rule 420H requires persons to use the personal protective equipment, protective devices, and special tools provided for their work.

10. Adams violated NESC Section 420H when he failed to wear his protective gloves while installing the mechanical hot line jumper.

11. Perkins failed to see that all safety and operating procedures were observed by those under his direction. His failure is a violation of NESC Rule 421A which requires a person in charge to adopt such precautions as are within his authority to prevent accidents and to see that the all safety rules and operating procedures are observed by those under his direction.

12. Big Sandy RECC failed to comply with Administrative Regulation 807 KAR 5:006, Section 26(2), when it failed to submit a written summary report of the incident within 7 calendar days of the incident.

Based on its review of the Utility Accident Investigation Report and being otherwise sufficiently advised, the Commission finds that prima facie evidence exists that Big Sandy RECC has failed to comply with Administrative Regulations 807 KAR 5:006, Section 26(2), and 807 KAR 5:041, Section 3.

The Commission, on its own motion, HEREBY ORDERS that:

1. Big Sandy shall appear before the Commission on May 12, 1998 at 9:00 a.m., Eastern Daylight Time, in Hearing Room 1 of the Commission's offices at 730 Schenkel Lane, Frankfort, Kentucky, for the purpose of presenting evidence concerning the alleged violations of Administrative Regulation 807 KAR 5:006, Section 26(2), and 807 KAR 5:041, Section 3, and of showing cause why it should not be subject to the penalties prescribed in KRS 278.990(1) for these alleged violations.

2. Big Sandy RECC shall submit to the Commission within 20 days of the date of this Order a written response to the allegations contained in the Utility Accident Investigation Report.

3. The Utility Accident Investigation Report of December 12, 1996, a copy of which is appended hereto, is made part of the record of this proceeding.

4. Any motion requesting any informal conference with Commission Staff to consider any matter which would aid in the handling or disposition of this proceeding shall be filed with the Commission no later than 20 days from the date of this Order.

Done at Frankfort, Kentucky, this 27th day of January, 1998.

PUBLIC SERVICE COMMISSION

Chairman

Vice Chairman

Commissioner

ATTEST:

Executive Director

APPENDIX A

AN APPENDIX TO AN ORDER OF THE KENTUCKY PUBLIC SERVICE COMMISSION IN CASE NO. 98-033 DATED JANUARY 27, 1998

UTILITY ACCIDENT INVESTIGATION REPORT

Utility:	Big Sandy RECC				
Reported By:	John M. Howard				
Dates & Times					
Accident Occurred:	11/05/96 - Approximately 11:20 a.m.				
Utility Notified:	11/05/96 - 3:55 p.m.				
PSC Notified:	11/05/06 - 6:43 p.m.				
Investigated:	11/06/96				
Written Report Rcvd:	11/16/96				
Location of Accident:	Floyd County, Head of Cow Creek near the residence of Astro Hunter and Sam Goodman				
Description of Accident:	Mr. James Adams was in the process of installing a mechanical hot line jumper when the incident occurred. Mr. Adams was moving a section of line hose back to install the hot line jumper when he contacted the hot phase with his right index finger. Mr. Adams was not wearing his rubber gloves at the time of the incident. Mr. Paul M. Perkins, part owner and supervisor of the construction company, was approximately one-fourth of a mile away when the incident occurred.				
Victims:					
Name:	James Adams	**Fatal:**	No	**Age:**	36
Addr./Empl.:	Long Ridge Construction Company, Inc., 4012 Paris Pike, Mount Sterling, Kentucky				
Injuries:	Severely burned right index finger and little toe on left foot.				
Witnesses:	**Name**	**Address/Employment**			
	Tim Carter	Long Ridge Construction Company, Inc. 4012 Paris Pike, Mount Sterling, Kentucky			
Sources of Information:	**Name**	**Address/Employment**			
	Paul M. Perkins	Long Ridge Construction Company, Inc. 4012 Paris Pike, Mount Sterling, Kentucky			
	John W. Land	PSC Engineering Staff, On-Site Investigator			

Probable Violations:	.807 KAR 5:006, Section 26(2), Summary written report was not submitted within seven (7) calendar days. 1990 NESC Rule 420H, Tools and Protective Equipment. 1990 NESC Rule 421A1.2., Duties of a First Level Supervisor of Person in Charge.				
Line Clearances At Point of Accident:	**Measured**	**Minimum Allowed by NESC**	**Applicable NESC Edition[1]**	**Volt.**	**Constr. Date**
Phase Conductor to Ground Elevation:	27' - 8"	18' - 6"	1990	7620 V	1996
Neutral Conductor to Ground Elevation:	23' - 6"	15' - 6"	1990	N/A	1996
Tri-Plex Service to Ground Elevation	22' - 5"	16' - 0"	1990	240 V	1996
Comm. Conductor to Ground Elevation:	18' - 3"	15' - 6"	1990	N/A	N/A
Date of Measurement:	11/06/96				
Approximate Temp.:	68°				
Measurements Made By:	John W. Land, PSC Engineering Staff				
Investigated By:	John W. Land				
Signed:	John W. Land				

Attachments A. PSC Accident and Trouble Report
B. Big Sandy RECC's Investigation Report
C. Photographs

[1] Current edition adopted by the Commission. If clearances are not in compliance with the current edition, then the edition in effect when the facilities were last constructed or modified would apply.

Attachment A

PSC Accident and Trouble Report

P. S. C.
ACCIDENT AND TROUBLE REPORT FORM

TODAY'S DATE 11-5-96 TIME 5:30PM

COMPANY Big Sandy Recc.

PERSON REPORTING INCIDENT: NAME: John M. Howard

TITLE: Member Service Director

ADDRESS: 789-4095/886-2616

PHONE NO: Big Sandy Recc

* * * * *

ACCIDENT DESCRIPTION: Contacted 7.2KV over head line
Right hand Index Finger Epitle Left foot little toe.
No Rubber Gloves being Worne

VICTIMS NAMES: James Adams SEX M AGE 36? DEATH ___ INJURY ✓

Highland Regional Hosp - SEX ___ AGE ___ DEATH ___ INJURY ___
Prestonsburg Ky.

SEX ___ AGE ___ DEATH ___ INJURY ___

LOCATION OF ACCIDENT: Floyd Co., Ky

TIME OF OCCURRENCE: Approx 11:20 AM.

* * * * *

~~TROUBLE DESCRIPTION:~~ Contractor Long Ridge Construction Co.

TIME OF OCCURRENCE:

TIME OF RESUMPTION OF NORMAL SERVICE:

NUMBER OF CUSTOMERS AFFECTED:

SIGNED John M Howard

DATE 11-5-96

Attachment B

Big Sandy RECC's Investigation Report

ACCIDENT INVESTIGATION GUIDE

BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION
504 11th St., Paintsville, Ky 41240

Date: 11-05-96

Time: 11:00 AM PM

Location: Floyd County - Head of Cow Creek near the residence of Astor Hunter and Sam Goodman

Photographs: To Be Attached to Report

Diagram: Measure Scene, Document All Objects Involved

Person(s) Making Measurements/Diagrams:

Injuries:

Name: James Adams

Address: Middle Creek Road
Prestonsburg, KY

Age:

Occupation: Lineman, Longridge Contractor

Injury: Hand contact with high voltage line (~~6720~~ 7620 V)
Severely burnt right index finger and little toe on left foot.

Name:

Address:

Age:

Occupation:

Injury:

Hospital Yes ☒ No ☐

EMS Yes ☐ No ☒

Name of Provider:

Address:

MEASUREMENTS/DIAGRAMS

Accident Investigation

James Adams, an employee of Long Ridge LLC, a contractor for Big Sandy RECC was working on a high voltage line.

James was energizing a new line from bucket truck when he reached up to move rubber insulation hose back to install mechanical jumper. James was wearing leather gloves. One end of jumper was in bucket. Apparently, the flow of electricity passed thru James' body to wire in bucket that was in contact with mechanical jumper.

Tim Carter, Clay City, KY was witness to accident.

Statement prepared by,

John Howard
Member Service Director
Big Sandy RECC

Big Sandy Rural Electric Cooperative Corporation

504 11th Street
Paintsville, Kentucky 41240-1422
(606) 789-4095 • Fax (606) 789-5454

Branch Office:

Box 8, Glyn View Plaza
Prestonsburg, KY 41653
(606) 886-2987

November 7, 1996

Mr John Land
Public Service Commission
P O Box 615
Frankfort KY 40602

Dear John:

Here is a copy of insurance from Long Ridge LLC, Paul Perkins, owner-operator. This is the most recent Certificate of Insurance that we have on them. The one included with the copy of the contract we gave you was not the most recent.

If you have any questions, let me know.

Sincerely,

John M Howard
Member Service Director

JMH/jsh

Enclosure

ACORD. CERTIFICATE OF INSURANCE

CSR DG PERDUE1 — DATE (MM/DD/YY) 03/08/96

PRODUCER

Putnam Agency, Inc.
P. O. Box 991
Ashland KY 41105

Diann Waggoner
Phone No. 606-329-2200 Fax No.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

Long Ridge LLC
P O Box 508
Mt Sterling KY 40353

COMPANIES AFFORDING COVERAGE

COMPANY A: Bituminous Casualty

COMPANY B: Kentucky Employer's Mutual Ins

COMPANY C:

COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED, NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

CO LTR	TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
	GENERAL LIABILITY					
A	[X] COMMERCIAL GENERAL LIABILITY		03/11/96	03/11/97	GENERAL AGGREGATE	$ 2000000
	[ ] CLAIMS MADE [X] OCCUR				PRODUCTS - COMP/OP AGG	$ 1000000
	[ ] OWNER'S & CONTRACTOR'S PROT				PERSONAL & ADV INJURY	$ 1000000
	[ ]				EACH OCCURRENCE	$ 1000000
					FIRE DAMAGE (Any one fire)	$ 50000
					MED EXP (Any one person)	$ 5000
	AUTOMOBILE LIABILITY					
A	[X] ANY AUTO		03/11/96	03/11/97	COMBINED SINGLE LIMIT	$ 1000000
	[ ] ALL OWNED AUTOS				BODILY INJURY (Per person)	$
	[ ] SCHEDULED AUTOS					
	[X] HIRED AUTOS				BODILY INJURY (Per accident)	$
	[X] NON-OWNED AUTOS					
	[ ]				PROPERTY DAMAGE	$
	GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
	[ ] ANY AUTO				OTHER THAN AUTO ONLY:	
	[ ]				EACH ACCIDENT	$
					AGGREGATE	$
	EXCESS LIABILITY				EACH OCCURRENCE	$ 1000000
A	[X] UMBRELLA FORM		03/11/96	03/11/97	AGGREGATE	$ 1000000
	[ ] OTHER THAN UMBRELLA FORM					$
B	WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				[X] STATUTORY LIMITS	
	THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [X] INCL [ ] EXCL	App #711772	03/11/96	03/11/97	EACH ACCIDENT	$ 500000
					DISEASE - POLICY LIMIT	$ 500000
					DISEASE - EACH EMPLOYEE	$ 500000
	OTHER					

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

CERTIFICATE HOLDER

BIGSA-5

Big Sandy RECC
504 11th St
Paintsville KY 41240

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL MAIL 10 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Diann Waggoner Diann Waggoner

Application For Employment

We consider applicants for all positions without regard to race, color, religion, sex, national origin, age, marital or veteran status, the presence of a non-job-related medical condition or handicap, or any other legally protected status.

(PLEASE PRINT)

Position(s) Applied For	Date of Application
Line Man	

How Did You Learn About Us?

☐ Advertisement ☑ Friend ☐ Walk-In
☐ Employment Agency ☐ Relative ☐ Other _____

Last Name	First Name	Middle Name
Adams	James	Ellis

Address Number	Street	City	State	Zip Code
Rt. 1 Box 404		Salyersville	Ky	41465

Telephone Number(s)	Social Security Number
[redacted]	[redacted]

If you are under 18 years of age, can you provide required proof of your eligibility to work? ☒ Yes ☐ No

Have you ever filed an application with us before? ☐ Yes ☑ No

If Yes, give date _____

Have you ever been employed with us before? ☐ Yes ☑ No

If Yes, give date _____

Are you currently employed? ☑ Yes ☐ No

May we contact your present employer? ☑ Yes ☐ No

Are you prevented from lawfully becoming employed in this country because of Visa or Immigration Status? ☐ Yes ☑ No
Proof of citizenship or immigration status will be required upon employment.

On what date would you be available for work? Anytime

Are you available to work: ☑ Full Time ☐ Part Time ☐ Shift Work ☐ Temporary

Are you currently on "lay-off" status and subject to recall? ☐ Yes ☑ No

Can you travel if a job requires it? ☑ Yes ☐ No

Have you been convicted of a felony within the last 7 years? ☐ Yes ☑ No
Conviction will not necessarily disqualify an applicant from employment.

If Yes, please explain _____

Education

	Elementary School					High School				Undergraduate College / University				Graduate / Professional			
School Name and Location	Clark Elem.					Prestonsburg H.S.				—				—			
Years Completed	4	5	6	7	(8)	(9)	10	11	12	1	2	3	4	1	2	3	4
Diploma / Degree																	
Describe Course of Study																	

Describe any specialized training, apprenticeship, skills and extra-curricular activities	
Describe any honors you have received	
State any additional information you feel may be helpful to us in considering your application	

Indicate any foreign languages you can speak, read and / or write			
	FLUENT	GOOD	FAIR
SPEAK			
READ			
WRITE			

List professional, trade, business or civic activities and offices held.

You may exclude memberships which would reveal sex, race, religion, national origin, age, ancestry, or handicap or other protected status:

References

Give name, address and telephone number of three references who are not related to you and are not previous employers.

1. _____

2. _____

3. _____

Have you ever had any job-related training in the United States military?

☐ Yes ☒ No

If Yes, please describe _____

Are you physically or otherwise unable to perform the duties of the job for which you are applying?

☐ Yes ☒ No

Employment Experience

Start with your present or last job. Include any job-related military service assignments and volunteer activities. You may exclude organizations which indicate race, color, religion, gender, national origin, handicap or other protected status.

1.	Employer: Brown & Cantrell Const. Co	Dates Employed From: 1985 To: 1987		Work Performed: Lineman
	Address: Prestonsburg Ky			
	Telephone Number(s):	Hourly Rate/Salary Starting:	Final:	
	Job Title: Lineman Supervisor: Hiall Brown			
	Reason for Leaving: Got a better Job			
2.	Employer:	Dates Employed From: To:		Work Performed:
	Address:			
	Telephone Number(s):	Hourly Rate/Salary Starting:	Final:	
	Job Title: Supervisor:			
	Reason for Leaving:			
3.	Employer:	Dates Employed From: To:		Work Performed:
	Address:			
	Telephone Number(s):	Hourly Rate/Salary Starting:	Final:	
	Job Title: Supervisor:			
	Reason for Leaving:			
4.	Employer:	Dates Employed From: To:		Work Performed:
	Address:			
	Telephone Number(s):	Hourly Rate/Salary Starting:	Final:	
	Job Title: Supervisor:			
	Reason for Leaving:			

If you need additional space, please continue on a separate sheet of paper.

Special Skills and Qualifications

Summarize special job-related skills and qualifications acquired from employment or other experience.

Applicant's Statement

I certify that answers given herein are true and complete to the best of my knowledge.

I authorize investigation of all statements contained in this application for employment as may be necessary in arriving at an employment decision.

This application for employment shall be considered active for a period of time not to exceed 45 days. Any applicant wishing to be considered for employment beyond this time period should inquire as to whether or not applications are being accepted at that time.

I hereby acknowledge that any employment relationship with this Company is of an *"at will"* nature, which means that the Employee may resign at any time and the Employer may discharge Employee at any time with or without cause. It is further understood this *"at will"* employment relationship may not be changed by any written document or by conduct unless such change is specifically acknowledged in writing by an authorized executive of the Company.

In the event of employment, I understand that false or misleading information given in my application or interview(s) may result in discharge. I understand, also, that I am required to abide by all rules and regulations of the employer.

James Adams — 11/6/96

Signature of Applicant — Date

FOR PERSONNEL DEPARTMENT USE ONLY

Arrange Interview ☐ Yes ☐ No

Remarks _____

_____ INTERVIEWER _____ DATE

Employed ☒ Yes ☐ No Date of Employment 11/6/96

Job Title app. technician Hourly Rate/ Salary 7.00/hr Department _____

By _____ NAME AND TITLE _____ DATE

NOTES _____

Applicable in Alaska

A person who willfully makes a false or misleading statement or representation for the purpose of obtaining or denying a benefit or payment is guilty of theft by deception.

Applicable in Arkansas

Any person or entity who willfully and knowingly makes any material false statement or representation for the purpose of obtaining any benefit or payment or for the purpose of defeating or wrongfully decreasing any claim for benefit or payment or obtaining or avoiding workers' compensation coverage or avoiding payment of the proper insurance premium (or who aids and abets for either said purpose), under this chapter shall be guilty of a Class D. felony.

Applicable in California

Any person who makes or causes to be made any knowingly false or fraudulent material statement or material representation for the purpose of obtaining or denying workers' compensation benefits or payment is guilty of a felony.

Applicable in Connecticut

This form must be completed in its entirety. Any person who intentionally misrepresents or intentionally fails to disclose any material fact related to a claimed injury may be guilty of a felony.

Applicable in Delaware and Oklahoma

Any person who knowingly and with intent to injure, defraud, or deceive any insurer, files a statement of claim containing any false, incomplete or misleading information is guilty of a felony. The lack of such a statement shall not constitute a defense against prosecution under this section. *Delaware Statutes Regulations: Del #C Section 913(B)

Applicable in Florida

Any person who, knowingly and with intent to injure, defraud or deceive any employer or employee, insurance company or self-insured program, files any statement of claim containing any false or misleading information is guilty of a felony of the third degree.

Applicable in Idaho

Any person who knowingly and with the intent to injure, defraud, or deceive any insurance company files a statement of claim containing any false, incomplete or misleading information is guilty of a felony.

Applicable in Indiana

A person who knowingly and with intent to defraud an insurer files a statement of claim containing any false, incomplete or misleading information commits a felony.

Applicable in Kentucky and New York

Any person who knowingly and with intent to defraud any insurance company or other person files a statement of claim containing any materially false information, or conceals for the purpose of misleading, information concerning any fact material thereto, commits a fraudulent insurance act, which is a crime. In New York, such person shall also be subject to a civil penalty not to exceed five thousand dollars and the stated value of the claim for each such violation.

Applicable in Michigan

Any person who knowingly and with intent to injure or defraud any insurer submits a claim containing any false, incomplete or misleading information shall, upon conviction, be subject to imprisonment for up to one year for a misdemeanor conviction or up to ten years for a felony conviction and payment of a fine of up to $5,000.00.

Applicable in Minnesota

A person who files a claim with intent to defraud or helps commit a fraud against an insurer is guilty of a crime.

Applicable in Nevada

Pursuant to NRS 686A.291, any person who knowingly and willfully files a statement of claim that contains any false, incomplete or misleading information concerning a material fact is guilty of a felony.

Applicable in New Hampshire

Any person who, with purpose to injure, defraud or deceive any insurance company, files a statement of claim containing any false, incomplete or misleading information is subject to prosecution and punishment for insurance fraud, as provided in RSA 638:20.

Applicable in New Jersey

Any person who knowingly files a statement of claim containing any false or misleading information is subject to criminal and civil penalties.

Applicable in Ohio

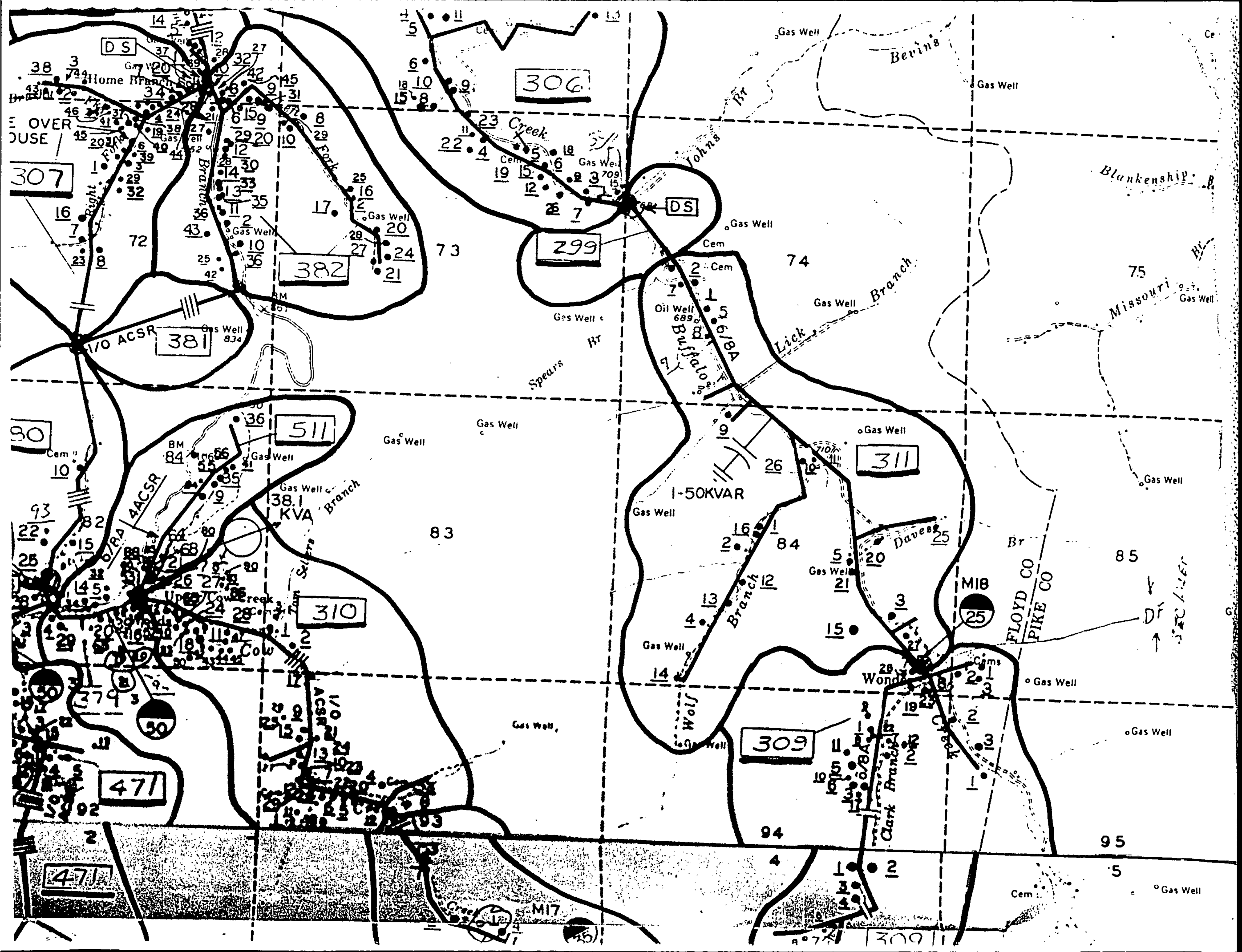
Any person who, with intent to defraud or knowing that he is facilitating a fraud against an insurer, submits an application or files a claim containing a false or deceptive statement is guilty of insurance fraud.

Applicable in Pennsylvania

Any person who knowingly and with intent to injure or defraud any insurer files a claim containing any false, incomplete or misleading information shall, upon conviction, be subject to imprisonment for up to seven years or payment of a fine of up to $50,000.

Applicable in Utah

Any person who knowingly presents false or fraudulent underwriting information, files or causes to be filed a false or fraudulent claim for



DS
Home Branch
OVER
OUSE
307
Right Fork
Branch
Fork
382
72
73
306
Creek
Johns Br
Bevins
Gas Well
Blankenship Br
DS
299
Cem
74
75
Missouri Br
Lick Branch
Buffalo
6/8A
Oil Well
1/0 ACSR
381
Spears Br
511
4ACSR
6/8A
BM
Gas Well
38.1 KVA
Branch
83
1-50KVAR
311
26
84
Daves Br
85
M18
25
FLOYD CO
PIKE CO
Upper Cow Creek
Cow
310
1/0 ACSR
Branch
Wolf
Wonda
309
Clark Branch
Creek
471
379
50
94
95
93
92
Creek
M17
309

safety manual

for an electric utility

prepared by: Bureau of Safety
MIDDLE WEST SERVICE COMPANY
in conjunction with: Safety Committee
AMERICAN PUBLIC POWER ASSOCIATION

American Public Power Association

2301 M Street, N.W.
Washington, D.C. 20037-1484
202/467-2900

FOREWORD

An accident is defined as an unplanned event which frequently results in injury or damage and interrupts the completion of an activity, and is invariably preceded by an unsafe act(s) and/or unsafe condition(s). Accidents are an unnecessary waste of both our human and economic resources. Though many accidents are due to unsafe conditions and can be minimized with periodic inspections and preventive maintenance, the majority of accidents are due to unsafe acts and human failure. It is the responsibility of every employee to comply with safety and health standards and all rules which are applicable to his own actions and conduct.

This manual has been prepared for the guidance and safety of all employees. Strict observance of safety rules is necessary to prevent accidents. Lack of enforcement or repeated and flagrant violation of rules can only result in accidents with their accompanying injury and economic loss.

In the preparation of this manual, it is recognized that local conditions and regulations may cause some minor conflicts. In the event of such conflict, you are advised to adhere to the local regulations governing the situation in question.

This manual shall be observed in all situations to which it applies, without respect to where statements may appear.

CONTENTS

DEFINITIONS

Alive or live: Electrically connected to a source of potential difference, or electrically charged so as to have a potential significantly different from that of the earth in the vicinity. The term "live" is sometimes used in place of the term "current-carrying", where the intent is clear, to avoid repetition of the longer term.

ANSI: American National Standards Institute.

Approved: The term "approved" when used in connection with methods, tools or equipment, refers to the methods, tools or equipment approved by the Company through committee, departmental action or in a Safety Rule.

Authorized person: One who has the authority to perform specific duties under certain conditions or who is carrying out orders from responsible authority.

Barrier: A physical obstruction which is intended to prevent contact with energized lines or equipment.

Barricade: A physical obstruction such as tapes, screens, or cones intended to warn and limit access to a hazardous area.

Bond: An electrical connection from one conductive element to another for the purpose of minimizing potential

differences, or providing suitable conductivity for fault current or for reducing leakage current and electrolytic action.

Cable: A conductor with insulation, or a stranded conductor with or without insulation and other coverings (single-conductor cable) or a combination of conductors insulated from one another (multiple-conductor cable).

Circuit: A conductor or system of conductors through which an electric current is intended to flow.

Clear Hot Stick Distance: The minimum distance for the use of live-line tools held by linemen when performing live-line work.

Clearance: (a) For working: Certification by the proper authority that a specified line or piece of equipment is de-energized, that the proper precautionary measures have been taken, and that the line or equipment is being turned over to the qualified workmen. (b) From hazard: Adequate separation or protection by the use of devices to prevent accidental contact by persons or objects on approach to a point of danger. (c) From hot line: An assurance that the automatic reclosing features of a circuit have been made inoperative.

Company: The employer. The entity having jurisdiction and control over the operation of the utility.

Communication Lines: The conductors and their supporting or containing structures that are used for public or private signal or communication service.

Note: *Telephone, telegraph, railroad signal, data, clock, fire, police-alarm, community television antenna, and other similar systems are included.*

Conductor: A material, usually in the form of a wire, cable, or bus bar suitable for carrying an electric current.

Confined Space: A place such as a manhole, underground vault, condenser generator, tank, tunnel or any other space which is entered through a manhole opening or other restricted opening or which may become difficult to leave.

Dead: When the word "dead" is used in connection with wires or equipment that are a part of the electrical system, it shall be taken to mean disconnected from any electrical source of supply and properly tagged, shorted and grounded.

Designated Person: See Authorized person.

Disciplinary Action: Administrative action taken by the employer against the employee. May vary from verbal reprimand to dismissal.

Disconnected: Means disconnected from any electrical source of supply.

Effectively grounded: Intentionally connected to earth through a ground connection or connections of sufficiently low impedance and having sufficient current-carrying capacity to prevent the buildup of voltages which may result in undue hazard to connected equipment or to persons.

Emergency: An emergency occurs when an unusual condition exists that endangers life and/or property.

Employee: In the broad sense, any person employed by or representing the Company. In general usage, employee means a person employed by the Company and below the level of supervisor or foreman.

Employer: See Company.

Enclosed: Surrounded by a case, cage, or fence, which will protect the contained equipment and prevent accidental contact of a person with live parts.

Energized (also alive or live): Electrically connected to a source of potential difference or electrically charged so as to have a potential different from that of the earth or different from that of adjacent conductors or equipment.

Excavations: The word "excavations" shall be used to indicate any opening made in the ground, street or sidewalk in connection with Company work, such as holes, trenches, ditches or tunnels.

Exposed: (a) Exposed circuits or lines means in such a position that in case of failure of supports or insulation, contact with another circuit or line may result. (b) Exposed equipment means an object or device that can be inadvertently touched or approached nearer than a safe distance by any person. It is applied to objects not suitably guarded or situated.

Flares: The word "flares" shall be used to indicate flares, torches, fuses, red lanterns, reflectors or any other equipment that is adaptable for the purpose intended.

Foreman or Supervisor is used in a general sense to indicate any person, regardless of classification, who is

directly in charge of a specific job or specific jobs. (Depending upon local classification, this may be a "lead man," working foreman, foreman, general foreman, supervisor or superintendent).

Governmental: Any type of political agency having control over a certain activity. Included are federal, state, county, township, city, etc.

Ground: (Noun). The term means a conductive connection whether intentional or accidental, by which an electric circuit or equipment is connected to reference ground.

Ground: (Reference). The term means that conductive body, usually earth, to which an electric potential is referenced.

Ground: (Verb). The term means the connecting or establishment of a connection, whether by intention or accident of an electric circuit or equipment to reference ground.

Grounding Electrode (ground electrode): A conductor embedded in the earth, used for maintaining ground potential on conductors connected to it, and for dissipating into the earth current conducted to it.

Grounded System: A system of conductors in which at least one conductor or point (usually the middle wire or neutral point of transformer or generator windings) is intentionally grounded, either solidly or through a current-limiting device (not a current-interrupting device).

Guarded: Protected by personnel, covered, fenced, or enclosed by means of suitable casings, barrier rails, screens, mats, platforms, or other suitable devices in accordance with standard barricading techniques designed to prevent dangerous approach or contact by persons or objects. (Note: Wires, which, are insulated but not otherwise protected, are not considered as guarded.).

Hold Cards: Also called "Hold Tags". A card or tag-type device, usually having a predominant color of white or red which warns against or which cautions against the operation of a particular switch, device, circuit, tool, machine, etc. The use of such tags must be respected; equipment or items so tagged must not be activated or used without full and proper authority from a responsible person.

Hotline tools and ropes: Those tools and ropes which are especially designed for work on energized high voltage lines and equipment. Insulated aerial equipment especially designed for work on energized high voltage lines and equipment shall be considered "hot line".

Insulated: Separated from other conducting surfaces by a dielectric substance or air space, permanently offering a high resistance to the passage of current and to disruptive discharge through the substance or space.

Isolated: An object that is not readily accessible to persons unless special means of access are used.

Load dispatcher—power dispatcher—system operator: Person designated by the employer as having authority over switching and clearances of high voltage lines and station equipment.

Manhole: A subsurface enclosure which personnel may enter and which is used for the purpose of installing, operating, and maintaining equipment and/or cable.

Manhole Opening: An opening through which persons may enter into a confined or restricted space.

Pad mount: Transformer or equipment in a surface mounted enclosure and normally worked from ground level.

PCB (polychlorinated biphenyls): a non-conductive and non-combustible liquid used in some transformers and capacitors. It has several trade names—Pyranol, Askeral and Inerteen, etc.

Primary compartment: A compartment containing voltages above 600 volts.

Primary voltage: Any electrical circuit which normally operates at more than 600 volts.

Public: Any individual not an employee or representative of the Company.

Qualified person: A person who is familiar with the construction or operation of the lines and/or equipment that concern his position and who is fully aware of the hazards involved; or one who has passed a journeyman's examination for the particular branch of the electrical trade with which he may be connected. A person who has successfully demonstrated his ability and is recognized by management as qualified to perform the duties to which he has been assigned.

Reduced visibility: Times when normal visibility is reduced because of adverse weather conditions such as fog, heavy rainfall, snow, dawn or dusk.

Road: The paved or unpaved surface of a roadway upon which vehicles are intended to travel. When the road is paved, the entire surface is thus included.

Roadway: Includes the road and the areas immediately adjacent thereto, such as the shoulder of the road, parking strip, etc. This area normally extends approximately 15 feet from the road.

Safety Rule: A positive rule requiring compliance by all employees concerned. Deviation from safety rules is not permitted and is subject to disciplinary action.

Secondary compartment: A compartment containing voltages below 600 volts.

Secondary voltage: Any electrical circuit that normally operates at less than 600 volts.

Shall: When the word "shall" appears in the wording of a rule, the rule is to be obeyed as written.

Should: When the word "should" appears in the wording of a rule, the rule is to be obeyed as written when it is reasonable or practical to do so.

Switch: A device for opening and closing or changing the connection of a circuit. In these rules, a switch is understood to be manually operable, unless otherwise stated.

Tailboard Safety Talk: A short informal discussion of the work to be accomplished and the safety measures to be incorporated. Normally conducted by the foreman, these are sometimes referred to as "Tailgate Talks", "Tool Box Talks", or "Five Minute Safety Talks".

Underground Residential Distribution (URD): A general term which covers the necessary facilities to furnish underground service-generally to residential and "commercial type" customers-usually through directly buried cable.

Unsafe conditions: This is used to indicate dangerous conditions, hazardous conditions, defective conditions, or unusual conditions which could be conducive to accidents.

Vault: An enclosure above or below ground which personnel may enter and is used for the purpose of installing, operating, and/or maintaining equipment and/or cable.

Voltage: The effective (RMS) potential difference between any two conductors or between a conductor and ground. The voltage specified in this Manual shall mean the maximum effective voltage to which the personnel or protective equipment may be subjected.

Low voltage includes voltages up to 600 volts.

High voltage shall mean voltages in excess of 600 volts.

Voltage of an effectively grounded circuit. The term means the voltage betwen any conductor and ground, unless otherwise indicated.

Warning signs: For the purpose of these rules, a warning sign is any sign or similar means of employee or public notification alerting an employee to an actual or possible hazard. Included are "Danger signs," "Caution" signs, traffic protection signs, instructional signs and informational signs.

INTRODUCTION

Accident Prevention

No phase of operations is of greater importance than accident prevention. The degree of safety and the results accomplished are directly proportional to the effort expended to control the conditions, practices and human actions which are responsible for accidents.

Purpose

The purpose of this Manual is to assist in the elimination or prevention of accidents.

Effectiveness

a) This Manual shall be effective as of the date of issuance; compliance by every employee is mandatory and is considered a requirement for employment.
b) Existing governmental codes, statutes, rules and orders shall be considered a part of this Manual and where any conflict exists between the two, those of governmental status shall prevail.

Emergency Conditions

In case of emergency involving hazard to life, a supervisor, foreman or employee in charge of any work may modify or suspend such portion of this Manual as may be considered temporarily necessary to permit proper handling of the specific emergency. In any such case, the person so acting shall be fully accountable for the reasonableness of his actions.

Occupational Safety and Health Requirements

The company is responsible to have its employees comply with all aspects of Occupational Safety and Health rules (or as modified by the State) and may be subject to severe penalties for violation of these requirements by any employee. As stated in the Occupational and Safety and Health Act, "Each employee shall comply with occupational safety and health standards and all rules, regulations, and orders issued pursuant to this Act which are applicable to his own actions and conduct."

Those employees who do not abide by the safety rules of this Manual or other company safety requirements shall be subject to disciplinary action which may include dismissal.

Responsibility of Employees

Employees share with the employer the responsibility for safety. Each employee is responsible for his own safety, the safety of his fellow workmen and the general public. Employees shall become familiar with and use all the protective devices which are provided for their protection.

Employees shall report all unsafe equipment, unsafe tools and hazardous conditions which come to their attention.

Knowledge of Safety Rules

Every employee shall become thoroughly familiar with the contents of this Manual as they apply to his work activities.

Conditions Not Covered

Although each employee is primarily responsible for his own safety, in all instances where conditions are not covered by this Manual, or the job is not completely understood by him, the employee shall obtain specific instructions from his supervisor before proceeding with the work.

Qualifications For Duty

Any supervisor or foreman having reasonable grounds to suspect that an employee under his jurisdiction is either mentally or physically unfit for the work assigned, shall prohibit such employee from working until satisfactory medical or other evidence indicating his fitness is secured.

Care In Performance Of Duties

Each employee shall use reasonable care in the performance of his duties and act in such a manner as to assure at all times maximum safety to himself, his fellow employees and the public.

Section 1 **GENERAL RULES**

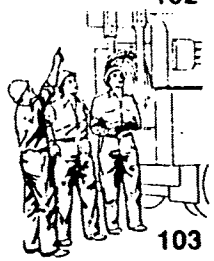
101 Application

a) Every employee shall carefully study (not merely read) those safety rules applicable to his duties. Compliance with these safety rules is mandatory and is considered a requirement for employment.

b) If an employee is called upon to perform work which he considers hazardous and not properly protected, he shall bring the matter to the attention of his foreman before starting his work. If questions arise, interpretation rests finally with the supervisor.

c) These rules represent minimum requirements and are only intended to cover average conditions. Employees shall use good judgment in dealing with conditions not covered in these rules

102 Employee's Responsibility For Safety



a) Before beginning a job, the employee shall satisfy himself that he can perform the task without injury. If he is in doubt as to his ability to perform the work, he shall call this to the attention of his foreman.

b) Before starting a job, each employee shall thoroughly understand the work to be done, his part in the work and the safety rules which apply.

103 Reporting Employee Injuries

a) Injuries, no matter how slight, shall be reported to the person in charge as soon as practical.

b) All minor injuries shall be properly treated and a report made to the employee's supervisor.

c) When the services of a physician are necessary, a physician designated by the Company should be used whenever possible. Such injuries shall be reported to management immediately.

d) In case of serious or fatal accidents to employees, appropriate action shall be taken promptly. The accident shall be reported immediately to the department head or manager.

104 Reporting Company Vehicle Accidents

a) The driver shall report accurately and immediately every accident to a vehicle in his possession. Additional reports shall be made to the police or state authority as required.

b) The driver shall not discuss or argue the causes or results of an accident with other parties but shall secure all pertinent facts and information. He shall answer questions when asked by proper authority but under no circumstances shall he admit fault or negligence or sign any statement for anyone except proper representatives of the Company.

c) Should the other driver demand immediate action, he shall be referred to the employee's supervisor.

d) The driver, when involved in an accident, shall stop and give his name and address, and the employer's name and address. He shall also secure the name and address of others involved in the accident and of witnesses to the accident (this is very important). The driver shall also note position of vehicle after the collision in reference to edge of road, sidewalk line, center of intersection, etc.

e) If any person is injured as the result of a vehicle accident, employees shall see that necessary emergency aid is provided.

105 Reporting Hazardous Conditions

a) When an employee observes a hazardous condition that may cause injury or property damage or interfere with services, regardless of the department in which the condition exists, he shall report it promptly to a proper authority and when necessary guard it.

b) An employee who receives a report of any hazardous emergency condition shall obtain the name of the informant, the exact location and the nature of the trouble.

He shall immediately refer this information to the person having responsibility for such matters.

106 Taking Chances

a) Before commencing any work that may be hazardous, care shall be taken to establish a safe procedure. Where more than one employee is engaged in the same job, all employees concerned shall understand the procedures to be followed. (Tailboard conference.) Under no circumstances shall safety be sacrificed for speed.

b) Employees shall always try to place themselves in a safe and secure position.

107 Practical Jokes

Employees shall not engage in practical jokes or "horseplay".

108 Guards

a) No guard shall be removed from any machine or piece of equipment except to perform required maintenance.

b) Guards removed to perform maintenance operations shall be replaced immediately and the machine shall not be operated while the guards are removed (except for maintenance certification).

109 Hold Cards and Tags (Refer to Company Dispatching Policies)

a) Before starting work on any circuit, machine, belting, shafting or other apparatus which is out of service, employees shall assure themselves that a standard Hold Card, tag, or lockout device is properly attached to the apparatus control.

b) No switch, governor, valve, throttle or other device used to put a circuit or equipment into service shall be operated while a Hold Card or similar device is attached to it.

c) A Hold Card, or similar device, that has been placed for the protection of workers shall be removed only by authorization of the person in whose name it was placed and then only after the work has been completed and all workmen and tools are in the clear. (Follow Company Operating Instructions pertaining to the equipment involved.)

d) Each man in charge of work on any equipment shall have his Hold Card or similar device secured to the apparatus control.

Note: *See Rule 508 covering Dispatching and Clearances and Rule Nos. 801, 802, and 803 covering work on boilers.*

110 Warnings

Warning signs shall be heeded. Persons seen in a dangerous situation shall be warned without being startled. Employees not required to be near potentially dangerous places shall keep away from them.

111 Intoxicating Beverages and Drugs

Use of intoxicating beverages or drugs on utility premises or on the job or during working hours is prohibited and shall be sufficient cause for disciplinary action. Any employee taking drugs prescribed by a physician or over-the-counter drugs which could impair his or her assigned work shall report this fact to his or her supervisor.

112 Housekeeping

Work locations, vehicles and both the inside and outside of buildings shall be kept clean and orderly at all times.

a) Combustible materials, such as oil-soaked rags, waste and shavings shall be kept in approved metal containers with metal lids. Containers shall be emptied as soon as practicable.

b) Both clean rags and used rags shall be kept in metal or metal lined bins having metal covers.

c) Flammable liquids shall be used only for their designed purposes. Gasoline, benzene, naphtha, lacquer thinner, etc., shall not be used for cleaning purposes or for starting or kindling fires.

d) All solvents should be kept in approved, properly labeled containers. Gasoline, benzene, naphtha, lacquer thinner, and other solvents of this class shall be handled and dispensed only in U.L. approved, properly labeled (yellow letters) red safety cans.

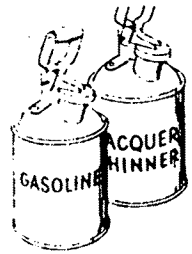
e) Permanent floors and platforms shall be kept free of dangerous projections or obstructions and shall be maintained reasonably free from oil grease, or water. Where the type of operation produces slippery conditions, mats, grates, cleats or other methods shall be used to reduce the hazard from slipping.

f) Stairways, aisles, permanent roadways, walkways and material storage areas in yards shall be kept reasonably clear and free from obstructions, depressions and debris.

g) Materials and supplies shall be stored in an orderly manner so as to prevent their falling or spreading and to eliminate tripping and stumbling hazards.

h) No clothing shall be allowed to hang on walls, behind doors or in the space back of switchboards. No matches shall be left in clothes placed in lockers. Rubbish and unused clothing shall not be allowed to accumulate in lockers.

i) Paper and other combustible materials shall not be allowed to accumulate, and weeds or other range vegetation shall not be permitted to grow in or around the neighborhood of substations, pole yards, buildings, oil tanks or other structures.



j) In any building, except one provided for their storage, flammable liquids such as gasoline, benzene, naphtha, lacquer thinner, etc. shall be limited to five gallons, in U.L. approved, properly labeled containers.

k) Rule 111-j. does not apply to kerosene and cleaning agents of the "Stoddard" solvent class; however, not more than one gallon of such liquids shall be kept in any open container. The container shall be provided with a proper cover and be kept securely covered except when in actual use.

l) When pouring or pumping gasoline or other flammable liquids from one container to another, metallic contact shall be maintained between the pouring and receiving containers. Transferring of flammable liquids from one container to another shall be accomplished only in properly ventilated spaces free from ignition sources.

m) Strict adherence shall be paid to "No Smoking" and "Stop Your Motor" signs at fuel dispensing locations.

113 Smoking

Smoking or open flames shall not be permitted in areas where dangerous gases might be present; for example, oil rooms, hydrogen areas, acetylene storage, or similar areas. Neither shall smoking be permitted in storerooms, battery rooms, flammable liquid storage and use locations, or in other areas where quantities of combustible materials are kept. Absence of "No Smoking" signs shall not excuse smoking in dangerous places.

114 Fire Protection

a) Fire protection equipment shall be properly located at all times. Except for actual use, employees shall not move or remove such equipment without proper authority.

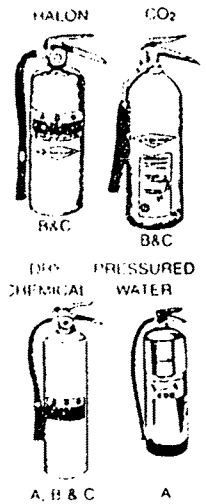
b) Except for wheeled type equipment, all fire extinguishers shall be mounted. (Recommended height is 42 inches or less).

c) Employees shall be familiar with both the location and the operation of all fire protective equipment in the vicinity of their work area.

d) All employees shall know the classes of fire, their burning characteristics and the proper extinguishing agent to be used.

(Class "A" fires involve normal combustibles such as wood and paper. Extinguishing agents include water, soda-acid and multipurpose dry chemical).

(Class "B" fires involve oils and flammable liquids. Extinguishing agents include CO_2 and dry chemical).



(Class "C" fires involve electrical equipment. Extinguishing agents include CO_2 and dry chemical).

(Halon 1301 (Freon) and Halon 1211 are gaseous extinguishing agents suitable for combating both Class "B" and Class "C" fires, especially at indoor locations. Both agents are slightly toxic in low concentrations (less than 5 percent) and will cause unconsciousness in a short period of time when the concentration is above 15 percent. When the extinguishing agent is released, precautionary measures similar to those for toxic, confined spaces should be employed.)

e) Employees shall not enter confined spaces after using CO_2 extinguishers until the area has been thoroughly ventilated.

f) Carbon tetrachloride fire extinguishers shall not be used; carbon tetrachloride is extremely toxic.

115 Clothing

a) All employees shall always wear clothing and shoes which are suitable for the particular type of work which they are doing.

b) A shirt or jacket (non-synthetic material) with full-length sleeves rolled down and buttoned and an electrical safety hat shall be worn when working on or near live parts and while on poles or structures.

c) Loose, dangling watch chains, key chains or unnecessary metal of any kind shall not be worn when working on or near energized parts.

d) Each employee shall wear gloves suitable for the work. Rubber glove protectors shall not be used as work gloves.

e) Finger rings shall not be worn while climbing on or off structures or vehicles or while performing any task where the ring might be caught under or snagged by a projecting item. Rings and wrist watches with metal case and watch bands shall not be worn while working on or near energized equipment or lines.

116 Eye Protection

Appropriate and approved eye protection (See chart on page 132) shall be worn when an employee is engaged in the following work activities:

a) Drilling or chipping stone, brick, concrete, paint, pipe coatings or metal.

b) Power grinding, buffing or wire brushing.

c) Flame welding, cutting or burning. (Approved colored lenses shall be used).

d) Hand drilling or sawing of overhead objects.

e) Use of powered tools such as drills, saws, sanders, etc.

f) Dust or flying particles (compressed air used for cleaning purposes must be less than 30 p.s.i. and then effective chip guarding and personal protection must be used).

g) Gunniting, pouring hot lead, hot compounds or the use of other hot or injurious substances.

h) Handling acids, caustics, chlorines, ammonia or other similar liquids or gases except when approved complete head coverings are worn. (Chemical goggles are necessary).

i) Brush chippers.

j) Thermite (cadweld) type welders.

k) Flying particles caused by other workmen, if employee is within the range of such particles. (A suitable screen around the work may be used instead).

l) Any other danger of injury to the eyes, or at the direction of a foreman or supervisor.

m) Any time there is a possibility of electrical flash safety glasses shall be worn.

n) While using powder-actuated tools.

117 Supplemental Breathing Equipment

a) Approved breathing apparatus shall be used when:

1) Entering or working in any confined space or in any environment where an adequate supply of fresh air cannot be assured.
2) Sandblasting.
3) Exposed to any environmental condition which would otherwise be unhealthy.

b) An employee shall not use supplemental breathing equipment unless he has been trained in its use.

118 Life Jackets, Life Lines and Similar Equipment

a) When working where there is a danger of drowning, employees shall wear an approved personal flotation device or be protected by a safety belt and lanyard or by a safety net.

b) While working in limited exit areas where there is a likelihood of fire, escaping gas, toxic fumes, or deficiency of oxygen (as inside tanks or tunnels), an employee shall wear an approved belt or harness with life line attached. Employees shall not enter such a confined area unless a second person is stationed outside the exit and is prepared to render assistance.

119 Head Protection

a) Approved safety head gear shall be worn by all employees when in areas where falling objects, electrical contact, or other hazards may cause a head injury.

b) Safety head gear or head band assembly shall not be defaced or altered in any manner without approval.

c) Approved head shields or hoods shall be worn when welding with hydrogen, heliarc or electric arc.

120 Wearing Apparel

Each employee shall wear gloves and other clothing suitable for work performed. Rubber glove protectors shall not be used as work gloves.

Appropriate footwear required for special work shall be worn as directed by employee in charge. It is recommended that all employees wear appropriate footwear for assigned jobs (tennis shoes are not approved) that will insure minimum protection.

(Other protective devices are to be used in specific types of work to provide adequate personal protection.)

121 Hand Tools

a) All tools, regardless of ownership, shall be of an approved type and maintained in good condition. (Tools are subject to inspection at any time. A foreman has the authority and responsibility to condemn unserviceable tools, regardless of ownership).

b) Defective tools shall be tagged to prevent their use or they shall be removed from the job site.

c) Employees shall always use the proper tool for the job performed. Makeshift and substitute tools shall only be used with proper authorization and under supervision.

d) Hammers with metal handles, screwdrivers or knives with metal continuing through the handle and metallic measuring tapes shall not be used on or near energized electrical circuits or equipment.

e) Tools shall not be thrown from place to place or from person to person; tools that must be raised or lowered from one elevation to another shall be placed in tool buckets or firmly attached to hand lines.

f) Tools shall never be placed unsecured on elevated places.

g) As impact tools such as chisels, punches, drift pins, etc. become mushroomed or cracked, they shall be dressed, repaired or replaced before further use.

h) Chisels, drills, punches, ground rods and pipes shall be held with suitable holders or tongs (not with the hands) while being struck by another employee.

i) Shims shall not be used to make a wrench fit.

j) Wrenches with sprung or damaged jaws shall not be used.

k) Pipe shall not be used to extend a wrench handle for added leverage unless the wrench was designed for such use.

l) Tools shall be used only for the purposes for which they have been approved.

m) Tools with sharp edges shall be stored and handled so that they will not cause injury or damage. They shall not be carried in pockets.

n) Wooden handles that are loose, cracked or splintered shall be replaced. The handle shall not be taped or lashed with wire.

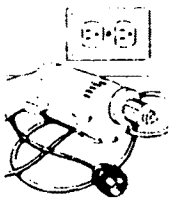
o) All cutting tools such as saws, wood chisels, drawknives, or axes, shall be kept in suitable guards or in special compartments.

p) Tools shall not be left lying around where they may cause a person to trip or stumble.

q) When working on or above open grating, a canvas or other suitable covering shall be used to cover the grating to prevent tools or parts from dropping to a lower level where others are present, or the danger area shall be barricaded or guarded.

r) The insulation on hand tools shall not be depended upon to protect users from shock.

122 Portable Electric Tools



a) The non-current carrying metal parts of portable electric tools such as drills, saws and grinders shall be effectively grounded when connected to a power source unless:

1) The tool is an approved double-insulated type, or

2) The tool is connected to the power supply by means of an isolating transformer or other isolated power supply, such as a 24V DC system.

b) All powered tools shall be examined prior to use to insure general serviceability and the presence of all applicable safety devices. The electric cord and electric components shall be given an especially thorough examination.

c) Powered tools shall be used only within their capability and shall be operated in accordance with the instructions of the manufacturer.

d) All tools shall be kept in good repair and shall be disconnected from the power source while repairs are being made.

e) Electrical tools shall not be used where there is a hazard of flammable vapors, gases, or dusts.

f) Tools connected to a central power supply (not isolated) and are not double- insulated, shall be protected by a Ground Fault Interruptor (GFI) or by an "assured grounding system."

123 Pneumatic Tools

a) Compressed air and compressed air tools shall be used with caution.

b) Pneumatic tools shall never be pointed at another person.

c) Pneumatic power tools shall be secured to the hose or whip by some positive means to prevent the tool from becoming accidentally disconnected.

d) Safety clips or retainers shall be securely installed and maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

e) Compressed air shall not be used for cleaning purposes except where reduced to less than 30 p.s.i. and then only with effective chip guarding and personal protective equipment.

f) Compressed air shall not be used to blow dust or dirt from clothing.

g) The manufacturer's safe operating pressure for hoses, pipes, valves, filters, and other fittings shall not be exceeded.

h) The use of hoses for hoisting or lowering tools shall not be permitted.

i) All hoses exceeding ½-inch inside diameter shall have a safety device at the source of supply or branch line to reduce pressure in case of hose failure or disengagement of a connection.

j) Before making adjustments or changing air-tools, unless equipped with quick-change connectors, the air shall be shut off at the air supply valve ahead of the hose. The hose shall be bled at the tool before breaking the connection.

k) Eye protection, foot protection and other protective devices shall be worn when their use could reduce the possibility of injury.

l) Pneumatic tools shall be operated only by competent persons who have been trained in their use.

m) The use of metal-reinforced hose shall be avoided near energized equipment. When this type of hose must be used, proper clearances shall be maintained.

124 Power Lawn Mowers, Edgers, Etc.

a) Employees shall insure that all applicable guards are in place prior to using power lawn mowers.

b) All power lawn mowers shall be equipped with adequate guards, which shall remain in place while mower is in use.

c) Prior to making adjustments, inspections or repairs, the employee shall turn off the mower and permit it to come to a complete stop.

d) When operating a power mower, the operator shall:

1) Remove any rocks, pieces of wire or other foreign objects from the area to be mowed.

2) Avoid placing the body in front of the discharge opening.

3) When mowing a slope or incline, mow across the face of the slope.

4) Wear proper protective equipment to include as a minimum safety glasses or safety goggles. (Safety footwear should be worn).

125 Powder Actuated Tools

a) Only those employees who are qualified by training in their operation shall use these tools.

b) Explosive charges shall be carried and transported in approved containers.

c) Operators and assistants using these tools shall be safeguarded by means of eye protection (safety eye goggles and/or face shields) and a safety hat.

d) Tools shall be maintained in good condition and serviced regularly by qualified persons. The material upon which these tools is to be used shall be examined before work is started for the purpose of determining its suitability and eliminating the possibility of hazard to the operator and others.

e) Prior to use, the operator shall insure that the protective sheild is properly attached to the tool.

f) Prior to use, the operator shall inspect the tool to determine it is clean, moving parts operate freely and the barrel is free from obstructions.

g) A defective tool shall be tagged and immediately removed from service.

h) Powder actuated tools shall not be used in an explosive or flammable atmosphere.

i) Tools shall not be loaded until just prior to the intended firing.

j) Only cartridges with an explosive charge adequate for the job and with proper penetration shall be used.

k) Tools and cartridges shall never be left unattended.

l) Tools shall never be pointed at any person.

m) In case of a misfire, the operator shall hold the tool in place for 30 seconds. He shall then try to operate the tool a second time and then wait another 30 seconds. Misfired cartridges shall be disposed of properly. (Place in metal container and return to supervisor.)

126 Safe Supports and Scaffolds

a) No employee, or any material or equipment, shall be supported or permitted to be supported on any portion of a tree, pole structure, scaffold, ladder, walkway, or other elevated structure, crane or derrick, etc., without it first being determined that such support is adequately strong and properly secured in place.

b) Employees shall check all scaffolding prior to use to insure it is of sufficient strength and rigidity to safely support the weight of persons and material to which it will be subjected.

c) Employees shall not use a scaffold from 4 to 10 feet in height having a minimum horizontal dimension of less than 45 inches unless proper guardrails are present to provide employee protection.

d) Employees shall not use a scaffold over 10 feet in height unless there is present a standard guardrail, with midrail and toeboard, to provide adequate employee protection.

e) Scaffold planks shall extend over their end supports by not less than 6 inches (unless cleated) nor more than 12 inches.

f) Scaffolds shall not be moved without first removing all loose tools, materials and equipment resting on the scaffold deck.

g) All scaffolds shall rest on a suitable footing and shall stand level. Movable scaffolds shall have the casters or wheels locked to prevent movement.

127 Ladders—General

a) Wooden ladders shall not be painted so as to obscure a defect in the wood; only a clear, non-conductive finish shall be used.

b) All ladders shall be inspected frequently and regularly. Ladders with weakened, broken or missing steps, broken side rails, or other defects shall be tagged and removed from service.

c) Ladders and scaffolds shall be sufficiently strong for their intended use.

d) Portable metal ladders shall not be used in the vicinity of energized electrical circuits. (Exception: Such ladders may be used in specialized work, as high voltage substations, where non-conductive ladders might present a greater hazard. These ladders shall be properly marked).

e) Ladders shall not be placed in front of doors opening toward the ladder unless the door is open, locked or guarded.

f) When ascending or descending ladders, employees shall have both hands free and shall face the ladder.

g) Only one employee shall work from a ladder at one time (except for hook-type ladders). If two employees are required, a second ladder shall be used.

h) Only company-owned ladders shall be used by employees.

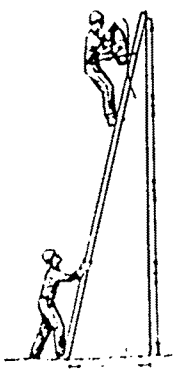
i) Ladders shall not be used as scaffold platforms.

j) Boxes, chairs, etc. shall not be used as ladders.

128 Straight Ladders

a) Portable straight ladders shall not be used without non-skid bases.

b) The ladder shall be placed so that the distance between the bottom of the ladder and the supporting point is approximately one-fourth of the ladder length between supports.



c) Straight ladders shall not be climbed beyond the third step from the top.

d) When working from a portable ladder, the ladder must be securely placed, held, tied, or otherwise made secure to prevent slipping or falling.

e) When dismounting from a ladder at an elevated position (as at a roof) the employee shall insure that the ladder side rails extend at least 3 feet above the dismount position, or that grab bars are present.

f) Employees shall belt off to a ladder whenever both hands must be used for the job or there exists a possibility of the employee falling from an elevated position.

g) Ladders shall not be spliced together to form a longer ladder.

h) A ladder shall not be placed against an unsafe support.

129 Step Ladders

a) The top step shall not be used, except for platform ladders.

b) Step ladder legs shall be fully spread and the spreading bars locked in place.

c) Step ladders shall not be used as straight ladders.

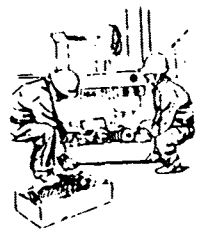
d) When an employee is working on a step ladder over 10 feet high (except a platform ladder), the ladder shall be held by another person.

130 Material Handling

a) An employee shall obtain assistance in lifting heavy objects or power equipment shall be used.

b) When two or more persons carry a heavy object that is to be lowered or dropped, there shall be a pre-arranged signal for releasing the load.

c) When two or more persons are carrying an object, each employee, if possible, should face the direction in which the object is being carried.



WRONG RIGHT

(The right way to lift is easiest and safest. Crouch or squat with the feet close to the object to be lifted; secure good footing; take a firm grip; bend the knees; keep the back vertical; and lift by bending at the knees and using the leg and thigh muscles. Employees shall not attempt to lift beyond their capacity. Caution shall be taken when lifting or pulling in an awkward position.)

131 Explosives

a) Explosives or explosive materials shall not be used except with specific permission from supervisors.

b) Only persons authorized by the company to do so, shall use explosives or explosive materials. These persons shall be qualified by training or experience in the handling and use of explosives and shall have a working knowledge of applicable State and local laws.

c) Explosives and blasting caps (detonators) shall not both be transported on the same vehicle. (Blasting caps may be transported on the same vehicle with unmixed "blasting agents" such as commercial packages of ammonium nitrate and oil. These materials should be transported in separate compartments to increase safety).

d) Explosives shall be carried and transported in approved containers.

e) Smoking and open flames shall not be permitted near any explosive materials. When transporting explosives, persons may not smoke in the cab or near the vehicle.

f) Vehicles transporting explosives or blasting caps shall be placarded on the front, rear and both sides with approved "EXPLOSIVES" signs.

g) Because electric blasting caps, when not shielded by a closed metal box, have been known to be detonated by the operation of two-way radios in vehicles as well as by regular radio transmitter stations, no vehicle equipped with radio transmitter shall be allowed within 100 feet of

blasting operations or exposed electric caps, while the transmitter is in operation.

h) When electric blasting caps are used, adequate signs warning against the use of mobile radio transmitters shall be prominently displayed.

i) The blaster, prior to connecting the charge or initiating the explosives shall insure the protection of both the public and company employees through the use of warning signs and/or personnel stationed around the perimeter of the danger area.

j) Electrical connections shall be made only after the hole has been charged and the area is clear.

k) Before the blast is fired, a loud signal shall be given by the blaster who shall have made certain the area is clear of persons and extraneous materials. Blasting signals shall be as follows:

1) Warning Signal—a 1 minute series of long blasts given 5 minutes prior to blast signal.

2) Blast Signal—a short signal of blasts 1 minute prior to the shot.

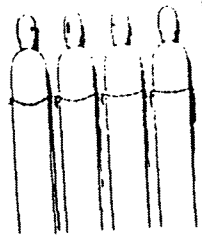
3) All Clear Signal—a prolonged blast following the inspection of blast area.

l) Misfires. Misfires shall not be inspected until a sufficient waiting period has elapsed. For non-electric blasting the minimum waiting period is 1 hour; for electric blasting, the minimum period is 15 minutes.

m) Blasting cap leg wires shall be kept short-circuited (shunted) until they are connected into the circuit for firing.

Note: In addition to the above, all local, state and federal laws covering the transportation and use of explosives shall be observed.

132 Compressed Gases



a) Care shall be exercised in handling all compressed gas cylinders. They shall not be dropped, jarred or exposed to temperature extremes.

b) Cylinders shall have the valve cap or valve protection device in place at all times, except when in actual use of connected to a welding set.

c) Cylinders shall not be rolled and shall not be lifted by the valve or valve cap; a suitable cradle or other device shall be used.

d) Cylinders shall have their contents properly identified.

e) Compressed gas cylinders, whether full or empty, shall be stored in an upright position and chained or otherwise secured so they cannot fall or be upset.

f) Oxygen cylinders in storage shall be separated from fuel-gas cylinders or combustible materials (especially oil or grease) a minimum distance of 20 feet or by a 5 foot high non-combustible barrier.

g) Cylinders shall not be placed where they might become part of an electric circuit or within five feet of an electrical outlet.

h) Hydrogen and fuel gas cylinders shall not be stored inside any operating building. Separate storage buildings or sheltered storage areas shall be used.

i) Employees shall never force connections which do not fit nor shall they tamper with the safety relief devices of cylinder valves.

j) Before the regulator is removed from a cylinder, the valve shall be closed and all pressure released from the regulator.

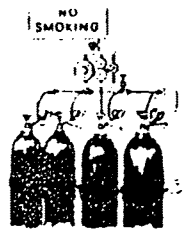
k) A leaking cylinder shall not be used. Such cylinders shall be taken outdoors away from sources of ignition. The supervisor shall be notified.

l) A flame shall never be used to detect gas leaks.

m) The recessed top of cylinders shall not be used as a place for tools.

n) No attempt shall be made to mix gases in a cylinder or to transfer gas from one cylinder to another.

o) A sign "Danger—No Smoking, Matches or Open Lights" or equivalent wording shall be conspicuously posted in rooms or at entrances to areas where fuel gas is used or stored.



p) Hydrogen. Special precautions shall be taken when using hydrogen to avoid the possibility of fire and explosion. "Danger—No Somking" signs shall be posted where hydrogen is used or stored.

q) Oxygen. Oil, grease or similar materials shall not be allowed to come in contact with any valve, fitting, regulator or gauge of oxygen cylinders.

r) Acetylene. Acetylene cylinders shall be properly secured and always be used, transported or stored in a vertical position. Cylinders shall be protected from sparks, flames, and contact with energized electrical equipment.

s) Chlorine. Also see page 108 Section 810.

1) Chlorine containers shall be stored and properly secured in a cool place protected from moisture.

2) Every precaution shall be taken to prevent accidental discharge of the gas, and protective equipment shall be readily available for use in an emergency.

3) Chlorine cylinders shall never be used or stored near flammable materials.

4) Should a chlorine leak develop, the cylinder shall be placed so that only "gas" escapes. (An ammonia swab may be used to detect leaks). Water should not be sprayed or poured on chlorine leaks.

5) Dry chlorine shall be stored in an isolated area as mixing it with anything but water could cause a fire or explosion.

133 Gas Welding and Cutting

a) Welding and cutting shall be performed only by experienced and properly trained persons. Before welding or cutting is started, the area shall be inspected for potential fire hazards.

b) When welding or cutting in elevated positions, precautions shall be taken to prevent sparks or hot metal from falling onto people or flammable material below.

c) Suitable fire extinguishing equipment shall be immediately available at all locations where welding and cutting equipment is used.

d) Matches shall not be carried by welders or their helper when engaged in welding or cutting operations.

e) Matches shall not be used to light a torch; a torch shall not be lighted on hot work. A friction lighter or stationary pilot light shall be used.

f) A fire watch shall be maintained wherever welding or cutting is performed in locations where combustible materials present a fire hazard. A fire check shall be made of the area one half hour after completion of welding.

g) Where combustible materials such as paper clippings or wood shavings are present, the floor shall be swept clean for a radius of 35 feet before welding. Combustible floors shall be kept wet or protected by fire-resistant shields. Where floors have been wet down, personnel operating arc-welding or cutting equipment shall be protected from possible shock.

h) Approved back flow check valves shall be used on gas welding rigs in both gas and oxygen lines.

i) Welding hose shall not be repaired with tape.

j) Machinery, tanks, equipment, shafts, or pipes that could contain explosive or highly flammable materials shall be thoroughly cleaned and decontaminated prior to the application of heat.

k) In dusty or gaseous spaces where there is a possibility of an explosion, welding or cutting equipment shall not be used until the space is adequately ventilated.

l) Adequate ventiliation or approved respiratory equipment shall be used while welding in confined spaces or while brazing, cutting or welding zinc, brass, bronze, stainless steel, or galvanized or lead coated material.

m) Cadmium bearing materials.

1) Proper respiratory protection must be used when welding or cutting cadmium bearing metals.

2) Indoors or in confined spaces, local exhaust ventilation or airline respirators shall be used.

3) Outdoors, respiratory protection such as approved fume respirators or airline respirators shall be used.

134 Electric Welding

a) Electric welding equipment shall be operated only by authorized persons who are experienced and properly instructed.

b) The electric welding machine shall be properly grounded prior to use.

c) Suitable fire extinguishing equipment shall be readily available in the work area.

d) Rules and instructions supplied by the manufacturer or affixed to the machine shall be followed.

e) To protect his eyes, face and body during electrical welding and cutting the operator shall wear an approved helmet, proper protective gloves and clothing. Helpers or attendants shall wear proper eye protection. Other employees shall not observe electric welding operations unless they use approved eye protection.

f) Proper eye protection shall be worn to guard against flying particles when the helmet is raised.

g) Welding screens shall be used whenever other persons could be exposed to the arc of the welding operation. Welders shall not strike an arc with an electrode,

whenever there are persons nearby who might be affected by the arc.

h) When electrode holders are to be left unattended, the electrodes shall be removed and the holders shall be so placed or protected that they cannot make electrical contact with employees or conducting objects.

i) When the welder must leave his work or stop work for any appreciable length of time, or when the welding machine is to be moved, the power supply switch to the equipment shall be opened.

135 ACIDS AND CAUSTICS

See Sections 807, 808, 809 and 810.

Section 2 HEALTH AND ENVIRONMENTAL CONTROL

This section deals with general health areas and depicts some of the control methods which the employee must use for his protection. The general principles outlined in this section are applicable to all work activities. However, specific control measures applicable to a specific work activity are covered in the section dealing with that work activity.

Work processes and work locations can present health hazards to the employee. Because most of these health hazards do not pose an immediate danger, they are frequently not given the attention which is necessary.

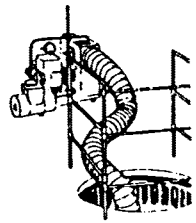
In order for the employee to be fully protected, he must become as knowledgeable as possible of the potential health hazards. Thorough understanding of the principles of this section is essential.

Identifying labels and applicable precautionary measures are normally found with all chemicals and hazardous materials. These instructions should be read and understood by the employees concerned. Applicable safety and health precautions must be taken.

201 Confined or Enclosed Spaces

a) Prior to entering a confined space, forced ventilation shall be used or the atmosphere shall be determined to be safe by testing.

b) When testing is performed, tests will be conducted for oxygen deficiency and the presence of explosive gases or fumes.



c) When unsafe conditions are detected, the work area shall be ventilated until safety has been assured by additional tests.

d) Employees shall ensure there is an adequate continuous supply of air.

e) Emergency entry may be made into confined spaces when an unsafe atmospheric condition exists if a fresh air breathing apparatus is used (e.g., air line respirator, supplied air unit, oxygen generating apparatus, etc.).

f) When working in an unsafe or unknown atmosphere, a safety life line and the "buddy system" must be used.

202 Noise

Table 2-1 Permissible Noise Exposures

Duration per day, hours:	*Sound level dBA slow response*
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

Note: Exposure to excessive noise can cause a gradual decay in hearing ability. Advancements are being made in the reduction of noise, but during the interim period, the employee shall wear proper ear protection when exposed to excessive noise.

a) Ear protection must be worn when there is a possibility of hearing damage. (This occurs when there is continuous exposure to noise or impulse exposure to loud impact noise). When exposed to noise of 90dBA (decibels) for more than eight hours, 95dBA for over 4 hours, 100dBA for over 2 hours or 105dBA for over 1 hour, proper ear protection must be worn. (If normal conversation can be understood about two feet away, the noise level is probably less than 90dBA). Protection must be worn to protect against impact noise over 140dBA, e.g., noise similar to a rifle or shotgun.

b) Specific areas where the noise level is above 90dBA shall be identified, and time limits stated. Employees shall wear proper protective devices when exposed beyond posted limits.

c) Proper ear protection may consist of any of the following: ear muffs, ear plugs, "Swedish Wool", molded ear protectors or wax-type ear plugs. Plain cotton is not acceptable. Ear protective devices shall be worn properly to provide the required protection and kept clean to reduce the possibility of ear infection.

203 Lighting

Where natural illumination is not sufficient, artificial lighting shall be used. Temporary lighting (excepting battery powered) shall be protected with approved guards.

204 Asbestos

Note: Asbestos fibers which are airborne (suspended in the air) in a significant quantity, can cause bodily harm if the fibers are inhaled. Wherever it is known that asbestos is in a facility, it is strongly recommended that professional consultation be utilized.

a) Insofar as practicable, asbestos shall be handled, mixed, applied, removed, cut, scored, or otherwise worked in a wet state unless this would render the product useless.

b) Asbestos cement, mortar, coating, plaster, etc., shall not be removed from the shipping container unless it is wetted, enclosed or ventilated.

c) Local exhaust systems or other engineering controls which are present to reduce the concentration of airborne asbestos fibers shall always be used when working with asbestos.

d) Personal protective equipment. Proper protective equipment, to include clothing, must be worn when working in an area where there is a significant amount of airborne asbestos fibers.

1) Respirators. Approved respirators shall be worn when there is a possibility of airborne concentrations of asbestos fibers. (Included are dust masks, air purifying respirators and Type "C" supplied-air respirators, continuous or pressure demand class.)

2) Special Clothing. Employees who are exposed to airborne concentrations of asbestos fibers which exceed the ceiling level shall use special clothing such as coveralls, head coverings, gloves and foot coverings. Clothing shall be changed only in the designated location and shall be kept separate from street clothes. Contaminated clothing shall be properly cared for and kept separate from other laundry

or disposed materials; it shall be transported in sealed, impermeable bags or similar containers and properly labeled to identify the possible hazard.

e) Housekeeping.

1) All external surfaces shall be maintained free of accumulations of asbestos fibers.

2) Asbestos waste and materials contaminated with asbestos which may produce airborne concentrations shall be collected and disposed of in sealed impermeable bags or similar containers.

205 Exhaust Ventilation

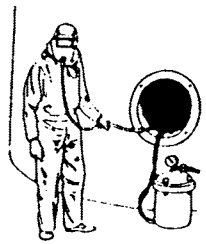
a) Exhaust systems, when provided at the work location, shall be used.

b) When an exhaust system does not provide adequate protection, other protective means, such as an approved respirator, shall be used in addition to (or in lieu of) the exhaust system.

206 Respirators

NOTE: Where various types of respirators are available, care must be taken in proper selection. The respirator must provide adequate protection against the anticipated hazard. Whenever there is doubt, the more protective device must be used.

Types of respirators include the following:



1) Air purifying respirators:

a) Particulate removing—single-use and reusable.

b) Gas and vapor removing—single-use and reusable.

2) Atmosphere supplying respirators:

a) Powered-air purifying respirator.

b) Continuous flow.

c) Demand.

d) Pressure demand.

e) Supplied air.

f) Hose mask with/without blower.

g) Self-contained breathing apparatus.

a) When respirators are provided for a particular work activity, they shall be used.

b) Use of a respirator shall follow the manufacturer's instructions, the specific instructions of supervision, or the company's Respiratory Protection Program.

c) Only employees trained in their use shall use respirators.

d) Persons using air line respirators or similar respirator devices in an enclosed area shall be equipped with a safety harness and life line or other equivalent means of rescue. At least one person with suitable self-contained breathing apparatus shall be at the nearest fresh air base for emergency rescue.

e) Approved respirators shall be worn when:

1) Applying paint or toxic liquids with pressure spray equipment inside buildings, except in shops where special approved rooms or booths are provided for this purpose.

2) Buffing creates an abnormal amount of dust.

3) Welding (or flame cutting) galvanized iron or when melting zinc.

4) Handling lime or other toxic or caustic powdered chemicals.

5) Exposed to abnormal amounts of coal dust.

6) Sand blasting.

7) Handling acids or caustics.

8) Handling asbestos.

9) Exposed to nuisance dusts.

10) Handling fly or bottom ash.

11) Exposed to known radiation hazards.

12) Entering or working in areas of unknown air quality.

13) Required by the Respiratory Protection Program or supervision.

f) Contact lenses shall not be worn when using a respirator.

g) Respirators shall be cleaned after use and stored in sanitary containers. Records of a respirator maintenance program should be kept.

Section 3 **VEHICLE OPERATIONS**

301 General

a) Only those employees specifically authorized and who possess a valid license or permit for the equipment being used shall operate company-owned motor vehicles or personally owned vehicles on company business.

b) Drivers shall know and obey all state and local motor vehicle laws applicable to the operation of their vehicle.

c) The driver shall drive at safe speeds no greater than that permitted by law. Traffic, road, and weather conditions shall be given consideration in determining the safe speed within the legal limit at which the vehicle shall be operated.

d) A driver shall not permit unauthorized persons to drive, operate or ride in or on a company vehicle.

e) Where seat belts are provided, they shall be used.

f) Employees shall not permit anyone to ride on the running boards, fenders or any part of the vehicle except on the seats or inside the body walls. Passengers shall not stand in moving vehicles.

g) Employees shall not ride on trailers.

h) Employees shall not jump on or off vehicles in motion.

302 Inspection of Equipment

a) The driver shall determine that brakes are in a safe operating condition before operating equipment. If brakes are not working properly, they must be corrected before vehicle is used.

b) The driver shall inspect windshield wipers frequently and see that they are in good operating condition and that the windows and windshield give sufficient visibility for safe operation of vehicle.

c) All lights and reflectors of vehicle shall be inspected by the driver doing any night driving, and if found defective, they shall be repaired immediately.

d) The driver shall report any defects which may have developed during the day. If the brakes are not working properly, they shall be adjusted or repaired before the vehicle is put in operation. Other items which affect safety shall be repaired prior to continued vehicle operation.

303 Exhaust Gas

The driver shall not operate the motor in any garage except when driving in or out, and then the motor shall be operated as little as practicable. The motor shall not be warmed up inside a garage nor shall the driver test motor operation in a garage unless the exhaust gas is carried directly to outside atmosphere, or doors and windows are open so that adequate ventilation exists.

304 Operation

a) The operator of a motor vehicle shall clearly signal his intention of turning, passing or stopping.

b) Upon a signal from a vehicle approaching from the rear, the driver of a company vehicle shall yield the right of way.

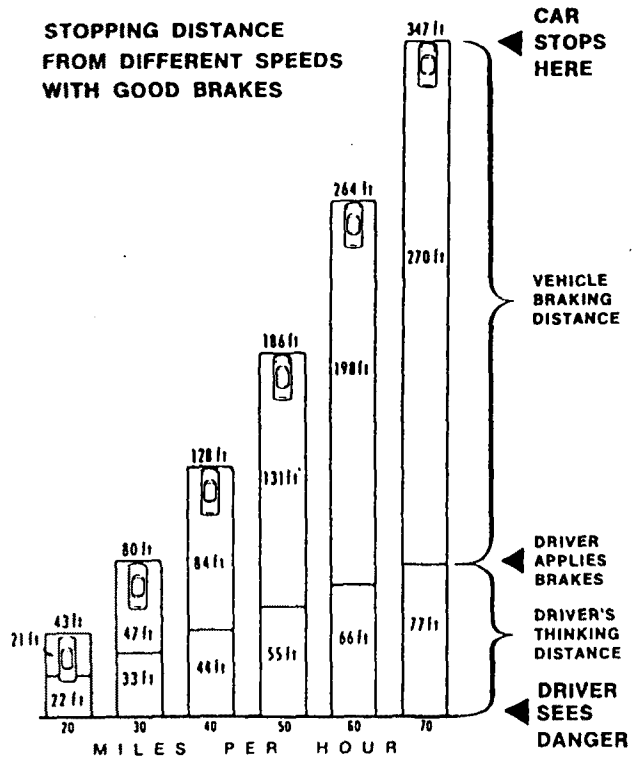
c) Drivers shall be prepared to stop and the right of way shall be yielded in all instances where necessary to avoid an accident.

d) The driver of a vehicle shall be courteous toward other operators and pedestrians. He shall operate his vehicle in a safe manner and shall yield the right of way to pedestrians and other vehicles when failure to do so might endanger any person or another vehicle

e) The driver shall stay a sufficient distance behind when following another vehicle so that he can safely stop the vehicle in the clear distance ahead.

f) Drivers shall exercise added caution when driving through residential and school zones.

g) When entering or leaving any building, enclosure, alley or street where vision is obstructed, a complete stop shall be made and the driver shall proceed with caution.



NOTE: *These are the shortest distances in which a vehicle in good condition, driven by an average driver, can stop on a good road surface. Distances will increase with any change in driver, vehicle or road surface.*

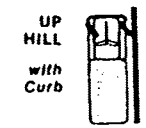
h) Trucks on which derricks or booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give his undivided attention to the movement.

i) Before a radio equipped vehicle is driven under or adjacent to energized equipment, especially in substation areas, the radio antenna shall be lowered and clearance checked in order to insure that proper clearances will be maintained between the vehicle and energized equipment.

j) All ignition systems shall be turned off and no smoking permitted while refueling.

k) When proceeding down grade the clutch shall not be disengaged. Trucks, particularly if heavily loaded, shall be in a lower gear on steep grades.

305 Parking

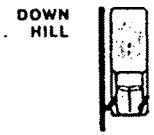


a) When vehicles must be parked on the roadway, they shall be parked on the right hand side facing in the direction of traffic flow, whenever possible.

b) When parking on a roadway, vehicles shall park off the traveled road surface, whenever possible. When vehicles must park closer than 10 feet to the traveled road surface, appropriate warning devices shall be used.

c) Trucks or trailers stopped on any public roadway shall be protected by proper warning lights, reflectors or red flags in accordance with state or local requirements.

d) Vehicles shall not be parked on bridges or over culverts except when necessary for work.



e) When it is necessary to park on an incline, the driver shall make sure the vehicle is left in a safe position. The engine shall be turned off, the vehicle placed in the lowest gear, or "park" position, and the parking brake set. The front wheels shall be cut into the curb or if a curb is not present, the rear wheels shall be chocked.

306 Backing

a) Whenever possible, the vehicle shall be positioned to avoid the necessity of backing later.

b) Extreme caution shall be exercised when backing a vehicle, to avoid injury to persons and to prevent property damage. If another employee is present, he shall be stationed at the rear of the vehicle to assist the driver in backing the vehicle safely.

c) When backing a vehicle which has an obstructed view to the rear:

1) A reverse signal (back-up alarm) audible above the surrounding noise level shall be used, or

2) An observer shall signal that it is safe to back.

3) Back slowly.

4) Watch both sides but do not depend entirely on mirrors.

5) In any difficult backing situation, enlist the help of another person on the ground as a guide, when such help is available.

307 Stopping on Highway

a) Stopping on the highway shall be avoided.

b) When it is absolutely necessary to stop on the highway, extreme caution shall be used. Warning signals and lights shall be used.

1) Rotating beacon shall be used, if vehicle is so equipped.

2) Tail lights/emergency flashers shall be used.

3) Flares or reflectors shall be placed to give adequate advance warning.

4) If work is in progress, traffic control devices (together with flagmen, where necessary) shall be used.

308 Hauling Poles or Ladders

a) Poles, ladders, pipe, etc. shall be loaded parallel with the truck length. Such material shall not extend beyond the normal sides of the vehicle.

b) Materials shall be securely fastened to prevent a hazard due to shifting.

c) Material which extends more than 4 feet beyond the front or back of the truck or trailer shall have warning devices attached. During the day, red flags shall be used; at night and during periods of poor visibility, red lights shall be used.

d) When hauling long poles and the vehicle must enter congested areas or heavy traffic conditions, escort vehicles displaying suitable warning signs should be used.

309 Industrial Trucks—Fork Lifts

a) Industrial trucks shall be operated only by authorized persons who are qualified and trained in their use.

b) Brakes and controls shall be tested prior to use. Equipment with faulty brakes or mechanical or electrical defects shall not be operated. Needed repairs shall be reported immediately.

c) Equipment shall always be operated at a safe speed for existing conditions

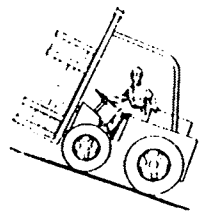
d) Before moving the equipment, the operator shall make sure that no person or objects are in the path of the vehicle. Clearances in all directions shall always be checked, particularly overhead clearances.

e) Industrial trucks shall not be fueled with the engine running.

f) When picking up a load, forks shall be set squarely and as far as possible under the load. Loads should not be raised or lowered while traveling. Loaded or empty, forks should be carried as low as possible, but high enough to clear uneven surfaces.

g) Loads shall not be suspended or swung over other persons. No one should be allowed to stand or walk under elevated forks.

h) The operator shall always face in the direction of travel.



i) On inclines, all types of loaded lift trucks shall be driven with the load on the upgrade side of the driver whether ascending or descending.

j) Sudden stops which might spill the load shall be avoided.

k) All loads shall be securely fastened or safely positioned to prevent tipping or falling.

l) Lift bars on fork lift trucks which are movable or replaceable shall be firmly in place by a proper securing pin. Jury-rigged devices, such as using a threaded bolt, shall not be permitted.

m) Only attachments provided by or approved by the manufacturer may be used. Such attachments shall be properly secured. Improvised methods shall not be used.

n) No one shall be allowed to ride the truck, fork lift or other equipment other than the operator, except when seats are provided for this purpose.

o) When an industrial truck is left unattended (operator is 25 feet away or the vehicle is not in his view), the load engaging means shall be fully lowered, controls shall be neutralized, power shall be shut off and brakes set. Wheels shall be chocked when the truck is parked on an incline.

p) Equipment with internal combustion engines shall not be operated in enclosed areas for prolonged periods of time so as not to exceed the allowable levels of carbon monoxide.

q) When loading or unloading trucks or railroad cars, approved docks or ramps which are properly secured shall be used. The wheels of the truck or railroad car shall be blocked.

310 Cranes, Derricks, Hoisting Equipment

a) Only authorized persons shall be permitted in the cab or on the equipment. Only those designated persons

who are trained and qualified shall operate the hoisting equipment.

b) No person shall be permitted to ride the hook, sling or load of any hoisting equipment.

c) Load limits as specified by the manufacturer shall not be exceeded under any circumstances.

d) Operating and maintenance procedures as specified by the manufacturer shall be followed.

e) The following are the minimum checks which shall be made daily prior to use:

1) All control mechanisms for maladjustment interfering with proper operation.

2) All safety devices for malfunction.

3) Deterioration or leakage in air or hydraulic systems.

4) Hooks, slings and load attachment devices.

5) Fire extinguisher available (5 BC or larger).

f) For the first lift of each day, the load shall be test-lifted and the brakes checked (load lifted several inches and then tested)

g) With every load, the slings and bindings shall be checked and shall be readjusted as necessary to insure safety and stability.

h) All slings and other fittings shall be of sufficient strength, proper type and safe for their intended use.

i) Signals to the equipment operator shall be given by one person designated to perform this task. The operator shall, however, obey a "Stop" signal given by anyone.

j) When mobile hoists, cranes or similar lifting devices are used near energized lines or equipment, the lifting device shall be:

1) Properly grounded, or

2) Insulated, or

3) Isolated, or

4) Considered as energized.

k) No employee shall be under a suspended load or inside the angle of a winch line. No employee shall stand or work near a cable, chain or rope under tension unless the nature of his work requires it.

l) Winch lines, ropes, or wire cables shall not be guided by hand when standing within reach of the drum or sheave.

m) Wire-rope loops shall be made by proper splicing or mechanical clamping of the tail section. Wire rope clips shall not be used to form eyes in wire rope bridles or slings. Knots shall not be used in wire ropes for any purpose.

CORRECT METHOD = U-Bolts of clips on short end of rope. (Live end not distorted.)

WRONG METHOD = U-Bolts on live end of rope. (This will kink strands on live end.)

WRONG METHOD = Staggered clips; two correct and one wrong.

WIRE ROPES—SAFE LOADS

SIZE	STRANDING	IMPROVED PLOW		PLOW	
		Breaking Strength Tons	*Permissible Working Loads in Pounds*	*Breaking Strength Tons*	*Permissible Working Loads in Pounds*
7/16"	6×19	8.27	3308	7.19	2876
	8×19	7.09	2836	6.17	2468
	6×37	7.82	3128	6.80	2720
1/2"	6×19	10.70	4280	9.35	3740
	8×19	9.23	3692	9.02	3208
	6×37	10.20	4080	8.85	3540
9/16"	6×19	13.50	5400	11.80	4720
	8×19	11.60	4640	10.10	4040
	6×37	12.90	5160	11.20	4480
5/8"	6×19	16.70	6680	14.50	5800
	8×19	14.30	5720	12.40	4960
	6×37	15.80	6320	13.70	5480

All permissible working loads are based on a safety factor of 5.

n) When U-bolt wire rope clips are used to form eyes in winch lines, the number used and the spacing provided shall be in accordance with illustration. The U-bolt shall be applied so that the U section is in contact with the dead end of the rope.

o) Operators shall not leave their position at the controls of cranes, hoists, derricks or other lifting devices while the load is suspended.

p) Operators of cranes, derricks, hoists and other hoisting equipment shall exercise extreme caution when in close proximity to energized lines or equipment.

1) When performing power transmission or distribution construction refer to electrical section for applicable clearance requirements.

2) When work does not involve power transmission or distribution construction and maintenance, minimum clearance distances shall be:

Up to 50 kv	10 feet
Over 50 kv	10 feet plus 0.4 in. for each 1 kv over 50 kv

q) Trucks on which derricks or booms are erected above traveling height shall not be moved except under the immediate direction of a designated employee, who shall give his undivided attention to the movement.

311 Aerial Lifts

a) Only authorized persons who are properly trained and qualified shall use or operate this equipment.

b) The operating and maintenance instruction manuals issued by the manufacturer shall be followed.

c) Load limits of the boom and basket shall not be exceeded. Shock loading (sudden stops or starts) of the equipment shall be avoided.

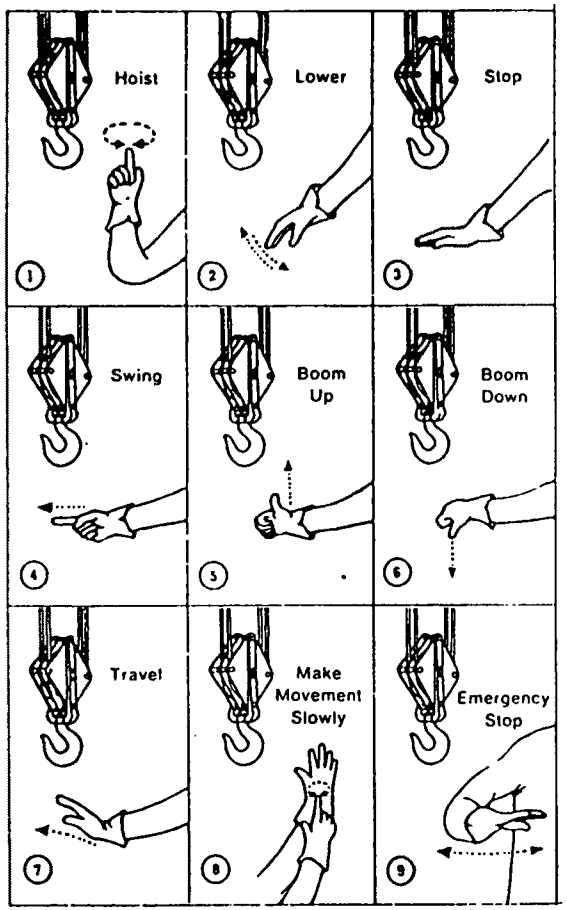
d) Aerial lifts shall not be "field modified" unless such modification is certified by the manufacturer. The insulated portion shall not be altered in any manner that might reduce its insulating value.

e) Prior to use, the equipment shall be given a warm up period. The hydraulic system and the lift controls shall be checked and tested daily before use to determine such features are in safe working condition. Malfunctions or unsafe operational conditions shall be reported. Equipment which is not in proper operational condition shall not be used.

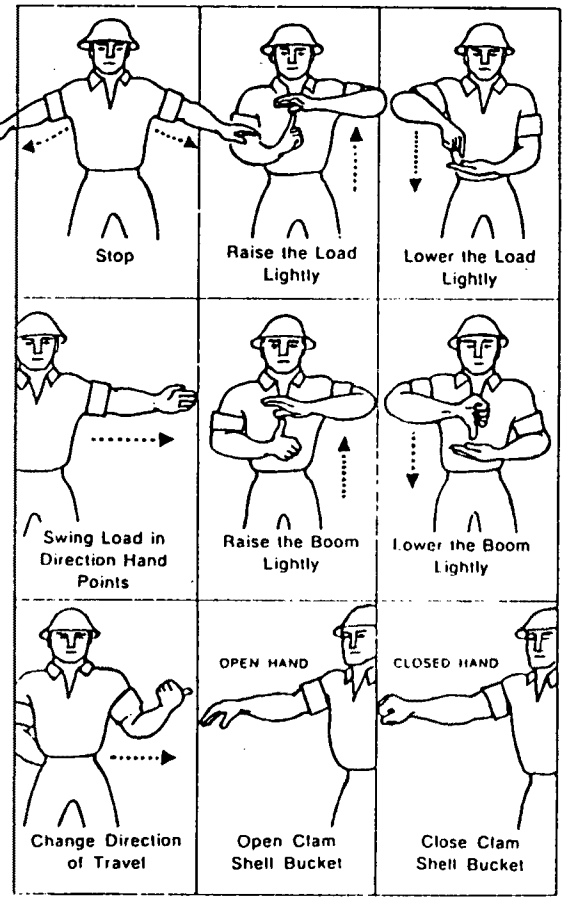
f) Articulating boom and extensible boom platforms, primarily designed as personnel carriers, shall have both platform (upper) and lower controls. Lower level controls shall not be operated unless permission has been obtained from the employee in the lift, except in case of emergency.

g) The truck shall not be moved unless the boom is lowered, the basket cradled and secured, and the outriggers retracted.

Standard Derrick Hand Signals



Power Crane-Shovel Hand Signals



h) Employees shall not ride in the bucket while the truck is traveling. (Exceptions: Men may ride in the basket for short moves at the work location if the basket is returned to the cradled position for each move and the employees face the direction of travel.

i) When employees are in the bucket of an aerial lift, the emergency brake of the vehicle shall be set. Wheel chocks or outriggers shall be used to provide added protection. When the vehicle is on an incline, wheel chocks shall be used regardless of whether or not outriggers

are used. The truck should sit approximately level when viewed from the rear.

j) When outriggers are used, they shall be set on pads or a solid surface.

k) Employees shall not belt to an adjacent pole or structure. When working from an aerial lift, a body belt or harness shall be worn and a lanyard attached to the boom.

l) Safety rules governing the use of hot-line tools, rubber goods, personal protective equipment and general safe practices shall also apply to work done from aerial baskets. (Exception: Different rules apply when performing "live-line bare-hand" work.)

m) When a boom must be maneuvered over a street or highway, necessary precautions shall be taken to avoid accidents with traffic and pedestrains.

n) The operator shall always face in the direction in which the basket is moving and he shall see that the path of the boom or basket is clear when it is being moved.

o) Employees shall not stand or sit on top or edge of the basket or on ladders placed in the basket. Employees' feet shall be on the floor of the basket the entire time he is in it.

p) Climbers shall not be worn by employees while in the basket.

q) When two men are in the basket or baskets, one of them shall be designated to operate the controls. One employee shall give all signals, which shall be thoroughly understood by all persons concerned.

r) When two linemen are working from the basket, extreme care shall be taken to avoid one man contacting poles, crossarms or other grounded or live equipment while the second lineman is working on equipment at a different potential.

s) In no case shall more than one energized conductor or phase be worked at one time.

t) Clearances. The aerial lift, together with the men in the basket and all tools and equipment shall maintain proper clearances from unprotected energized conductors. (Exception: Direct contact may be made when performing "live-line bare-hand" work.)

u) When using pneumatic or hydraulic tools in a bucket, the operator shall be sure that hoses or lines do not become entangled in the operational controls.

v) Unless the vehicle is equipped with lower boom and pedestal insulation rated for the voltage being worked, aerial basket vehicles working adjacent to energized primary shall be properly grounded or barricaded and treated as energized.

312 Reporting Company Vehicle Accidents

See Paragraph 104.

Section 4 WORK AREA PROTECTION

a) Work area protection is the adequate safeguarding or protecting of pedestrians, motorists, utility workmen and equipment by the use of adequate barriers, warning signs, lights, flags, traffic cones, high-level standards, barricade rope, flagmen, etc., on approaches to work areas, excavations, open manholes, parked equipment, etc.

b) Work area protection is accomplished by the use of good informative and protective devices, keeping in mind that a safe installation requires the use of these devices in relation to the location of the workmen and the equipment involved. The use of these devices must be coupled with proper planning, design, installation, inspection, maintenance and the use of good common sense. It is of the utmost importance that the work area be properly identified and that warning devices say what they mean, to convey the message to the traveling public well in advance of arrival at the work area.

c) The public must be warned in advance, then regulated and guided safely through or around the work area. Proper work area protection shall be planned to insure the safety and protection of the public, the workmen and the equipment.

d) The possibility of accidents occurring is greatly minimized by proper planning, design, installation, operation, and maintenance, coupled with the use of common sense.

e) See "Manual on Uniform Traffic Control Devices."

Black Border and Letters

White Background
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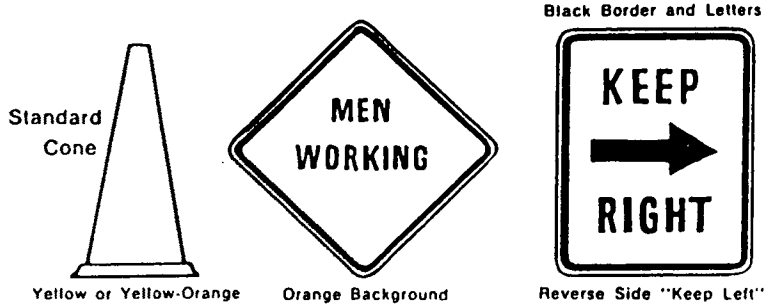
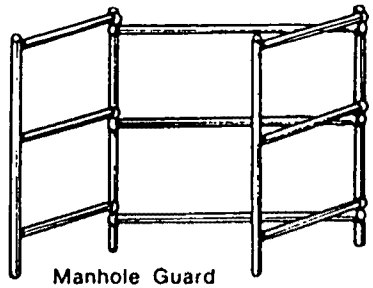


Yellow or Yellow-Orange

Orange Background

Reverse Side "Keep Left"



Manhole Guard

401 Equipment

a) Only those signs, standards, barricades, flags and cones which conform to state or local codes shall be used.

b) All state and local traffic codes shall be followed when providing work area protection.

c) During night operations or in periods of reduced visibility special precautions shall be taken. Adequate warning equipment, which may include flashing lights, flares or area illumination, shall be used.

d) Warning devices and equipment shall be removed as soon as the hazard is eliminated.

e) Warning devices and equipment not in use shall be stored in a proper manner or shall be removed from the work area.

402 Flagmen

a) Flagmen or other appropriate traffic controls shall be used whenever there is any doubt that effective protection can be provided by signs, signals and barricades.

b) Flagmen shall wear a red or orange warning vest or other garment. Warning garments worn at night shall be of a reflectorized material.

c) Flagmen using hand signaling equipment shall insure signals provide sufficient warning to protect themselves and the work site.

1) Signal flags shall be red and at least 24 inches square.

2) Sign paddles (Stop and Slow) shall be on a 6 foot staff.

3) In periods of darkness or reduced visibility, red lights shall be used.

d) Flagmen shall place themselves in a protected position to reduce possibility of injury from traffic.

e) Flagmen shall insure they can fully observe the operation and shall guide vehicular traffic in such a manner as to minimize the possibility of accidents or injury.

f) When flagmen are used at both ends of a job site, reliable communications or prearranged signals shall be used to insure proper traffic flow.

g) Flagmen shall face traffic when giving signals.

h) Flagmen shall give positive, direct signals which leave no doubt as to their meaning.

Section 5 OVERHEAD DISTRIBUTION AND TRANSMISSION

501 General

a) Only qualified employees shall work on or near energized lines or equipment. When two or more employees are working on the same line section, they shall only work on or contact the same conductor at one time.

b) No employee shall touch any exposed ungrounded line wire or apparatus unless he is insulated from other conducting surfaces or uses adequate protective devices.

c) Employees shall immediately report to the nearest foreman or supervisor any defective line, apparatus or tool or other condition which in their judgment may be dangerous either to persons or property or likely to interrupt or delay service.

d) Electrical equipment and lines shall always be considered as "live" unless they are positively known to be dead. Before starting to work, preliminary inspection or test shall be made to determine what conditions exist. Care shall be exercised to handle neutral wires with the same caution as is used with energized wires.

e) Secondary windings of current or series transformers shall be short circuited before any instrument, or other device connected in the circuit, is removed or disconnected.

Table 5-1 Alternating Current—Minimum distances

Voltage range (phase-to-phase) kilovolt	*Minimum working and clear hot stick distance*
2.1 to 15	2 ft. 0 in.
15.1 to 35	2 ft. 4 in.
35.1 to 46	2 ft. 6 in.
46.1 to 72.5	3 ft. 0 in.
72.6 to 121	3 ft. 4 in.
138 to 145	3 ft. 6 in.
161 to 169	3 ft. 8 in.
230 to 242	5 ft. 0 in.
345 to 362	* 7 ft. 0 in.
500 to 552	*11 ft. 0 in.
700 to 765	*15 ft. 0 in.

**Note:* For 345–362 kv., 500–552 kv., and 700–765 kv., the minimum working distance and the minimum clear hot stick distance may be reduced provided that such distances are not less than the shortest distance between the energized part and a grounded surface.

502 Flexible Protective Equipment (Rubber Synthetics, Etc.)

a) Employees shall not touch or work on any exposed energized lines or apparatus except when wearing approved protective equipment approved for the voltage to be contacted.

b) When work is to be done on or near energized lines, all energized and grounded conductors or guy wires within reach of any part of the body while working shall be covered with rubber protective equipment, except that part of the conductor on which the employee is to work.

c) When working on energized lines or apparatus, work should be done from below, if possible.

d) In applying flexible protective equipment, an employee shall always protect the nearest and lowest wires first, protecting himself as he progresses. In removing rubber protective equipment, the reverse order shall be maintained.

e) Flexible blankets shall not be used on the ground without protecting them from physical damage and moisture by means of a tarpaulin, canvas, or protective mat.

f) Protective equipment shall be put on before entering the working area within which energized lines or apparatus may be reached and shall not be removed until the employee is completely out of reach of this area.

g) When not in use, rubber protective equipment shall be protected from mechanical and chemical damage, and **shall always be stored in the containers provided** and nothing else placed therein.

h) To avoid corona and ozone damage, rubber protective equipment shall not be allowed to remain in place on energized lines or apparatus overnight or for more than one eight-hour period, unless approved by the supervisor in charge.

i) Line hose, hoods, blankets, line guards, etc., shall be visually inspected before each job.

j) Flexible protective devices shall be stored in special compartments on trucks and elsewhere where they will not be subjected to damage from tools or other equipment.

k) Bare communications conductors shall be treated as energized lines and shall be protected accordingly.

503 Climbing and Working on Poles

a) All poles and structures shall be carefully inspected before climbing to assure that they are in a safe condition for the work to be performed and that they are capable of sustaining the additional or unbalanced stresses to which they will be subjected.

b) Where poles or structures may be unsafe for climbing, they shall not be climbed until made safe by guying, bracing, or by other adequate means.

c) Wires shall not be attached to or removed from a pole or structure until it is certain the pole or structure will withstand the altered strain.

d) Poles, except new poles, shall be thoroughly tested before they are climbed. If a pole is not strong enough to sustain a lineman's weight by reason of its condition or its placement (such as in soft ground), it shall be guyed or otherwise secured throughout the time any work is being performed on it. If the pole to be climbed is being replaced and the new pole is set adjacent to it, the old pole may be lashed to the new pole in lieu of guying.

e) When poles are encountered which are unsafe to climb (ice, badly chewed, wide cracks, shell rot, etc.), an alternate means of climbing shall be used (use belt around pole while climbing) or the use of an aerial basket shall be considered.

f) Workmen shall not wear their climbers while driving or

riding in vehicles or when doing work on the ground, on ladders (except hook ladders) or on platforms in which the wearing of the climbers creates a hazard.

g) Gaffs on climbers shall be kept within safe length limits (1¼ inches min.), properly shaped, and sharp.

h) Employees shall not work on an elevated pole or structure without first securing themselves with a safety strap.

i) Only approved belts and straps shall be used.

j) Metal hooks, chains, etc., for holding tools or tape shall not be attached to body belt. Leather or other nonconducting material shall be used for this purpose.

k) The safety strap shall not be put around a pole above the uppermost pole attachment position, except where pole top or attachment is above eye level. It shall not be used on pole steps, crossarm braces, insulators, insulator pins, conductors, rotten or otherwise weak crossarms or on attachments that are being moved. When it is necessary to attach to a crossarm, the safety strap shall never be placed beyond the outside crossarm attachment. It shall be so placed that it will not be cut by line equipment or twisted or fouled by material that may give way under strain.

l) Employees shall not trust their weight to guy wires, pins, braces, conductors, or other such equipment that might prove unstable.

m) When two or more employees are to work on the same pole at the same time, each shall reach the working position before the next leaves the ground. They shall descend the pole one a time.

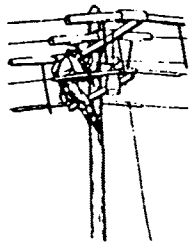
n) When climbers are stored in the truck or tool room, they shall be placed where the sharp points will not damage other equipment or cause personal injury.

504 Use and Care of Rubber Gloves

Note: *Supervision or company rules may require the use of rubber sleeves in addition to rubber gloves.*

a) The use of rubber gloves shall be in accordance with the following table:

Class of Glove	Maximum Use Voltage
0	1,000
1	7,500
2	17,000
3	26,500
4	36,000



b) Voltage shall be considered to be phase-to-phase voltage unless all conductors except the one being worked are insulated (with protective devices) or isolated so that physical contact cannot be made with any energized part. In that case, phase-to-ground voltage will determine maximum use voltage.

c) When the use of rubber gloves is required, they shall be put on before the employee comes within falling or reaching distance (in any event not less than 5 feet) of unprotected energized circuits or apparatus or those which may become energized and they shall not be removed until the employee is entirely out of falling or reaching distance of such circuits or apparatus.

d) Rubber gloves with the leather protectors shall be worn when:

1) Working on or within falling or reaching distance of conductors, electrical equipment, or metal surface (crossarms, crossarm braces or transformer cases) which are not effectively grounded and which may be or may become energized.

2) During wet or stormy weather, working on or within falling or reaching distance of any conductor or equipment which may be or may become energized at any voltage.

3) Required by supervision.

4) Removing lead sheath and sleeves from cables and joints, and opening or cutting cables (until they have been proven to be de-energized at the work location by positive tests).

5) Making statiscope tests on cables.

6) Operating manually controlled air-break switches.

7) Opening and closing manually operated oil circuit breakers.

8) Using an approved switch sticks or live line tools for opening, closing, removing, or replacing hot clamps, fuses, or fuse doors on cutouts.

9) Using approved switch sticks or live line tools for making tests to determine if lines are deenergized, and in applying and removing grounding devices.

10) Working on or near series street lighting circuits even though they are disconnected from the source of power.

11) Repairing series fixtures or attachments, the circuit of which is exposed to energized conductors,

except where the fixtures are disconnected from the line.

12) Pulling in wires or handling other conducting materials near circuits, apparatus or equipment which is, or may become energized.

13) Working on or near telephone or other circuits which are subject to induced voltages from energized high voltage circuits, unless such circuits to be worked are adequately grounded.

14) Also see rules 709 and 711.

Note: *"Reaching distance" includes the employee's reach as extended by handling conductive material and/or work equipment.*

e) When working with rubber protective equipment on energized circuits or apparatus where the voltage between any two conductors is over 7,500 volts, the following minimum conditions shall be met in addition to all other rules governing the use of protective equipment:

1) Rubber gloves and rubber sleeves shall be used.

2) Employee shall not make physical contact with protective devices installed on energized primary conductors with other than his rubber gloves or rubber sleeves.

3) Employee shall be isolated from all grounds (wooden poles shall be considered as grounds in this case) by using approved supplementary insulation such as aerial baskets, a lineman's platform, or other approved insulated devices.

4) When two or more employees are working on the same structure, they shall only work on or contact the same conductor at one time.

f) Rubber gloves shall never be worn inside out or without leather protectors. They shall be exchanged at any time they become damaged or the employee to whom they are assigned becomes suspicious of them.

g) Leather protectors or overgloves shall not be worn except when in use over rubber gloves. Their use shall conform to the following table:

Minimum distances between protector gauntlet and cuff of rubber glove.

Class of Rubber Glove	*Minimum Distance*
0	1"
1	1"
2	2"
3	3"
4	4"

h) Rubber gloves shall be inspected for corona cracks or other damage and shall be given air test at least once each day while in use, preferably at the beginning of the work period and at any other time when their condition is in doubt. They shall be checked before each use.

i) Gloves when not in use shall be kept in canvas bags or other approved containers and stored where they will not become damaged from sharp objects or exposed to direct sunlight. They shall never be folded while stored nor shall other objects be placed upon them.

j) Rubber gloves shall be stored in the glove bag with the cuffs down to permit drainage, better ventilation and reduce the possibility of damage.

505 Working on Energized Lines with Live Line Tools

a) Rubber gloves need not be worn when using live line tools except when making or breaking a circuit (such as in switching or grounding procedures), when proper clearance cannot be maintained from underbuilt circuits, and during inclement weather.

b) Lines of #6 copper, #6 ACSR, and #8A copper-weld or smaller shall not be worked on with live-line tools except in specific instances where continuity of service is vital and then only upon special authorization.

c) Planned work with live-line tools shall not be started during unfavorable weather.

d) Before work with live-line maintenance tools is begun, the dispatcher or person having jurisdiction shall be notified. If during live-line tool work, an interruption to service occurs, the dispatcher or other person having jurisdiction shall be notified immediately.

e) Only tools approved by the company shall be used in live-line maintenance work.

f) A careful check shall be made to see that the condition of the structure and lines at the point of the work is such that the job may be performed safely. In addition, the adjacent spans and structures shall be carefully checked for defects in conductors, tie wires, insulators and other equipment.

g) Under no circumstances shall a lineman depend on another workman to hold a live conductor clear of him.

h) When moving heavy conductors, blocks shall be used on the live-line tool so that they may be moved slowly and carefully.

i) While live-line work is in progress, no other work of any nature shall be performed on the same pole or structure.

j) All live-line tools, when not in use, shall be kept in canvas bags or waterproof boxes provided for that purpose, and such containers stored in a dry and, if possible, a warm place.

k) Live-line tools shall never be laid directly on the ground or against sharp objects such as barb wire fences. Special tool holders or tarpaulins shall be used for this purpose.

l) All live-line tools shall be visually inspected before use each day. Tools to be used shall be wiped clean, and if any hazardous defects are indicated, such tools shall be removed from service.

m) When practical, the automatic reclosing feature of circuit interrupting devices shall be made inoperative before work begins.

506 Working on Energized Lines Barehanded

a) Only employees who have been instructed and trained in live-line bare-hand work shall use the technique on energized circuits.

b) Live-line bare-hand work shall not be performed on voltages under 69KV.

c) Before using the live-line bare-hand technique on energized high-voltage conductors or parts, a check shall be made of:

1) The voltage rating of the circuit on which the work is to be performed;

2) The clearance to ground of lines and other energized parts on which work is to be performed; and

3) The voltage limitations of the aerial-lift equipment intended to be used.

d) Only equipment designed, tested, and intended for live-line bare-hand work shall be used.

e) The automatic reclosing feature of circuit interrupting devices shall be made inoperative where practical before working on any energized line or equipment.

f) Work shall not be performed during the progress of an electrical storm in the immediate vicinity.

g) A conductive bucket liner or other suitable conductive device shall be provided for bonding the insulated aerial device to the energized line or equipment.

1) The employee shall be connected to the bucket liner by use of conductive shoes, leg clips, or other suitable means.

2) Where necessary, adequate electrostatic shielding for the voltage being worked or conductive clothing shall be worn.

h) Only tools and equipment intended for live-line bare-hand work shall be used, and such tools and equipment shall be kept clean and dry.

i) Before the boom is elevated, the outriggers on the aerial truck shall be extended and adjusted to stabilize the truck and the body of the truck shall be bonded to an effective ground, or barricaded and considered as energized equipment.

j) Before moving the aerial lift into the work position, all controls (ground level and bucket) shall be checked and tested to determine that they are in proper working condition.

k) Arm current tests shall be made before starting work each day, each time during the day when higher voltage is going to be worked and when changed conditions indicate a need for additional tests.

This test shall consist of placing the bucket in contact with an energized source equal to the voltage to be worked upon for a minimum time of three (3) minutes. The leakage current shall not exceed 1 microampere per kilovolt of nominal line-to-line voltage. Work operations shall be suspended immediately upon any indication of a malfunction in the equipment.

l) All aerial lifts to be used for live-line bare-hand work shall have dual controls (lower and upper) as required by subdivisions (1) and (2) of this sub-paragraph.

1) The upper controls shall be within easy reach of the employee in the basket. If a two basket type lift is used, access to the controls shall be within easy reach from either basket.

2) The lower set of controls shall be located near the base of the boom that will permit over-ride operation of equipment at any time.

m) Before the employee contacts the energized part to be worked the conductive bucket liner shall be bonded to the energized conductor by means of a positive connection which shall remain attached to the energized conductor until the work on the energized circuit is completed.

n) The minimum clearance distances for live-line bare-hand work shall be as specified in Table 5-2. These minimum clearance distances shall be maintained from all grounded objects and from lines and equipment at a different potential than that to which the insulated aerial device is bonded unless such grounded objects or other lines and equipment are covered by insulated guards. These distances shall be maintained when approaching, leaving, and when bonded to the energized circuit.

Table 5-2 Minimum Clearance Distances for Live-Line Bare-Hand Work (Alternating Current)

Voltage range (phase-to-phase) kilovolts	*for maximum voltage Distance in feet and inches Phase to ground*	*Phase to phase*
46.1–72.5	3'0"	3'0"
72.6–121	3'4"	4'6"
138–145	3'6"	5'0"
161–169	3'8"	5'6"
230–242	5'0"	8'4"
345–362	* 7'0"	*13'4"
500–552	*11'0"	*20'0"
700–765	*15'0"	*31'0"

*Note: For 345–362 kv., 500–552 kv., and 700–765 kv., the minimum clearance distance may be reduced provided the distances are not made less than the shortest distance between the energized part and a grounded surface.

o) 1) The use of handlines between buckets, booms, and the ground is prohibited.

2) No conductive materials over 36 inches long shall be placed in the bucket, except for appropriate length jumpers, armor rods, and tools.

3) Nonconductive-type handlines may be used from line to ground when not supported from the bucket.

p) 1) A minimum clearance table (as shown in Table 5-2) shall be printed on a plate of durable nonconductive material, and mounted in the buckets or its vicinity so as to be visible to the operator of the boom.

2) It is recommended that insulated measuring sticks be used to verify clearance distances.

507 Working on De-Energized Lines and Equipment

a) General. All conductors and equipment shall be treated as energized until tested or otherwise determined to be deenergized and grounded.

who is leaving and accepting the other as authorized to report for him. Clear entries of all such authorized changes shall be made on dispatcher's records, Hold Cards or tags.

h) When it is necessary to obtain a working clearance on any line or apparatus not under the jurisdiction of a dispatcher, the request shall be made directly to the person having jurisdiction.

i) After de-energizing the line or apparatus and attaching Hold Cards or tags to each switch providing clearance on the line or apparatus, the employee shall report back to the person making the request that the line or apparatus is out of service and that work may be begun after adequate grounds have been installed.

j) A line or apparatus shall not be put back in service, nor the Hold Cards or tags removed until the person to whom clearance was given releases his clearance.

Exception: If the person who received the clearance must leave the work before it is completed, he shall so inform the person having jurisdiction, giving him the name of the person who is to take his place. In such cases, the person having jurisdiction shall communicate with both men, releasing the man who is leaving and accepting the other as authorized to report for him.

k) When the work is completed, the grounds removed and all men are clear, the employee who received the clearance, or his properly authorized substitute, shall report to the person having jurisdiction that the line or apparatus is ready for service.

509 Series Street Lighting Circuits

a) Before a series street lighting circuit is opened and work is performed thereon, one of the following procedures shall be performed.

1) Circuit shall be disconnected from the source of supply by opening disconnecting switches or other absolute cutouts, and Hold Cards shall be attached to such disconnects or cutouts. Dependence shall not be placed in time switches or other automatic devices.

2) Circuit shall be properly jumpered to avoid an open-circuit condition.

b) All series street lighting circuits shall be considered as energized, and worked on in accordance with Rules Nos. 504 and 505.

b) New construction. New lines or equipment may be considered de-energized and worked as such where:

1) the lines or equipment are grounded, or

2) The hazard of induced voltages is not present, and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

d) See Rule No. 516 for Grounding Procedures and Requirements.

508 Dispatching and Clearances

a) All oral communications about dispatching and clearances shall be recorded by the person receiving them and read back to the person giving them.

b) Under no circumstances shall clearances be granted or released on a predetermined time basis.

c) When two or more crews are working on the same line or apparatus and are not under the supervision of one general foreman or other supervisor, each crew foreman shall request and release his own clearance independently in accordance with these rules.

d) A Hold Card or tag shall be attached to each switch that is providing clearance on a cleared line or apparatus.

e) The handles of switches providing clearances for working on lines or apparatus shall be locked or blocked open or closed in addition to being Hold Carded or tagged.

f) Under no circumstances shall Hold Cards or tags be removed or the line or apparatus put in service until so ordered by the dispatcher.

g) Before ordering Hold Cards or tags removed and lines or equipment returned to service, the load dispatcher shall require that the same man who received the clearance shall report that the line or equipment may be re-energized.

Exception: If the person who received the clearance shall leave the work before it is completed, he shall so inform the dispatcher, giving him the name of the man who will take his place. In such cases, the dispatcher shall communicate with both men, releasing the one

510 Working on Transformers

a) The primary leads of a distribution transformer shall be considered energized at full voltage until both the primary and secondary leads have been disconnected, or it has been definitely determined that the secondary circuit to which it is attached is grounded.

b) The cases of all transformers connected to a source of supply shall be considered as being energized at the full primary voltage unless they are adequately grounded.

c) Employees shall not stand on, or otherwise contact transformer cases, while working on or near energized circuits.

511 Hoisting Cables—Conductive Material

a) Wire rope or other conductive material shall not be used to raise transformers, poles, or any other material near high-voltage lines, except when the wire rope and any conductive material being raised are adequately protected by insulating covering and such energized wires are properly covered.

b) Use of wire rope as a hoist line shall be discontinued when it becomes worn, deteriorated or damaged to a degree that is unsafe.

c) Metallic slings (chain or cable) shall not be used near energized equipment.

d) Chain slings shall not be used for lifting purposes.

e) Positive control of wire rope shall be maintained at all times.

f) Synthetic hoisting and pulling lines and ropes shall not be considered as non-conductive.

512 Working on Capacitors

a) Line capacitors shall be considered at full voltage until they have been removed from the line, and the terminals short-circuited and discharged to ground by an approved method.

The terminals shall not be short-circuited until the capacitors have been de-energized for at least five minutes.

b) Employee shall wear rubber gloves and use a hot stick while shorting and grounding terminals.

c) Employees shall not come in contact with an ungrounded capacitor case until the capacitor has been disconnected from the circuit and the terminals shorted.

d) The terminals of used capacitors in storage shall be shorted.

513 PCB's (Pyranol, Askeral, Inerteen, etc.)

a) Employees shall wear rubber or plastic gloves and eye protection when cleaning up after a rupture of a capacitor or transformer containing PCB.

b) Before entering a confined space (such as a transformer vault) after the failure of equipment containing PCB, the space shall be purged by forced ventilation and employees entering the space shall wear proper auxilliary breathing equipment until tests indicate it is free of fumes.

c) All materials such as rags, solvents, dirt, etc. contaminated by PCB shall be disposed of according to written instructions.

514 Stringing or Removing De-Energized Conductors

a) Prior to stringing operations, a briefing shall be held setting forth the plan of operation and specifying the type of equipment to be used, grounding devices and procedures to be followed, crossover methods to be employed, and the clearance authorization required.

b) Where there is a possibility of the conductor accidentally contacting an energized circuit or receiving a dangerous induced voltage buildup, to further protect the employee from the hazard of the conductor, the conductor being installed or removed shall be grounded or provisions made to insulate or isolate the employee.

c) If the existing line is de-energized, proper clearance authorization shall be secured and the line grounded on both sides of the crossover or, the line being strung or removed shall be considered and worked as energized.

d) When crossing over energized conductors in excess of 600 volts, rope nets or guard structures shall be installed unless provision is made to isolate or insulate the workman or the energized conductor. Where practical the automatic reclosing feature of the circuit interrupting device shall be made inoperative. In addition, the line being strung shall be grounded on either side of the crossover or considered and worked as energized.

e) Conductors being strung in or removed shall be kept under positive control by the use of adequate tension reels, guard structures, tielines, or other means to prevent accidental contact with energized circuits.

f) A transmission clipping crew shall have a minimum of two structures clipped in between the crew and the conductor being sagged. When working on bare conductors, clipping and tying crews shall work between grounds at all times. The grounds shall remain intact until the conductors are clipped in, except on dead end structures.

g) Adequate grounds shall be placed on all dead end structures and shall remain intact until jumpers are installed completing the circuit, or removed as the last phase of aerial cleanup.

515 Stringing Adjacent to Energized Lines

a) Prior to stringing parallel to an existing energized transmission line, a competent determination shall be made to ascertain whether dangerous induced voltage buildups will occur, particularly during switching and ground fault conditions. When there is a possibility that such dangerous induced voltage may exist, the provisions of subparagraphs (b) through (j) shall be followed.

b) When stringing adjacent to energized lines, the tension stringing method or other methods which preclude unintentional contact between the lines being pulled and any employee shall be used.

c) All pulling and tensioning equipment shall be effectively grounded.

d) A ground shall be installed between the tensioning reel setup and the first structure in order to ground each bare conductor, subconductor, and overhead ground conductor during stringing operations.

e) During stringing operations, each bare conductor, subconductor, and overhead ground conductor shall be grounded at the first tower adjacent to both the tensioning and pulling setup and in increments so that no point is more than 2 miles from a ground.

f) The ground shall be left in place until conductor installation is completed.

g) Such grounds shall be removed as the last phase of aerial cleanup.

h) Except for moving type grounds, the grounds shall be placed and removed with a hot stick.

i) Conductors, subconductors, and overhead ground conductors shall be grounded at all dead end or catch-off points.

j) A ground shall be located at each side and within 10 feet of working areas where conductors, subconductors,

or overhead ground conductors are being spliced at ground level. The two ends to be spliced shall be bonded to each other.

k) All conductors, subconductors, and overhead ground conductors shall be bonded to the tower at any isolated tower where it may be necessary to complete work on the transmission line.

l) Work on dead end towers shall require grounding on all de-energized lines.

m) Grounds may be removed as soon as the work is completed: Provided, that the line is not left open circuited at the isolated tower at which work is being completed.

n) When performing work from the structures, clipping crews and all others working on conductors, subconductors, or overhead ground conductors shall be protected by individual grounds installed at every work location.

516 Grounding—General

a) All previously energized conductors shall be considered energized until tested and properly grounded.

b) New construction. New lines or equipment may be considered de-energized and worked as such where:

1) The lines or equipment are grounded, or

2) The hazard of induced voltage is not present, and adequate clearances or other means are implemented to prevent contact with energized lines or equipment and the new lines or equipment.

c) Communication conductors. Bare wire communication conductors on power poles or structures shall be treated as energized lines unless protected by insulating materials.

d) Voltage testing. De-energized conductors and equipment which are to be grounded shall first be tested for the presence of voltage.

e) Attaching grounds.

1) When attaching grounds, the ground end shall be attached first, and the other end shall be attached and removed by means of insulated tools.

2) When removing grounds, the grounding device shall first be removed from the line or equipment using insulating tools.

f) Grounds shall be placed between work location and all sources of energy and as close as practicable to the

work location, or grounds shall be placed at the work location. If work is to be performed at more than one location in a line section, the line section must be grounded and short circuited at one location in the line section and the conductor to be worked on shall be grounded at each work location. The minimum distance shown in Table 5-1 shall be maintained from ungrounded conductors at the work location. Where the making of a ground is impracticable, or the conditions resulting therefrom would be more hazardous than working on the lines or equipment without grounding, the grounds may be omitted and the line or equipment worked as energized.

g) Testing without grounds. Grounds may be temporarily removed only when necessary for test purposes and extreme caution shall be exercised during the test procedures.

h) Grounding electrode. When grounding electrodes are utilized, such electrodes shall have a resistance to ground low enough to remove the danger of harm to personnel or permit prompt operation of protective devices.

i) Grounding to tower. Grounding to tower shall be made with a tower clamp capable of conducting the anticipated fault current.

j) Ground lead. A ground lead, to be attached to either a tower ground or driven ground, shall be capable of conducting the anticipated fault current and shall have a minimum conductance of No. 2 AWG copper.

k) Lifting equipment shall be bonded to an effective ground, or it shall be considered energized and barricaded when utilized near energized equipment or lines.

517 Single Point Grounding

a) A chain binder, with provisions for attaching grounding jumpers, shall be tightened around the pole at a position below where the lineman will place his feet.

b) A jumper shall be attached to the chain binder and extended to the system neutral. If neutral is not present or cannot be approached safely, see 516h) above for alternate grounding.

c) Jumpers shall be extended from the system neutral to each phase conductor.

d) When work is completed, the jumpers shall be removed in reverse order of installation.

e) When a circuit is to be opened, such as when opening jumpers at a junction pole, cutting slack, etc., a temporary jumper shall be installed across the open point.

f) When it is not practical to ground at the pole where work is to be performed, such as when wires are down, grounds shall be installed on both sides of the work location but not further than adjacent structures.

518 Pole Hauling and Temporary Storage

a) The trailing end of a load of poles shall be marked by a red flag during the day and illuminated warning devices at night. As an additional precaution, warning flags or lights may be placed in the center of long loads. An employee shall be used for flagging when necessary.

b) If it becomes necessary to store poles at the location where they are to be set, they shall be so placed that they will not interfere with traffic.

c) If poles, left on or near streets, highways or walkways overnight create a hazard, they shall be safeguarded by red lights or well-lighted warning signs.

d) Poles shall be so placed or blocked that they will not roll.

e) Employees shall not remain on a pole pile while poles are being hoisted.

f) Poles, loaded on a truck or trailer, shall be securely fastened in at least two places.

g) When a load of poles is within working distance of the ground, load binders shall be so installed that they can and will be operated by employees while standing on the ground.

h) Employees shall not ride pole dollies or trailers.

i) The wheels of the transporting vehicle shall be blocked or securely braked prior to loading or unloading.

j) See Section 308 for additional rules on hauling poles and ladders.

POLES— AVERAGE WEIGHTS *(When Furnished To A.S.A. Specifications)*

It should be understood that poles, even within the same class, vary in diameter and hence weight. Also, the moisture content of a pole changes under varius conditions. Therefore, the weights given in these tables should be taken as average values only, but they should prove sufficiently reliable.

	Length (ft)	Class 1	2	3	4	5	6	7	8	9
		Pounds								
WESTERN RED CEDAR	30	1000	850	730	610	500	420	350	325	250
	35	1200	1000	850	750	650	560	470	450	
	40	1500	1300	1100	900	800	700			
	45	1800	1550	1300	1150	1000				
	50	2000	1800	1550	1400	1300				
	55	2300	2000	1750	1600	1600				
	60	2600	2200	2000	1900					
	65	3200	2500	2300	2200					
	70	3600	3000	2700	2600					
	75	4200	3600	3100	3000					
	80	5000	4200	3600	3500					
	85	5500	4500	4000						
	90	6600	5600	4800						
CREOSOTED YELLOW PINE 8 lb. Treatment	30	1280	1082	921	784	660	550	454	513	371
	35	1567	1343	1155	1004	862	742	646	697	
	40	1884	1622	1403	1219	1059	921	807		
	45	2222	1911	1664	1444	1274	1114	976		
	50	2585	2214	1925	1687	1494	1329	1169		
	55	2993	2567	2200	1934	1718	1563			
	60	3765	3210	2740	2385	2130	1965			
	65	4380	3645	3070	2680	2440				
	70	5040	4125	3430	2980	2715				
	75	5670	4620	3825	3295					

519 Setting and Removing Poles

a) If any holes are left unfilled at the end of the work period, they shall be protected with substantial coverings.

b) All persons not engaged in pole-setting operations shall keep out of the work area.

c) No one shall be on a gin pole when it is being used to raise another pole.

d) While setting or removing poles between or near conductors energized above 600 volts:

1) If safe clearance cannot be maintained, the conductors shall be deenergized, covered with protective devices, spread, or pole guards shall be used, to minimize accidental contact.

2) Workmen handling the butt of the pole shall wear rubber gloves whether or not cant hooks, peaveys or slings are used.

3) Until a pole is positively secured from moving

against an energized conductor no one shall step on or off the truck, or touch any part of it without using rubber gloves if employee is standing on the ground.

4) Ground wires shall not be attached on the pole higher than 10 feet from the ground.

e) When pikes are used to hold poles in place while holes are being backfilled, the pikes shall be firmly grounded in all directions and shall not be removed until the back-fill is sufficient to hold. When a pole is being "canted" or "hooked" the pikes shall be held.

f) Employees shall not stand or pass under a suspended load or adjacent to, or over or under a loaded winch line.

g) Employees engaged in handling or working on poles shall wear suitable gloves and shall wear a shirt or jacket with the sleeves rolled down.

h) Hoisting equipment operators shall accept signals only from the employee specifically designated. The opeartor shall obey the stop signal given by anyone.

520 Derrick Trucks, Cranes, Etc.

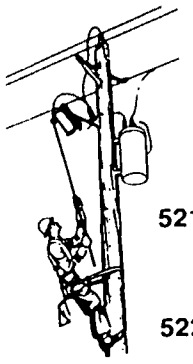
With exception of equipment certified for work on the proper voltage, mechanical equipment shall not be operated closer to any energized line or equipment than the clearances set forth in Table 5-1 unless:

1) An insulated barrier is installed between the energized part and the mechanical equipment, or

2) The mechanical equipment is grounded, or

3) The mechanical equipment is insulated, or

4) The mechanical equipment is considered as energized.



521 Fuses

See Sections 116 and 504d) 8) for rules on live line tools and safety eyewear.

522 Rope (Synthetic Fiber—Manila)

a) A rope shall not be overloaded or dragged over rough or sharp objects.

b) Short bends over sharp-edged surfaces should be avoided.

c) Kinks shall be removed before any strain is put on a rope.

d) When not in use, rope shall be dried and stored

properly and kept free from mechanical damage and excessive heat and dryness.

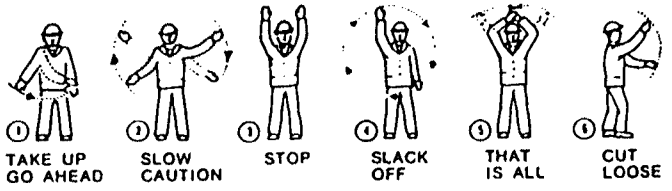
e) Rope shall be examined regularly for cuts, worn spots, burns and rot. The rope shall be untwisted at various places and inspected for poor fibre and dry rot.

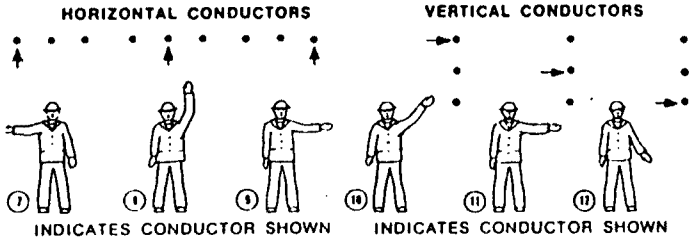
f) The outward appearance of rope shall not be accepted as proof of quality or strength.

g) The safe loads shall not be exceeded.

h) Handlines shall be a minimum of ½ inch diameter and have a strength equivalent to ½ inch manila.

SUGGESTED STANDARD SIGNALS FOR LINE WORK





① This signal is used to indicate the direction of pull. Faster or slower motions of this signal are used to indicate speeds other than caution or slow speeds. Where there is a choice of conductors to be pulled this signal is given with one of the indicating signals 7 to 12 inclusive.

② This signal always follows either No. 1 or No. 4 and is an indication of slow speed for caution. This signal must be given continuously while the pull is being made at slow speed and is to be terminated by either giving the No. 1, No. 4 (depending on direction) or No. 3 signal.

④ This signal is used to indicate the direction of pull and is used in slacking or lowering as No. 1 is used for taking up.

New Synthetic Fiber Rope
Safe Loads

Diameter Inches	Circumference Inches	NYLON Pounds per 100 ft.	NYLON Tensile Strength Pounds	NYLON Safe Load Pounds	POLYPROPYLENE Pounds per 100 ft.	POLYPROPYLENE Tensile Strength Pounds	POLYPROPYLENE Safe Load Pounds
¼	¾	1.54	1,500	300	1.16	1,200	240
⅜	1⅛	3.5	3,500	700	2.78	2,500	500
½	1½	6.06	6,000	1,200	4.76	4,300	860
⅝	2	10.3	10,000	2,000	8.0	6,700	1,340
¾	2¼	13.9	14,000	2,800	10.5	9,000	1,800
⅞	2¾	20.0	19,000	3,800	14.28	11,500	2,300
1	3	24.4	24,000	4,800	18.1	14,000	2,800
1⅛	3½	33.3	30,000	6,000	22.22	17,000	3,400
1¼	3¾	38.4	35,000	7,000	26.7	19,000	3,800
1½	4½	55.5	50,000	10,000	36.3	27,500	5,500
1⅝	5	66.6	62,000	12,400	45.45	33,000	6,600
1¾	5½	80.0	75,000	15,000	55.5	40,000	8,000

New Manila Rope
3 Strand—Plain Lay—Safe Load in Pounds

Diam. Inches	Circum. Inches	Single Rope	Two Part Sling 60°	Two Part Sling 45°	Two Part Sling 30°	Breaking Strength	Length & Weight In Coil (Approx.) Feet	Pounds	Feet Per Pound	Weight Pounds Per Ft.
¼	¾	120	208	170	120	600	2500	50	50' 0"	.020
⅜	1⅛	270	467	382	270	1350	1250	50	24' 5"	.041
½	1½	530	917	749	530	2650	1200	90	13' 4"	.075
⅝	2	880	1522	1244	880	4400	1200	160	7' 6"	.133
¾	2¼	1080	1868	1527	1080	5400	1200	200	6'	.167
⅞	2¾	1540	2664	2178	1540	7700	1200	270	4' 5"	.225
1	3	1800	3114	2545	1800	9000	1200	324	3' 9"	.270
1⅛	3½	2400	4152	3394	2400	12000	1200	432	2' 9"	.360
1¼	3¾	2700	4671	3818	2700	13500	1200	502	2' 5"	.418
1⅜	4	3000	5190	4242	3000	15000	1200	576	2' 1"	.480
1½	4½	3700	6401	5232	3700	18500	1200	720	1' 8"	.600
1⅝	5	4500	7785	6363	4500	22500	1200	893	1' 4"	.744
1¾	5½	5300	9169	7494	5300	26500	1200	1073	1' 1"	.895
2	6	6200	10726	8767	6200	31000	1200	1290	11"	1.08

Sisal Rope Tensile strength, approximately 25% less than Manila Rope. Four strand Manila rope approximately same tensile strength as three strand Manila rope.

Section 6 **TREE TRIMMING**

601 General

a) When tree trimming, tree felling, brush loading or brush disposal operations are under way on street, highway or any other area accessible to the public, "Men Working" signs, cones, red flags or flares, barricades and other warning devices (or combinations thereof) shall be used to protect vehicular and pedestrian traffic.

b) Pole climbers shall not be used in trees.

c) Dead or rotted limbs, regardless of size, shall not be used by employees for support.

d) No work shall be done in a tree until employee is securely tied in or belted to the tree.

e) The climbing rope shall be crotched in such a manner as to prevent its "working out" on a lateral limb.

f) When working in a multiple-trunk tree, the climbing rope shall preferably be crotched around a main trunk other than the one on which the employee is working.

g) Employee shall crotch his climbing rope in two places if a single crotch does not adequately protect him from falling into energized lines or falling back into trunk of tree.

h) The climbing rope shall not be used as a pull-rope or as a handline to lower limbs or branches.

i) The ground end of a climbing rope shall not be allowed to dangle over roadways and shall be kept free from obstructions, passing vehicles, etc.

j) The taut-line hitch shall not be released until the climber is on the ground.

⑦ to ⑫. These signals are always used in connection with either No. 1 or No. 4 and are given at the same time as either No. 1 or No. 4 is given. In using No. 10, No. 11, and No. 12, the man's arm on the wire side to be pulled is used for the indicating signal.

TRUCK HOIST SIGNALS

HAND CLOSED THUMB UP
⑪ TAKE UP

HAND CLOSED THUMB DOWN
⑭ LOWER

HAND OPEN
⑱ STOP

⑪⑭⑱These signals are to be used only when the signal man is within 50' of the truck operator.

k) Branches or other material shall not be dropped unless the immediate area has been cleared so that there is no possibility of injury to persons or damage to property is apparent. If such a possibility exists, a rope shall be used to lower branches or other materials.

l) When lowering heavy tree members, employees shall not tie fall lines around hands or bodies.

m) Employees shall not attempt to clear limbs or brush from under that side of tree where the climber is working.

n) Employees shall obtain assistance or use power equipment if available, when lifting logs or other heavy loads.

o) When loading brush on a truck, employees shall not stand on or straddle the loaded brush.

p) Brush shall be hauled away promptly or otherwise disposed of to avoid presenting "an attractive nuisance" to children and to prevent injury to persons or damage to passing vehicles.

q) When hauling brush, care shall be taken that it doesn't extend over the sides of the truck.

r) When it is necessary to work in the vicinity of poison ivy, poison oak or poison sumac, employees shall keep sleeves rolled down and wear gloves.

602 Working Near Energized Conductors

a) Wires in proximity to tree trimming shall be considered as energized, unless proven to be dead and are grounded.

b) Parts of trees, in contact with or likely to contact energized conductors, shall be cut with insulated tools or employee shall wear rubber gloves when making the cut. Limbs being removed from contact with wires are to be handled with the same precautions as the wires themselves. Care shall be taken to prevent limb being removed from coming in contact with employee's body.

c) Employees shall never pass between or contact energized wires unless such wires are covered with protective devices.

d) Employees shall not remove tree limbs or branches from above energized conductors while other employees are working in trees below the conductors in the same span.

e) Broken or fallen wires shall not be handled except by persons experienced in such work.

f) When working near wires the employee shall have his climbing rope so secured that in the event he slips or a limb breaks, he will swing free and clear of the wires.

g) Tree limbs shall not be dropped on conductors.

h) Ropes shall not be thrown over conductors or crossarms for the purpose of using the conductor or crossarm as a support or hitch.

i) Dry ropes shall be used in trees through which energized conductors pass.

j) If electric powered tools are used in trees, the supply cord shall be kept a minimum of 6 feet from energized conductors. Rubber gloves shall be worn when using such equipment in proximity to energized conductors or when cutting limbs that may contact such conductors.

k) When using aerial basket equipment employee shall take care not to bring himself or the equipment in contact with energized lines.

603 Tree Felling

a) Trees to be felled shall be inspected for dead limbs which may break, or broken limbs lodged in the tree, either of which may fall into the working area as the job progresses.

b) No one shall be allowed to work in a tree located near a tree that is being felled if there is any danger of its being struck by any part of the falling tree.

c) All persons not engaged in the felling operation shall be kept clear of guide ropes and other rigging.

d) Clear warning shall be given to all employees in area when trees are to be felled or heavy tree members are to be dropped.

e) Once the felling of a tree has been started, it shall be completed before leaving the job.

604 Care and Use of Tools and Rope

a) Ropes shall be inspected periodically. Damaged sections shall be cut out and destroyed or the rope replaced.

b) Ropes shall be kept away from fire, acids, oil, chemicals and all sources of excessive heat.

c) Dragging ropes over rough surfaces and sharp objects, such as rocks, shall be avoided. Ropes shall be stored separately from sharp edged cutting tools.

d) The cutting edge of tools shall be suitably sheathed or guarded except while in actual use.

e) When not in actual use, the trimmer's saw shall be returned to the scabbard.

f) Axes shall not be used in trees or carried on the shoulder.

g) Tools shall not be thrown into or dropped from a tree; they shall be raised or lowered by a suitable rope line.

h) A pruner shall not be laid on a limb, in a crotch or hooked on a wire or rope. It shall be hooked over a limb strong enough to hold its weight.

i) Ladders shall be removed from the base of the tree when not in use.

605 Powered Trimming Equipment

a) Employees operating powered trimming equipment shall wear suitable eye protection.

b) For hearing protection requirements, refer to rule 202.

c) When starting a chain saw, it shall be placed on or against a solid support.

d) The operator shall grip the chain saw with both hands during the entire cutting operation.

e) Saw bumper shall be against tree or limb before starting a cut.

f) Chain saw operators shall, when necessary, clear the immediate area around their work to make certain that brush will not interfere with either the chain saw or operator.

g) All chain saws shall be equipped with "deadman" controls (control cannot lock in "on" position).

h) The chain saw engine or motor shall be stopped:

1) When working on any part of the chain or cutting bar.

2) While the saw is being moved from one location to another.

3) While unit is unattended.

i) Gasoline driven chain saw engine shall be stopped when being refueled. If gas is spilled on chain saw during refueling, it shall be wiped off before engine is started.

j) A gasoline driven chain saw shall not be used above shoulder level.

k) Employees shall not approach chain saw operator within the reach of the saw while the saw is in operation.

l) Employee shall never hand a pneumatic pruner or

saw to another employee unless it is disconnected from air hose.

m) Powered tools shall not be left unattended if connected to power source.

n) Powered tools shall not be adjusted or repaired while connected to power source.

606 Chippers

a) Chippers shall never be parked directly under tree being trimmed.

b) Employees shall not permit spectators to stand near machine while feeding brush into chipper.

c) Full cover goggles or face shield shall be worn by employee when feeding brush into chipper.

d) Employee shall never place hands or other part of body into brush hopper while chipper is in operation.

e) Tools or other metallic objects shall not be used to push brush into chipper. Sweepings, which may contain foreign objects such as stones and nails, shall be loaded on truck and not fed into the chipper.

f) Ignition key shall be removed when chipper is left unattended.

g) For hearing protection requirements refer to rule 202.

h) Only wrist-length (non-gauntlet) gloves shall be used by employees feeding a chipper.

607 Right-of-Way Clearing and Maintenance

a) Where two or more men are cutting brush, they shall be separated by at least 10 feet.

b) Under no circumstances shall anyone except the operator ride on a bulldozer, or any other heavy equipment used in land clearing.

c) Bulldozer operators shall wear seat belts.

d) Employees shall not anchor equipment to railroad tracks, fences or structures belonging to others

e) When emerging from right-of-way, prior to road travel, employees shall test brakes.

608 Use of Herbicides and Other Chemicals

a) Before using any herbicide or other chemical, employees shall read the label carefully and follow the directions and precautions listed.

b) Employees shall avoid skin contact or breathing mist of spray material whenever possible.

c) When working with toxic materials, proper respirator protection must be used.

d) Spray equipment shall be cleansed daily when using oil solutions.

e) Spraying shall not be done when wind exceeds 15 mph unless specifically authorized by supervisor.

f) Brush shall not be sprayed at a distance greater than 15 feet from power spray nozzle.

g) Foliage and basal sprays shall not be used on wild cherry trees in areas where livestock may graze because of the poisonous acid that is generated.

h) Oil and other liquids, spilled on power spray equipment, shall be removed as soon as possible to prevent falls from slippery surfaces.

i) Hose connections on hydraulic sprayers shall be checked before use to prevent blowing.

j) Employees shall not smoke on or around mist spray equipment when oil solutions are being mixed or used.

k) Herbicides and other chemicals shall never be left where they would create a menace to persons or property.

l) Empty containers shall be disposed of in a safe manner. They shall never be thrown into ponds, lakes or streams.

m) Spray wastes shall be buried or otherwise disposed of in a safe manner.

Section 7 UNDERGROUND LINES AND EQUIPMENT

701 Opening and Guarding Holes

Whenever cover is to be removed from a manhole or a vault or any other obstruction to traffic exists, the following precautions shall be taken.

a) All obstructions to traffic shall be guarded by adequate signs, barricades, lights, flares, flags, etc. Traffic shall be warned in sufficient time, that an obstruction exists, through the use of signs, high level standards, flashing lights, traffic cones, flagmen, etc., as may be needed.

b) Where permissible and practicable, the truck shall also be placed to guard the work area against oncoming traffic.

c) A blow torch or other open flame shall never be used to melt ice around a manhole or vault cover.

d) Manhole, vault and service-box covers shall always be removed and replaced by means of approved hooks or hoists.

702 Entering Underground Structures

a) Before an employee enters a street opening, such as a manhole or an unvented vault, it shall be promptly protected with a barrier, temporary cover, or other suitable guard.

b) When work is to be performed in a manhole or unvented vault:

1) No entry shall be permitted unless forced ventilation is used or the atmosphere is found to be safe by testing for oxygen deficiency and the presence of explosive gases or fumes;

2) Where unsafe conditions are detected, by testing or other means, the work area shall be ventilated and otherwise made safe before entry;

3) Provisions shall be made for an adequate continuous supply of air.

c) If, in an emergency, it becomes necessary for an employee to enter a manhole or vault where gas is present, he shall use an approved gas mask and a safety belt to which there is attached a life line attended by another employee stationed at the manhole or vault opening.

d) A ladder shall always be used in entering or leaving a manhole or vault. Climbing into or out of manholes or vaults by stepping on cables or hangers is forbidden.

e) While work is being performed in manholes, an employee shall be available in the immediate vicinity to render emergency assistance as may be required. This shall not preclude the employee in the immediate vicinity from occasionally entering a manhole to provide assistance, other than emergency. This requirement does not preclude a qualified employee, working alone, from entering for brief periods of time, a manhole where energized cables or equipment are in service, for the purpose of inspection, housekeeping, taking readings, or similar work if such work can be performed safely

f) Before any work is done on a cable, it shall be identified by an approved method. If there is any doubt as to the identification, work shall not be started until it is checked and identified by the proper authority.

703 Work on Energized Cables

a) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized before work is done on the conductor, or before the cables are cut into or spliced.

b) Before any work is done on an energized cable other cables and all grounded equipment with which contact can be made while working on the energized cable shall be covered with rubber blankets or approved insulating shields. (Cables with non-metallic sheaths and those with an insulating jacket over the metallic sheath need not be covered).

c) Because of the characteristics of a low voltage net-

work system, when work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment, in observing adequate clearances and in using proper tools in order to prevent short circuits.

d) Employees shall wear rubber gloves with leather protectors and stand on rubber mats or insulated stools while cutting into and removing sheathing or sleeves and while testing an energized cable.

e) After removing a section of lead sheath or sleeve on an energized cable, the lead on each side of the opening shall be covered with insulating tape for a distance of at least 9 inches.

f) When cutting an energized multiple conductor cable, a piece of fiber or wood shall be placed between the conductor being cut and the other conductors and the cut shall be made directly over the sheild.

g) Immediately after each conductor of an energized multiple conductor cable is cut in two, the ends shall be insulated before another conductor is cut. During the course of the work, only one uninsulated conductor shall be exposed at any one time.

704 Work on De-Energized Cables

a) When cables and apparatus are taken out of service to be worked on, the procedure outlined in Rule 508 shall be followed.

b) Before making an opening in or removing a part of the sheath or sleeve of a cable, the line shall be grounded at the first possible grounding point on each side of the work location.

c) When a high tension cable is to be cut, a short section of the shielding if any, completely around the cable shall be removed and tests made with two statiscopes or other approved testing devices, to determine whether or not the cable is de-energized. If no indication of a live cable is obtained, the employee may proceed with the work.

d) When opening a joint or splice in a high tension cable, the sleeve of the joint shall be cut completely around near the wipes and then cut lengthwise and removed from the joint. No effort shall be made to remove the compound. The employee shall then test over each conductor with two statiscopes or other approved testing devices. If no indication of a live cable is obtained, he

shall remove the compound. If shielding tape is then encountered, it shall be removed and another test made over each conductor with two statiscopes or other approved testing devices. If no indication of a live cable is then obtained, he shall cut through the joint until the saw touches one of the conductors. Before sawing further a statiscope test shall be made on the blade of the saw.

e) When cutting or opening joints on low tension cables, the same procedure as outlined above for high tension cables shall be followed, except in testing. To determine whether the conductor is energized the insulation shall be cut away to the conductor and tests made with an approved tester. On multiple conductor cables, only one conductor shall be cut into at a time and tests made on at least two conductors before proceeding with work.

705 Pulling Cables

a) Employees shall not handle pull-wires or pulling-lines within reaching distance of blocks, sheaves, winch drums and take-up reels.

b) Pull-wires, steel pulling-lines or metal rodding shall not be pushed through ducts where energized equipment is present unless another employee is stationed at the other end of the run.

c) Employees shall not remain in a manhole or vault during pulling operations involving heavy pulling strains unless they can take a position clear of the pulling-line.

706 Moving Energized Cables

a) Cables operating at voltages above 15,000 volts shall not be moved under any circumstances.

b) All cables up to 15,000 volts may be moved at the discretion of the foreman. They shall not, however, be moved where such movement requires changing bends.

c) All energized cables shall be handled with rubber gloves except when applying fire-proofing materials.

707 Heating Materials

a) Metals and insulating compounds shall be heated in such manner as to prevent hazard to the employees working in manholes or vaults and to vehicular or pedestrian traffic.

b) Gloves shall be worn while heating or working with hot insulating compound.

c) Furnaces and tanks containing liquefied petroleum

gas such as butane or propane shall not be placed in a manhole or vault.

d) Cold solder scraps or dipper shall never be placed in a hot solder pot until the chill and any moisture has been removed from the scraps or dipper.

e) Heating pots for solder, oil or compound shall be safely positioned so that the contents cannot enter the vault or manhole in the event of spillage.

f) Lighted furnaces or blow torches should not be left unattended.

g) Torches or furnaces must be kept at a safe distance from flammable materials.

UNDERGROUND RESIDENTIAL DISTRIBUTION

Introduction

Underground Residential Distribution systems have a number of apparent advantages over overhead systems; however, they also have some disadvantages such as confined working spaces, closer clearances between energized parts and greater exposure to all types of grounds. In most cases, if protective devices are not used, the employee will be in direct contact with the ground, or grounded equipment. This contact completes half of an electrical circuit; therefore, if these contacts are not avoided, or protection against contact is not used, serious injury could result.

There is a safe way of doing **every** job; be sure you know it before proceeding.

708 URD—General

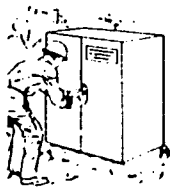
a) Before a URD transformer enclosure is opened, all unauthorized persons including private citizens shall be required to leave the work area, and remain clear of all hazards involved in the work.

b) When underground equipment is being located, short sections of scrap cable could provide false indications of the actual position of permanent conductors; therefore, all scrap cable, regardless of length, is to be removed from the job site.

709 Opening and Closing Circuits—URD

a) Company switching procedures, including Hold Carding and tagging practices, shall be followed when sectionalizing URD systems.

b) When URD circuit has opened, the route of the cir-



is closed and locked or until all equipment is properly grounded.

b) Rubber gloves shall be worn when removing animals, vines, weeds, grass or vegatation of any kind that has grown into an energized URD installation whether the equipment is opened or closed.

c) Rubber gloves and sleeves shall be worn when energized primary cables are moved, handled or protected.

d) Rubber gloves shall be worn when work is performed on energized secondaries and services.

e) Rubber gloves shall be worn when working on or contacting a neutral.

712 Work on Energized Equipment—URD

a) When work is performed on cables or apparatus carrying less than 600 volts, employees shall take extra precautions in the use of necessary rubber protective equipment in observing adequate clearances, and in using proper tools in order to prevent short circuits.

b) When energized pad-mounted transformers are unlocked and opened, they shall be directly attended by a workman. They shall be kept closed and locked at all other times.

c) A primary or secondary system neutral on any energized circuit shall not be opened under any circumstances.

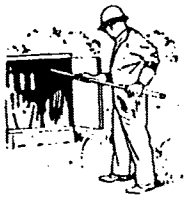
d) Elbow connectors provide a great deal of flexibility in switching and system sectionalizing. However, only those connectors designed and approved for load break use shall be used to connect or disconnect an energized circuit.

e) Only tools with insulated handles shall be used for making energized secondary connections, or when work is performed within energized service pedestals, pad-mount compartments or submersible transformer enclosures.

f) Only one energized secondary or service conductor shall be worked on at any one time, and protective devices shall be used to insulate or isolate it from all others.

g) Before any attempt is made to replace a damaged or blown cable limiter, the customer's service will be checked for faults by the use of either an ohmmeter or a voltmeter.

h) A shirt or jumper with full-length sleeves, rolled down,



cuit shall be patrolled for obvious hazards before the circuit is reclosed.

c) An approved switching tool and rubber gloves shall both be used when switches (including secondary breakers) in an energized circuit are opened or closed.

(Note: Supervision may require the use of rubber sleeves in addition to rubber gloves.)

d) Any URD primary circuit shall be de-energized by opening one or more load break devices. De-energizing shall be done with a load break elbow connector, load break fuse cutout at the riser pole, load break tool or other approved load break device.

e) Eye or face protection shall be worn when primary switching operations are performed.

710 Grounding—URD

(Note: A capacitance charge can remain in a URD cable after it has been disconnected from the circuit and a static-type arc can occur when grounds are applied to such cables.)

a) All URD cables and equipment, including services, that have been energized or could become energized from any source, shall be considered as energized until the equipment is positively proven to be de-energized and has been grounded.

b) Before doing work on de-energized primary circuits or equipment: (1) a visible open break shall be provided; (2) a voltage test shall be made; and (3) the equipment shall be grounded.

c) When work is to be done on equipment or cables of an underground system, precautions to prevent back-feed shall be taken. This shall include grounding of secondary conductors.

d) De-energized cables to be worked on, shall be grounded at a point as close to the work as possible.

e) All underground cables and apparatus carrying current at voltages above 600 volts shall be de-energized and grounded before cables are cut into or spliced.

f) All conductors of a circuit shall be deenergized when work is to be performed on any of them.

711 Rubber Glove Use—URD

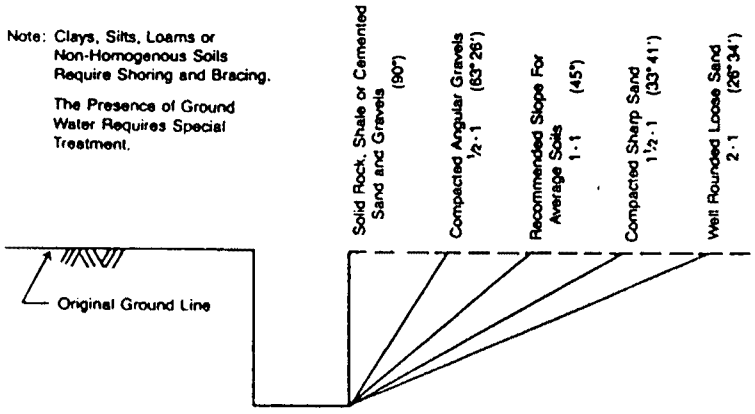
a) Rubber gloves shall be put on before any URD compartment or enclosure (including service pedestals) is opened and kept on until the compartment or enclosure

stored and retained at least 2 feet or more from the edge of the excavation.

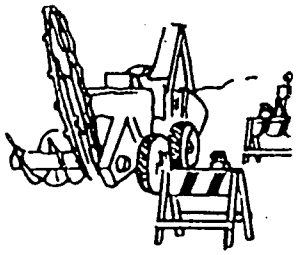
k) When employees are required to be in trenches 4 feet deep or more, an adequate means of exit, such as a ladder or steps shall be provided and located so as to require no more than 25 feet of lateral travel.

l) Sides of trenches 5 feet or more in depth shall be shored, sloped or otherwise supported by means of sufficient strength to protect employees working within them.

Approximate Angle of Repose
For Sloping of Sides of Excavations



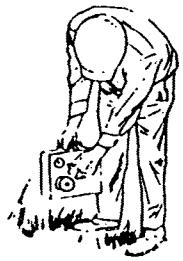
m) Trenching machines which are parked or operating on streets or highways shall be protected by proper warning devices.



n) When it is necessary to leave excavating equipment unattended, the blade, bucket or scoop shall be lowered to the ground and the ignition system locked.

shall be worn when work is performed on any energized URD cable or apparatus.

713 Excavations—URD



a) Mechanical excavating equipment shall be used only in areas where there is no known danger of contacting or damaging buried facilities.

b) Before excavating in any area where any buried facilities are suspected, such facilities shall be located as accurately as possible.

c) Whenever excavating is done in close proximity to buried facilities, it shall be done only by hand digging.

d) If electric cables are damaged, the following steps shall be taken:

1) If the damaged cable belongs to a power company other than the one performing the work, this company shall be notified at once.

2) The area shall be barricaded and the public kept out until hazardous conditions can be eliminated.

e) If gas lines are damaged, the following steps shall be taken as soon as possible:

1) The hole shall be left open to allow the gas to dissipate into the atmosphere. All possible sources of igniting the gas shall be removed or eliminated.

2) Residents of the area shall be warned when necessary and the public kept out of the area.

3) The local fire department shall be notified immediately.

4) The gas company shall be notified at once.

5) The local police department shall be notified.

f) If communication cables are damaged, the communication company shall be notified at once.

g) When trenches are left open, warning devices, barriers, barricades or guardrails shall be placed to adequately protect the public and employees.

h) At the end of each day's work, as much of the trench as practical shall be closed. No more trench shall be open at one time than is necessary.

i) Suitable gloves shall be worn when using any equipment or tools to excavate, expose or handle secondary cables. They shall also be used when digging with approved hand tools to expose primary cables.

j) In excavations which employees may be required to enter, excavated or other material shall be effectively

Section 8 **GENERATING STATIONS**

801 General

a) Visitors or uninstructed workmen shall be accompanied by a qualified employee in stations and around company properties where life, service or property might be endangered.

b) All employees entering an attended station, except employees regularly working at such station, shall immediately report their presence or purpose according to plant procedure.

c) Employees shall not work on gauge glasses until pressure has been relieved. Gauge glasses shall be pressurized carefully with only authorized personnel persent.

d) All control, annunciator, and indicating light circuits on the back of control gauge boards shall be considered as energized. Employees working in back of these boards shall use precaution to guard against contact with exposed energized parts. Caution shall be exercised when disconnecting, blowing down or draining gauge lines to prevent contact with exposed electrical equipment.

e) Should the water in the boiler become so low that it is not visible in the water column, the furnace fire shall be retarded and other procedures followed as recommended by the manufacturer.

f) When prolonged welding or burning is to be done in the boiler drum, auxiliary ventiliation shall be used.

g) On all water tube boilers where drums are equipped with manheads at each end, both manheads shall be removed from each drum before workers enter the boiler. For inspection purposes only, only one manhead need be removed if a worker is stationed outside during period of inspection.

h) Steam lines shall not be worked on while under pressure except for repacking valves or peening pin hole leaks.

i) Before men enter the furnace or gas passes of the boiler, the following precautions shall be taken.

1) All fuel shut-off valves shall be closed and tagged with Hold Cards.

2) Soot-blower valves shall be closed and a Hold Card placed on each valve.

3) Hold Cards shall be placed on the controls of the mechanical firing equipment such as fuel oil pumps, gas lines, pulverizers, dampers, etc. See rule 109 and Company clearance procedures.

4) Throughly ventilate all areas in which work is to be performed. (It may be advisable to provide continuous forced ventiliation during the progress of the work).

j) When working inside the furnace or ash hopper, protection shall be provided against falling slag. Boilers should be satisfactorily cleaned when out of service for furnace work.

k) See HAND TOOLS, Paragraph 121

802 Entering Confined Spaces

The term "confined space" designates a place such as a condenser, generator, tank, tunnel or any other space which is entered through a manhole opening or other restricted opening or which may become difficult to leave.

a) Before a workman enters a confined space, he shall notify his supervisor and shall see that all valves, switches, control devices and other operating mechanisms have been so positioned, secured and tagged with Hold Cards as to prevent closing the exit opening, energized electrically; evacuating the air or flooding the space with steam, gas, water or anything else that may endanger his life or health..

b) No employee shall enter a confined space unless a competent person, instructed as to the hazards of the job, is available to render assistance.

c) To prevent the latching of self-locking doors or hatches while employees are working inside confined spaces, the locking devices shall be made inoperative or the doors (hatches) shall be secured in the open position.

d) No employee shall undertake work inside a furnace, boiler drum, pressure vessel or tank except under the supervision of the Plant Superintendent or his authorized representative.

e) Before anyone enters a boiler drum, all valves, including blow-down valves, feedwater valves, steam valves and fuel valves shall be closed tightly and approved Hold Cards displayed as follows: One on each of the blow-down valves and one at each of the water-inlet valves. These cards shall not be removed until all work on the boiler has been completed, all men are out of the boiler and all handhole, manhole and heater plates have been replaced. See Rule 109 and Company clearance procedure.

f) Only circuits with approved low-voltage (6 to 12 volt) or GFI (ground fault interrupter) power supplies for lighting shall be used in boiler drums, boilers, pressure vessels, and tanks. These circuits shall have extension cords of sufficient length that the transformers and power supplies are located outside the wet areas at all times.

g) Before dismantling valves, flanges and similar apparatus associated with boilers, pressure vessels or pressure piping, the pressure shall be relieved and the equipment adequately drained.

h) Employees shall not smoke or use open flame in boiler while protective coating, containing flammable solvent is being applied. Only explosion-proof lamps shall be used.

803 Boiler Plant

a) Water wall ring header and economizer blow-down valves shall not be operated while boiler is under load or being fired with other than ignition or pilot torches.

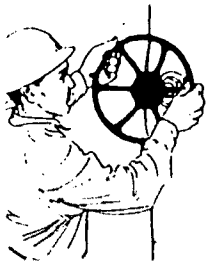
b) Should a blow-off line break, a tube fail or some similar serious leak develop, the fire shall be drawn or retarded immediately and other procedures followed as recommended by manufacturer.

c) When the blow-down line of a boiler being worked on is connected to a common blow-down line with other boilers and it becomes necessary to open the blow-

down valves of the boiler being worked on, a Hold Card shall be attached to the blow-down valves from all boilers. These Hold Cards shall not be removed until the valves of the boiler being worked on have been reclosed. See Rule 109, Rule 508 and "Company Safe Clearance Procedure."

d) Employees shall not work on safety valves while boiler is under pressure except to make necessary adjustments, nor shall they work near unvented safety valves while the boiler is under pressure.

e) Leaky manheads, handhole plates and bolted flanges on steam lines shall not be worked on under pressure without getting specific approval from Plant Superintendent or his authorized representative.



f) Before a boiler water column is repaired or adjusted, the upper and lower shut-off valves shall be closed and the drain opened to release the pressure. Before placing a boiler water column in service, all personnel shall place themselves so that if the gauge glass should rupture, the employee would not be in direct line of steam discharge.

g) While applying a hydrostatic test to a boiler only those inspecting for leaks shall be inside the boiler. If safety valve gags are used, care shall be taken to see that they are removed before the boiler is fired.

h) All employees shall stay clear of pressurized oil or air escaping from a ruptured line or fitting. No attempt shall be made by an employee to stop or slow such a leak by using his hands, feet or other parts of his body. The pump, compressor or engine shall be stopped as soon as the leak is detected.

i) Inlet and outlet circulating water valves shall be Hold Carded before employees enter the water box. If these valves are electrically operated, their main breakers shall be opened and Hold Carded. See Rule 508 and Company clearance procedure.

j) All boiler plant safety devices such as safety valves, relief valves, fuel tripping devices, auxiliary tripping relays, interlocks and alarms shall be tested as set forth by the Plant Management.

k) When lancing boilers, workmen shall wear a long sleeve shirt, buttoned at the collar (or slagging jacket), gloves and a face shield.

l) The boiler operator shall be notified before any door on a boiler is opened, since the fire might flash out due to a plus pressure within.

m) Workmen shall stand to one side when opening the door.

n) Only authorized personnel shall be permitted to open boiler doors. Doors shall be closed before leaving the area.

Note: *When practicable, the unit should be placed on a fixed load and the induced and force draft fans on hand control in order to lessen the danger of a plus pressure.*

o) Employees shall stand to one side when using plugs or brushes with an air gun to clean tubes. This will guard against back pressure in a blocked tube that may drive the plug or brush back when the air gun is removed.

p) No one shall be at the opposite end of tubes being cleaned or plugged.

q) Before removing a valve bonnet, or stuffing box gland, breaking a flanged joint or other pressure connections, the pressure shall be relieved and the system tagged.

r) Bolts, nuts or other fasteners shall be loosened with special care until it is certain that pressure does not exist.

s) Employees shall use only hoses that are approved for the intended use.

t) Air and water hose shall not be used for steam. Steam hoses shall be insulated sufficiently to avoid burns from accidental contact.

u) When a work area is adjacent to, or partially or wholly surrounded by energized areas, the "Safe" work area shall be clearly marked by the use of barricades, tape, rope or other suitable means.

v) When areas are to be marked with barricades, tape or equivalent, as above, this shall be accomplished without violating the minimum working clearance for the voltage involved.

w) While working or pounding on hoppers, to aid the removal of fly ash or siftings, employees shall wear dust proof goggles, dust respirator, gloves and long-sleeved shirt buttoned at the collar.

x) Dust proof goggles shall be worn and care employed when removing inspection plugs from hoppers.

y) Ash pit doors and gates shall be opened and closed cautiously.

z) The spray water shall be on if an occasion arises where the ashes drop to the bottom of the pit (a jam-

ming of large clinkers, etc.), and if it is necessary for an employee to "rod" the jammed passage.

aa) The employee shall wear an approved face shield, slagging jacket and approved safety equipment to fully protect himself from any sudden release of hot ashes.

804 Turbine Generators

Turbine generators shall be started and stopped in accordance with approved station operating instructions.

a) When working on or above open grating, a suitable covering shall be used to cover the grating in order to prevent tools or parts from dropping to a lower level.

b) Work area protection shall be provided or the danger area shall be barricaded when gratings are removed.

805 Gantry Cranes

a) Both rail clamps and wheel brakes shall be applied at all times, when outdoor cranes are not in use.

b) Limit switches on cranes shall be tested regularly but should not be relied upon to stop the motor. Action of the crane shall be controlled by the operator at all times.

c) Gantry cranes shall not be used to make a side pull.

d) Automaic signals shall be sounded before starting and repeated during travel of the crane.

806 Hydrogen Cooling Systems

a) Open flames shall be kept away from hydrogen cylinders and employees shall not smoke in the vicinity of cylinders or the manifolds to which they are connected. No smoking will be allowed in the immediate vicinity of the hydrogen seal oil unit.

b) A sufficient quantity of CO_2 shall be readily available at all times to purge the hydrogen from the generator.

c) Any generator or other vessel containing air shall first be purged with CO_2 before hydrogen gas is admitted.

d) Any generator or other vessel containing hydrogen shall be purged before entering; first with CO_2, then with air. Test for adequate oxygen shall be made with approved apparatus before entering.

e) If hydrogen seal oil pressure is lost and cannot be immediately restored, the hydrogen shall be purged from the generator.

f) Only non-sparking tools shall be used in hydrogen areas.

807 Acids and Caustics—Storage

a) Acids, in any quantity, shall be kept in an approved carboy or other container, prominently labeled. These containers shall not be used for any other purpose.

b) Acids shall not be stored near heaters, steam pipes or other sources of heat.

c) Acid containers shall be securely stoppered or covered.

d) Acids kept on shelves shall not be stored higher than waist level.

e) If acids or caustics are spilled, they shall be flushed away with an ample supply of water—never wiped up.

f) Employees handling acids, caustics or other corrosive, toxic chemicals shall wear approved gloves, aprons, eye and face protection, and shall take precautions to prevent personal injury.

g) The use of new materials shall be investigated thoroughly as to their toxic qualities and personnel shall be advised of any hazards involved.

h) Chemical pumps shall be washed externally before repacking or performing maintenance work.

i) Storage areas for acids and caustics shall be posted with appropriate warning signs.

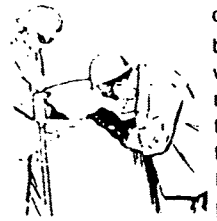
j) Areas where acid cleaning is to be done shall be barricaded by suitable means and no smoking or open flames shall be permitted.

k) Suitable procedures shall be established to avoid explosions from released hydrogen or injuries from the chemicals.

l) Contact lenses shall not be worn when working in laboratory or when handling acids, caustics, or other corrosive chemicals.

808 Acids and Caustics—Handling

a) Only reliable, dependable and properly trained employees or suppliers' personnel shall operate valves or other equipment that control the movement of chemicals.



b) Approved protective equipment and clothing shall be worn whenever acids or caustics in harmful quantities may spill, splash, fly or drip upon the person handling them. The quantity of acid or caustic handled shall determine the kind and quantity of clothing and equipment. Minimum protection shall be chemical goggles, acid-proof gloves and apron.

c) Should any acid, caustic or other chemical come in contact with the eyes, they shall be thoroughly washed with large amounts of running water and a physician consulted as soon as possible. DO NOT RUB THE EYES.

d) Employees shall not handle acids or caustics unless there is access to an adequate supply of water for quick drenching and flushing of the eyes and body.

e) After handling large quantities of caustics, employee shall take a shower to avoid skin irritation.

f) Before lifting or moving a carboy or other acid container, it shall be examined carefully to see that it is not in a leaky or defective condition. The wire holding the carboy stopper in place shall be checked to see that it has not corroded and that the stopper is secure. All movements shall be made slowly to avoid excessive agitation of the acid.

g) Before starting to unload a tank car or tank truck of acid, the acid storage tank shall be gauged to see if there is adequate space inside the tank to contain the acid being added without overflowing.

h) When tank cars or trucks are unloaded, warning signs shall be prominently posted and barriers placed so as to warn all personnel of the impending danger.

i) Only approved methods, tools and equipment shall be used to extract acids and caustics from a container.

j) Acid in railroad tank cars or tank trucks shall be unloaded in accordance with the regulations of the Interstate Commerce Commission and the recommended practices of the Manufacturing Chemists' Association.

809 Acids and Caustics—General

a) When mixing acid or caustic with water, the acid or caustic shall be poured into the water, not the water into the acid or caustic.

b) If it is necessary to enter a tank or vat to clean it, the person entering shall wear approved hard hat or hood, rubber gloves, rubber or plastic outer clothing and boots, shoes or wooden clogs. He shall also wear a supplied-air mask and a lifeline. At least one worker shall remain outside the tank or vat to man the lifeline.

c) Hydrazine and morpholine are highly toxic and caustic and shall never be handled without adequate ventilation. Skin or clothing contact and the breathing of fumes shall be avoided.

d) All small containers such as bottles or jars shall be

washed thoroughly when emptied. Carboys, steel drums, tank trucks or tank cars shall not be washed but shall be completely drained of all acid before returning to the acid supplier.

e) Open flames and smoking are prohibited when working with or near acid in metal containers, such as tanks, condensers or boilers. Spark proof tools shall always be used where there is a danger of accumulated hydrogen.

Note: *Certain acids in contact with metal produce explosive hydrogen.*

810 Acids and Caustics—Chlorine

a) When it is necessary to work on chlorine lines or equipment, all sources of chlorine shall be turned off at the chlorine cylinders and the lines safely discharged (to normal path of usage, not to atmosphere) before any connection or pipe is opened. (See Rule 109 for Hold Card procedure.)

b) In the event a chlorine cylinder leaks, the leak shall be stopped if practical. If the leak cannot be stopped, the cylinder shall be moved to the open air and placed a safe distance from all personnel. Leaky cylinders shall be turned so that the leak is on top.

c) Only employees who have been trained in the proper use of respiratory protective equipment shall perform work on chlorine lines or equipment.

d) A chlorine system enclosure or shelter shall have available two units of approved, self-contained breathing apparatus and protective clothing. They shall be located outside the shelter or enclosure at a sufficient distance to make them approachable in the event of a chlorine leak.

e) Danger-control teams shall have drills every six months.

f) Portable gas cylinders in storage shall have roof or shield covers for protection against the weather.

811 Coal Handling—Railway Operations

a) Only authorized employees shall operate locomotives.

b) Before moving a locomotive, the operator shall give a proper warning (car dumper excepted). A warning shall always be sounded when approaching a walk or driveway, when passing cars on an adjacent track or when passing any structure obscuring the operator's vision.

c) When operated manually, the operator shall not move

the locomotive when he is unable to see his switchman.

d) Employees shall not ride on footboards of locomotives.

e) Switchmen or brakemen shall use adequate signaling devices and standard railroad signals when working in conjunction with locomotive engineers, hand signals or appropriate flag for daytime use, lantern or red flares at night for switching purposes.

f) Employees shall not mount locomotives when then are in motion.

g) Only in emergencies shall a locomotive be returned from empty yard through the car dumper and then only after the operator has obtained clearance from the car dumper operator.

h) Work (except testing procedures) shall not be performed on locomotives while they are moving.

i) Locomotives shall not be operated at unsafe speeds. The train shall be kept under control at all times.

j) Whenever the locomotive engines are shut off the hand brake shall be set. The operator key (lever) shall not be left in an unattended locomotive.

k) Locomotive operators shall follow all signals carefully. If signals are not fully understood they shall not move train until clarification has been made.

l) Employees engaged in switching or dumping cars shall not line up drawheads with their feet.

m) Drawheads or knuckles shall not be shifted while locomotives or cars are in motion.

n) Flying switches shall not be made.

o) Employees shall not jump from one car to another while either is in motion.

p) Cars shall not be spotted where they will foul another track.

q) When shoving cars, the operator shall protect the front end of the train.

r) Employees shall not go between cars, board or leave locomotive cranes or cars while such equipment is in motion.

s) When a car is spotted for unloading on other than level ground, it shall be held in place by approved blockers in addition to setting the brakes.

t) Cars and equipment marked with a blue flag shall not be moved.

u) When a string of cars has been separated at a cross-

ing or walkway, they shall not be recoupled unless the operator is at the crossing.

v) Employees shall not walk, stand or sit on tracks except when necessary for the proper performance of duty.

w) Employees shall cross or walk on tracks at a safe distance from cars or locomotives.

x) Trains, engines and cars shall be expected to move at any time, on any track in either direction.

y) Approved car movers shall be used for moving cars by hand.

z) Companion ways and catwalks must be kept free of tools and materials.

aa) Employees shall not crawl under or work beneath cars or locomotives unless the wheels have been blocked in both directions and warning flags are placed at both ends.

bb) When thawing operations are in progress by use of oil fired torches, adequate face protection and ear protection shall be used.

cc) Fire protection and first aid equipment shall be available in open flame thawing areas.

dd) When dusty coal conditions exist, dust respirators shall be used.

ee) Emergency safety key-switches and pull-ropes should be checked frequently and maintained in good condition.

ff) Pulley drives, gearing, motor couplings and idlers at sealing strips shall be adequately guarded.

812 Barges, Boats and Docks

a) Employees shall stay clear of barge cables while barges are being moved.

b) When barges are moored at docks, the mooring lines shall be loose enough to allow sufficient movement of the barge to keep sway from passing boats from breaking lines, yet shall be tight enough to permit the passage of personnel from dock to barge.

c) Only authorized employees shall operate Company boats.

d) The lifeboat and workboats shall, at all times, be equipped with a pair of oars and a ring buoy attached to a 50 foot coil of ½ inch line attached to the boat.

e) Docks and walkways shall be maintained in safe

condition at all times. They shall be kept clear of all obstructions.

f) While working on boats, barges, rafts or other floating equipment or on docks, employees shall wear approved life jackets or a belt and lifeline.

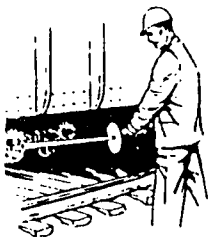
g) Employees shall not enter a barge which is being unloaded by a grab bucket, unless he is in full view of the craneman or signalman.

h) Before working on a barge, the gunwales and end decks shall be cleared of loose coal.

i) Employees shall not work under a crane or grab bucket at any time.

j) Crane buckets shall always be lowered before the crane is left unattended.

813 Car Shakers and Dumpers



a) Only tools approved by the company shall be used for releasing doors on hopper-type cars.

b) Car shakers shall be shut off before employees climb onto the car, and car shall not be moved until all personnel are out of the car.

c) Employees engaged in car shaker operations shall use suitable eye protection, hearing protection and respiratory equipment as prevailing conditions dictate.

d) Cars shall not be moved through the car dumper for refueling purposes.

e) Only coal cars shall be permitted on the car dumper and car shaker tracks.

814 Conveyors and Crushers

a) Employees shall stay clear of conveyors as they may start at any time.

b) Employees shall not ride conveyor belts or buckets.

c) Employees shall not attempt to clear a blocked conveyor or crusher or loosen any material therein (except from established positions outside the equipment) without first shutting off the power and tagging the control with a "Hold Card."

d) Employees shall not clean around conveyor rollers while belt is in operation.

e) Coal dust shall not be cleaned up in a manner that will create a hazardous, dusty atmosphere. Use of compressed air is especially prohibited.

f) Belt conveyors shall be equipped with emergency stop cords for their entire exposed lengths.

g) Repairs shall not be made except when the electric system is shut off and tagged.

h) Employees shall cross over or under conveyors only where permanent walkways with railings have been installed.

815 Coal Storage

a) Before entering a coal bunker, a clearance shall be obtained on the associated mill feeder. If there is any doubt about the condition of the air, a test shall be made to determine if it is safe. If toxic or explosive gas is present, it shall be expelled before entering and frequent tests made during the progress of the work.

b) Employees entering a bunker for the purpose of dislodging coal or inspection shall wear an approved harness with lifeline attached. The lifeline shall be secured to a fixed support outside the bunker and another employee stationed to attend it and render assistance if needed.

c) When cleaning down coal in a bunker, employees shall not work from a position under the lodged coal and shall use non-sparking tools.

d) Employees shall not smoke in coal storage buildings or buildings housing coal crushing and handling equipment except in designated areas.

e) Only portable lights and extension cord lights meeting dust proof requirements shall be used in coal storage buildings or buildings housing coal crushing and handling equipment. Portable electrical tools and appliances shall not be operated in these areas unless special precautions are taken to eliminate explosion hazards.

f) When welding or use of open flame is required in the coal conveyor system, the area shall be cleaned and wet down. Fire protective equipment shall be available and ready for use.

g) Rescue equipment shall be available and ready for use, consisting of self-contained breathing apparatus, air pac mask and either a mechanical or power hoisting device for quick removal of a stricken or injured employee.

816 Hydro Stations

a) Whenever it is necessary to work in a location where there is a possibility of falling into dangerous water, employees shall wear a U.S. Coast Guard approved life jacket and/or safety belt with an approved life line attached.

b) Rigging equipment shall be inspected before and after using. Wood scaffold planks shall be free and clear of cracks and large knots.

c) Employees shall be protected from falling by secured guardrails or the use of approved belts, straps, harness and lines.

d) A Hold Tag procedure shall be established before entering penstocks, scroll cases and similar water passages.

e) A Hold Tag procedure shall be established before any internal work is performed on a generator.

f) The unit shall be secured by cables or blocked to prevent turning when working in the turbine or generator.

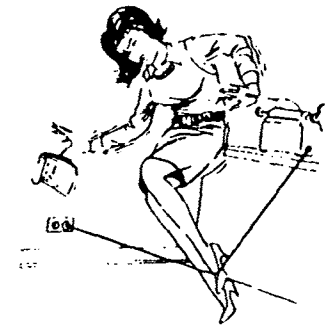
g) The elevation of the water shall be maintained at a safe level below crest when working flashboards and making other repairs.

h) Employees using boats in dangerous water shall wear approved life jackets.

i) At least two men shall be present where any work is done inside tanks, tunnels, conduits, deep manholes and other confined or deep spaces.

j) Deep and confined spaces shall be ventilated with fans or blowers before entering.

Section 9 **OFFICE SAFETY**



900 Office Safety

a) Employees shall report all injuries, regardless of severity, to the person in charge.

b) Employees shall walk cautiously up and down stairs; the handrail shall be used whenever possible.

c) Caution shall be exercised when walking around blind corners.

d) Drawers of desks and file cabinets shall be kept closed when not in use.

e) Only one drawer of a file cabinet shall be pulled out at a time in order to avoid over-balancing, unless the cabinet is securely fastened to the wall or to other cabinets.

f) Do not sit on the edge of a chair. Do not tilt back when sitting in a straight chair.

g) Boxes, chairs, etc., shall not be used in place of ladders.

h) The floor shall be kept free of tripping hazards such as telephone cords, electric extension cords, and paper cartons.

i) Material shall be stored on shelves in a manner to prevent falling; heavy objects shall be placed on lower shelves.

j) Employees shall not use ventilation fans unless they are guarded or securely placed at least seven feet above the floor.

k) Solvents and other volatile or toxic substances shall be used only with adequate personal protection or in well-ventilated areas.

l) Employees shall not attempt to clean, oil, or adjust any machine that is running. If the machine is not equipped with a starting switch that can be locked in the "off" position, it shall be disconnected from its power source.

m) Unsafe electrical cords, faulty electrical or other equipment or any other hazardous condition shall be reported.

n) Safety shall be considered in what you wear on the job. Loose-fitting clothing, dangling bracelets, rings and ties may cause serious injury to employees operating or working around power-driven machines and shall not be worn.

o) Broken glass and other sharp objects shall not be placed in waste paper containers.

q) Cigarettes, cigars and other burning materials shall not be placed in waste paper containers.

r) Common or sharp-pointed pins shall not be used for fastening paper together. Staples, paper clips or other approved fasteners shall be used.

Section 10 **FIRST AID**

Introduction

The material in this section is intended to act as an overall guide to first aid activities. It is not designed as a self teaching course, but merely reviews some aspects of first aid techniques for those who have received training in first aid.

The information given is very generalized. Specific action which must be taken at the scene of an emergency cannot be predetermined and will necessarily be modified by the situation. It is important that employees be familiar with the contents of this section and local emergency procedures so as to be better prepared to assist fellow employees in the event of an accident. Details for first aid treatment may be found in the American Red Cross Text Book on First Aid and the U.S. Bureau of Mines First Aid Manual.

1001 General

a) Employees shall be familiar with the basic techniques for first aid so that they may provide emergency treatment to fellow employees. Personnel should be knowledgeable of the treatment for traumatic shock, means of giving artificial respiration and control of bleeding. Preplanning for a potential emergency situation is most valuable. All employees should be aware of the medical services available and how to obtain them.

b) Personnel engaged in overhead line work shall know the essential elements of pole top rescue. They should also be familiar with resuscitation techniques and how to apply such techniques in an elevated position.

c) Where first aid kits are supplied, employees shall be familiar with the location, the contents and the instructions given with the first aid kit. Each employee shall learn to use this equipment, so he can render treatment when needed. Except for minor injuries, the service of a physician shall be obtained.

d) The contents of the first aid kits shall be inspected each week and expended items replaced.

1002 Wounds and Control of Bleeding

a) A man can bleed to death in a very short time—less than one minute. Therefore, in the event of an injury which results in significant bleeding, immediate steps must be taken to prevent the loss of blood.

b) Bleeding may be controlled by the following methods:

1) Direct pressure. Application of pressure directly on the wound. Use of a sterile dressing is preferred. In an emergency, use any dressing or even the bare hand.

2) Indirect pressure or pressure points. Application of pressure on the arterial pressure points in the arm or leg. Pressure points may be combined with direct pressure to restrict severe bleeding. .

3) Elevation. Loss of blood can be slowed by raising the wound above the level of the heart.

4) Tourniquet. The use of a tourniquet is a desperation action. It shall be used only for severe, life-threatening bleeding which cannot be controlled by any other means. Tourniquets should be applied as close to the wound as possible and should not be loosened except by trained, professional medical personnel, normally at the hospital. (If the tourniquet is loosened, severe shock can result.)

c) Shock is present in all cases of serious bleeding. Attention must be given to the prompt treatment for shock.

1003 Shock

a) Shock usually occurs following a severe loss of blood or some type of serious injury. It can occur from a minor injury or even from anxiety or emotional stress. Regardless of the cause, the symptoms are the same and similar treatment is required.

b) Shock is easier to prevent than to cure. Every injured person is potentially a shock victim and should be treated as such, whether the symptoms of shock are present or not.

c) Symptoms of shock are:

—Chalk-like appearance
—Dull or anxious expression
—Shallow breathing
—Weak rapid pulse
—Cold, moist skin

d) Recommended treatment for shock is:

1) The patient should be kept warm and comfortable, but not hot. In many cases, the only first aid measure necessary and possible is to cover the patient underneath as well as on top to prevent loss of body heat.

2) Keep the patient's body horizontal or, if possible position him so that his feet are at least 6 inches higher than his head. In any case, always keep the patient's head low. The single exception to this positioning is the case of a patient who obviously has an injury to his chest, and who has difficulty breathing. This patient should be kept horizontal with head slightly raised to make his breathing easier.

3) Clear the victim's mouth of all foreign bodies and make sure he is breathing properly.

4) Loosen tight clothing at the neck, the chest and the waist.

5) If patient is conscious, hot tea, coffee or broth may be given in small quantities, as the warmth is valuable in combating shock.

6) Proper transportation is never more imperative than in the case of a person who may develop shock. It constitutes the most important single measure in the prevention and treatment of shock. Use an ambulance, if possible. If other means must be used, follow the above points as closely as possible.

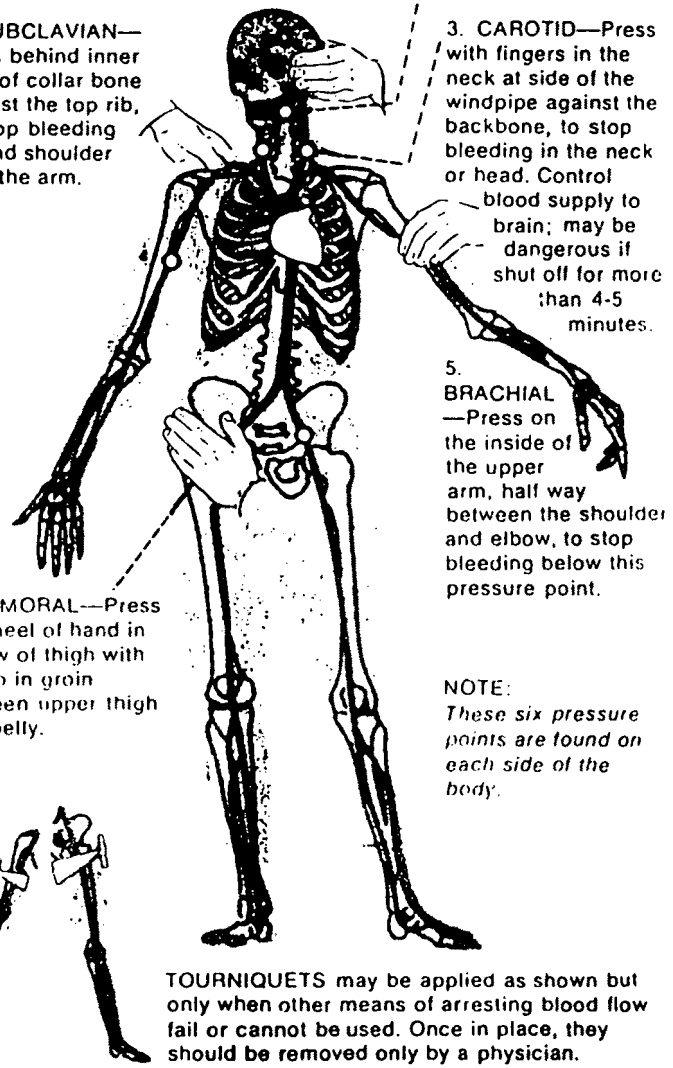
1004 Eye Injuries

a) Foreign Bodies.

1) When a small foreign body, such as dust or a wood flake, is on the eye or eye lid, moderate efforts may be made to remove it. The edge of a clean handkerchief or some similar device may be used. Never use a match stick, knife or other such instrument that might cause damage to the eye.

2) Objects imbedded in the eye must not be removed, except by a physician. Both eyes of the injured should be bandaged loosely and the em-

SIX PRESSURE POINTS TO STOP ARTERIAL BLEEDING



1. TEMPORAL—Press just in front of the ear against the skull to stop bleeding on scalp and forehead.

2. FACIAL—Press up and out on under side of jaw about ⅓ distance between angle of jaw and chin

3. CAROTID—Press with fingers in the neck at side of the windpipe against the backbone, to stop bleeding in the neck or head. Control blood supply to brain; may be dangerous if shut off for more than 4-5 minutes.

4. SUBCLAVIAN—Press behind inner third of collar bone against the top rib, to stop bleeding around shoulder or in the arm.

5. BRACHIAL—Press on the inside of the upper arm, half way between the shoulder and elbow, to stop bleeding below this pressure point.

6. FEMORAL—Press with heel of hand in hollow of thigh with thumb in groin between upper thigh and belly.

NOTE:
These six pressure points are found on each side of the body.

TOURNIQUETS may be applied as shown but only when other means of arresting blood flow fail or cannot be used. Once in place, they should be removed only by a physician.

ployee taken to the doctor immediately. The injured employee should be told to relax and try not to move his eyes.

b) Chemical burns—acid or caustic. Immediate irrigation of the eye with large quantities of clean water is mandatory whenever a chemical substance enters the eye. Flushing of the eye with running water should continue for 15 minutes.

c) All eye injury cases, regardless of first aid measures taken, should be taken to a physician to be checked and applicable treatment administered.

1005 Artificial Respiration—General

Whenever a person is found unconscious, check to determine if the person is breathing. If the person is not breathing, rescue breathing is to be started as soon as possible without endangering the rescuer.

a) In electric shock cases, do not rush in and become a casualty yourself. If possible, deenergize or insulate the power source. Remove victim from electric lines with a dry, non-conducive material. When safe to do so, start rescue breathing.

b) Attempt to stop any serious flow of blood.

c) Tilt victim's head back to open airway. Do not waste time trying to clear anything out of victim's mouth. Commence rescue breathing but if unable to get air into victim's lungs, stop and clear air passage of obstruction. Reposition the head and try again to breath into the victim. If still unable to get air into the victim, turn him onto his side and strike him four times forcibly between his shoulder blades. Then roll him onto his back and give him four quick manual thrusts upward on his abdomen between his rib cage and navel. Then, with a hooking motion with your finger, sweep through the victim's mouth to remove any obstruction. Retilt the victim's head and start again to give rescue breathing. If unsuccessful, repeat the procedure until air passage is open and you can successfully inflate his lungs.

d) If help is unavailable, have the following taken care of while one rescuer is giving rescue breathing: Notify your office or the system dispatcher. BE SURE TO GIVE EXACT LOCATION OF VICTIM.

e) Continue uninterrupted rescue breathing until victim is breathing without help or until there are positive signs of death such as rigor mortis (stiffening of the body).

f) One breath is given every five seconds. If another in-

dividual is available to help, changes in rescuers shall be done as smoothly as possible without breaking the rhythm. If necessary to move victim from imminent danger or to prepare him for transport, rescue breathing may be interrupted for not more than thirty seconds.

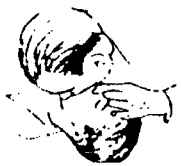
g) Watch victim carefully after he revives. Do not permit him to exert himself.

h) Treat victim to prevent shock. Transport him to a doctor or hospital for examination and disposition.

1006 Artificial Respiration—Mouth-to-Mouth (Nose) Method

a) Place victim on his back. Place his head slightly downhill, if possible. A folded coat, blanket or similar object under victim's shoulders will help maintain proper position. Tilt head backward so chin points straight upward.

b) Grasp victim's jaw and raise upward until lower teeth are higher than upper teeth; or place fingers on both sides of jaw near ear lobes and pull upward. Maintain jaw position throughout resuscitation period to prevent tongue from blocking air passage.



c) Pinch victim's nose shut with thumb and forefinger, take a deep breath and place your mouth over victim's mouth making air-tight contact; or close victim's mouth, take a deep breath and place your mouth over victim's nose making air-tight contact. If you hesitate at direct contact, place a porous cloth between you and victim. (For an infant, place your mouth over its mouth and nose.)

d) Blow into victim's mouth (nose) until his chest rises. (Blow gently, if an infant). Remove your mouth to let him exhale, turning your head to hear outrush of air. The first 8 or 10 breathes should be as rapid as victim will respond, thereafter, rate should be slowed to about 12 times a minute (20 times if an infant.)

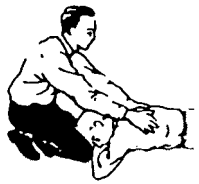
e) Things To Remember

1) If air cannot be blown in, check position of victim's head and jaw and re-check mouth for obstructions, then try again more forcefully. If chest still does not rise, turn victim face down and strike his back sharply to dislodge obstruction. Then repeat rescue breathing procedure.

2) Sometimes air enters victim's stomach, evidenced by swelling of stomach. Expel air by gently pressing down on stomach during exhalation period.

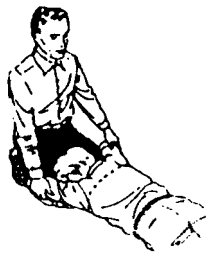
1007 Back-Pressure Arm-Life Method of Resuscitation

Note: This method is not as effective as the mouth-to-mouth method. It should not be used on victims having a serious arm, shoulder or upper back injury. It would be the preferred method if the victim had serious facial injuries or burns.



a) Place the victim in face-down, prone position. Bend his elbows and place his hands one upon the other. Turn his face to one side, placing the cheek upon his hands.

b) Check for open air passage. Kneel on both knees, facing the victim, with one knee on each side of his head. (If desired, operator may kneel with one knee at the side of the victim's head, close to the forearm, placing the opposite foot near the elbow). Place your hands, thumb tips touching, on victim's back just below shoulder blades. Spread fingers downward.



c) Rock foward slowly to exert pressure, until arms are almost vertical. Keep your elbows straight.

d) Release pressure by flexing your elbows. Rock back on your heels, sliding your hands up victim's back and out along arms.

e) Grasp arms just above elbows and pull upward toward you until you feel resistance and tension.

f) Lower victim's arms to ground. This completes the cycle.

g) Repeat cycle about 12 times per minute, at a steady uniform rate. The compression and expansion phases should occupy about an equal amount of time, the release periods being of less duration.

1008 Cardio-Pulmonary Resuscitation (CPR)

The information given in this section is not intended as instruction for the administration of cardio-pulmonary resuscitation. Such treatment should be given only by persons who are properly trained and qualified. The following is a reminder to those persons of the points to be followed. If not administered properly, CPR may result in other serious injuries.

Perform CPR only when indicated.

After rescue breathing has been performed for about half a minute, if bluish or grey skin color remains and no pulse can be felt, or if pupils of the eyes are dilated, CPR may be started. CPR is always accompanied by rescue breathing. Two persons should perform rescue

efforts for the victim; one should give rescue breathing while the other performs external heart compression. If only one rescuer is present, interrupt compression about every 10–15 compression cycles and give victim 3 or 4 breaths.

a) Place victim on his back on a firm surface.

b) Put hands on breastbone. Place heel of one hand on lower third of breastbone with other hand on top of first.

c) Press downward. Apply pressure until breastbone moves 1½ to 2 inches.

d) Lift hands and permit chest to return to normal.

e) Repeat compression 60 times per minute.

Note: CPR should not be done:

1) When victim has a pulse.

2) When his pupils do not remain widely dilated.

3) When his ribs are broken.

1009 Pole Top Rescue

Electric contacts may occur at elevated locations. When such a contact does happen, immediate rescue is necessary.

Rescue operations will vary, depending upon the prevailing situation. The information in this section is intended to serve only as a guide.

Preplanning and training for a possible emergency is important.

a) Size up the situation. The rescue effort will be far more effective if a few seconds are devoted to full identification of the situation.

b) Radio for help. Prepare the equipment you will need.

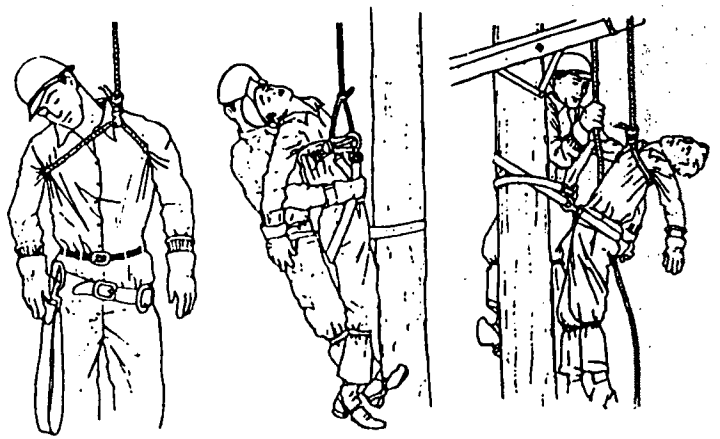
c) Protect yourself. Apply necessary protective equipment. Use necessary personal protective devices. Then clear the victim from the hazards.

d) Position yourself for rescue.

e) Proceed with rescue or resuscitation as dictated by the conditions.

1) If victim is conscious:
   a) Reassure the injured
   b) Be watchful for shock
   c) Help injured descend the pole
   d) Administer first aid.

2) If victim is unconscious and breathing:
   a) Watch breathing closely



1010 After Rescue

All victims of electric contact shall be transported to a doctor or a hospital for examination and disposition.

1011 Training

All employees engaged in electrical work shall receive training in resuscitation and in rescue from their working environment. (Poles, structures, manholes, boilers, aerial baskets, confined spaces, etc.)

b) Lower injured to ground

c) Give first aid

d) Summon medical assistance.

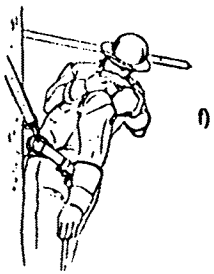
3) If victim is unconscious and not breathing:

a) Give victim four quick, full breaths.

b) Determine how quickly the victim can be lowered

1) If the victim can be lowered within 3 minutes, proceed to lower.

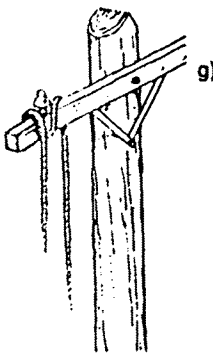
2) If the victim cannot be lowered within 3 minutes, apply pole top resuscitation.



f) Pole top resuscitation

1) Mouth-to-mouth artificial respiration should normally be used. The method is similar to that described above, except for the position of the victim.

2) An alternate method is the Oesterreich Method performed by compression of the victim's abdomen by a hugging action directed toward the victim's chest cavity.



g) Lowering victim from the pole.

1) For field expediency, the following method is presented.

a) Place handline on crossarm, preferably 2 or 3 feet from pole.

b) Make one wrap of line. Do not cross load line over fall line.

c) Pass handline under armpits.

d) Tie 3 half-hitches.

e) Cinch line tightly around victim.

f) Remove slack in line.

g) Cut victim's safety.

h) Lower victim.

2) Depending upon the situation, alternate hitching or lowering methods might be more desirable.

D

E

F

INDEX

Note: *Refer to Table of Contents in front of book for page location of Section Numbers shown below in bold type.*

A

B

C

U

V

W

R

S

T

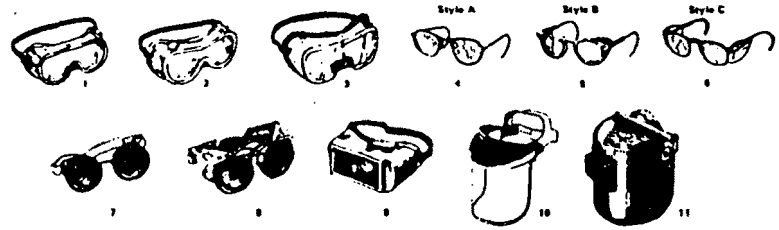
EMERGENCY TELEPHONE NUMBERS

EYE AND FACE PROTECTORS

AMERICAN NATIONAL STANDARD Z87.1-1979

Selection Chart for Eye and Face Protectors for Use in Industry, Schools, and Colleges

This Selection Chart offers general recommendations only. Final selection of eye and face protective devices is the responsibility of management and safety specialists. (For laser protection, refer to American National Standard for Safe Use of Lasers, ANSI Z136.1-1976.)



1 GOGGLES, Flexible Fitting, Regular Ventilation
2 GOGGLES, Flexible Fitting, Hooded Ventilation
3 GOGGLES, Cushioned Fitting, Rigid Body
*4 SPECTACLES, without Sideshields
5 SPECTACLES, Eyecup Type Sideshields
6 SPECTACLES, Semi-Rigid Fold-Sideshields
**7 WELDING GOGGLES, Eyecup Type, Tinted Lenses (Illustrated)
7A CHIPPING GOGGLES, Eyecup Type, Clear Safety Lenses (Not Illustrated)
**8 WELDING GOGGLES, Coverspec Type, Tinted Lenses (Illustrated)
8A CHIPPING GOGGLES, Coverspec Type, Clear Safety Lenses (Not Illustrated)
**9 WELDING GOGGLES, Coverspec Type, Tinted Plate Lens
10 FACE SHIELD, Plastic or Mesh Window (see caution note)
* 11 WELDING HELMET

*Non-sideshield spectacles are available for limited hazard use requiring only frontal protection.
**See Table A1, "Selection of Shade Numbers for Welding Filters," in Section A2 of the Appendix.

APPLICATIONS		
OPERATION	HAZARDS	PROTECTORS
ACETYLENE-BURNING ACETYLENE-CUTTING ACETYLENE-WELDING	SPARKS, HARMFUL RAYS, MOLTEN METAL, FLYING PARTICLES	7, 8, 9
CHEMICAL HANDLING	SPLASH, ACID BURNS, FUMES	2 (For severe exposure add 10)
CHIPPING	FLYING PARTICLES	1, 3, 4, 5, 6, 7A, 8A
ELECTRIC (ARC) WELDING	SPARKS, INTENSE RAYS, MOLTEN METAL	11 (in combination with 4, 5, 6, in tinted lenses, advisable)
FURNACE OPERATIONS	GLARE, HEAT, MOLTEN METAL	7, 8, 9 (For severe exposure add 10)
GRINDING-LIGHT	FLYING PARTICLES	1, 3, 5, 6 (For severe exposure add 10)
GRINDING-HEAVY	FLYING PARTICLES	1, 3, 7A, 8A (For severe exposure add 10)
LABORATORY	CHEMICAL SPLASH, GLASS BREAKAGE	2 (10 when in combination with 5, 6)
MACHINING	FLYING PARTICLES	1, 3, 5, 6 (For severe exposure add 10)
MOLTEN METALS	HEAT, GLARE, SPARKS, SPLASH	7, 8 (10 in combination with 5, 6, in tinted lenses)
SPOT WELDING	FLYING PARTICLES, SPARKS	1, 3, 4, 5, 6 (Tinted lenses advisable, for severe exposure add 10)

CAUTION
- Face shields alone do not provide adequate protection.
- Plastic lenses are advised for protection against molten metal splash.
- Contact lenses, of themselves, do not provide eye protection in the industrial sense and shall not be worn in a hazardous environment without appropriate covering safety eyewear.

LONG RIDGE LLC

CONSTRUCTION CONTRACT
WITH
BIG SANDY RECC

L O N G R I D G E LLC

DISTRIBUTION LINE EXTENSION

CONSTRUCTION CONTRACT
(Labor Only)

For Construction of Rural Electric
System Improvements & Extensions

DISTRIBUTION LINE EXTENSION CONSTRUCTION CONTRACT

(Labor Only)

FOR CONSTRUCTION OF RURAL ELECTRIC SYSTEM IMPROVEMENTS & EXTENSIONS

U. S. DEPARTMENT OF AGRICULTURE
RURAL ELECTRIFICATION ADMINISTRATION

REA FORM 792
REV 5-70

DISTRIBUTION LINE EXTENSION CONSTRUCTION CONTRACT
(REA Form 792)

INDEX

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Washington, D.C. 2040[illegible]
Stock Number [illegible]

PROPOSAL

TO:
BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION

(hereinafter called the "Owner").

ARTICLE I--GENERAL

Section 1--Offer to Construct. The undersigned (hereinafter called the "Contractor") hereby propos to construct for the prices hereinafter stated, with materials furnished by the Owner, the rural electr project Line Conversion Line Extensions (hereinafter call "Project") in strict accordance with the Plans, Specifications, and Construction Drawings hereinaft referred to. The Contractor understands and agrees that the Project will consist of line extensio and additions and line changes or similar work usually associated with overhead or undergrou distribution system improvement or extension work all located within the area served or ultimate to be served by the Owner and that the exact location and scope of individual sections of the Proje (hereinafter called "Sections") will be made known to the Contractor from time to time as provid in Article II, Section 1 hereof; and provided, however, that the Contractor shall not be obligated start construction of any Section unless the cost of construction of the Section computed on the un prices of this Proposal shall amount to at least Two Thousand dollars ($ 2,000.00 and provided further that the Owner shall be obligated to release to the Contractor for construction least one Section pursuant to the provisions of this Proposal.

Section 2--Additional Projects. From time to time the Owner and the Contractor may enter in negotiations for the performance of work at labor prices which may differ from those in the Propos (such work being hereinafter called "Additional Projects"). Except as may otherwise be agreed upo in writing by the Owner and the Contractor at the time the supplemental contract for the Additiona Project is negotiated, the provisions of the Contract for the Project shall apply.

Section 3--Proposal on Unit Basis. The Contractor understands and agrees that the various Construc tion Units considered in this Proposal are defined by symbols and descriptions in this Proposal, tha the Proposal is made on a unit basis, and that the Owner may specify, as provided in Article I Section 1 hereof, any number or combination of Construction Units which the Owner, may deem nec essary for the construction of the Project. If kinds of Construction Units for which prices are no established in this Proposal are necessary for the construction of the Project, the prices of suc additional Units shall be as agreed upon in writing by the Owner and the Contractor prior to the tim of installation. The unit prices herein set forth are applicable to work performed on unenergize lines. Such unit prices shall be increased by -0- (-0-) percen for all units installed on energized lines in accordance with instructions of the Owner, as provide in Article II, Section 1g.

Section 4--Description of Contract. The Specifications and Construction Drawings set forth in:

REA Form 804, Specifications and Drawings for 7.2/12.5 kV Line Construction
REA Form 803, Specifications and Drawings for 14.4/24.9 kV Line Construction
REA Form 806, Specifications and Drawings for Underground Electric Distribution

as applicable, which by this reference are incorporated herein, together with the Plans, Proposa and Acceptance constitute the Contract. The Plans, consisting of maps and special drawings, an approved modifications in standard specifications are attached hereto and identified as follows:

System Improvements and Force Account as required

Section 5--Familiarity with Conditions. The Contractor acknowledges that it has made a careful examination of the site of the Project and of the Plans, Specifications and Construction Drawings, and has become informed as to the location and nature of the proposed construction, the transportation facilities, the kind and character of soil and terrain to be encountered, the kind of equipment, tools, and other facilities required before and during the construction of the Project and has become acquainted with the availability status of materials to be furnished by the Owner and with the labor conditions which would affect work on the Project.

Section 6--License. The Contractor warrants that a Contractor's license (is) (is not) required, and if
strike out one
required, it possesses Contractor's License No. _____ for the State of _____ in which the Project is located, and said license expires on _____, 19_____.

Section 7--Contractor's Resources. The Contractor warrants that it possesses adequate financial resources for the performance of the work covered by this Proposal and that it will provide necessary tools and equipment and a qualified superintendent and other employees.

Section 8--Changes in Construction. The Contractor agrees to make such changes in construction previously installed in the Project by the Contractor as required by the Owner on the following basis:

The cost of labor shall be the reasonable cost thereof as agreed upon by the Contractor and the Owner but in no event shall it exceed two (2) times the labor price quoted in the Proposal for the installation of the unit to be changed. Such compensation shall be in lieu of any other payment for the installation and removal of the original unit but shall not include the cost of the installation, if any, of a new or replacing unit, payment for which shall be made at the unit price as quoted in the Proposal.

No payment shall be made to the Contractor for correcting errors or omissions on the part of the Contractor which result in construction not in accordance with the Plans and Specifications.

ARTICLE II--CONSTRUCTION

Section 1--Time and Manner of Work. The Contractor agrees to be prepared to commence the construction of the Project within fifteen (15) calendar days after written notice by the Owner of acceptance of the Proposal. The Contractor agrees to commence construction of a Section within Ten (10) days after receipt in writing from the Owner of the following:

a. Location and number of the various Construction Units required for construction of the Section (hereinafter called the "Staking Sheets").

b. Itemized list of the materials required for the construction of the Section and an authorization by the Owner for the Contractor to obtain such materials from the Owner's warehouse located at Paintsville, KY.

c. A schedule showing the rate at which construction of the Section shall proceed and the total number of calendar days (excluding Sundays) to be allowed for completion; provided, however, that the required completion time for any Section shall not be less than _____ (_____) days or Fifteen (15) days per mile of line, whichever is the greater, which days shall be calendar days (excluding Sundays). The time of the completion of the Section is of the essence of the contract to be effected by acceptance of this Proposal.

d. A statement that all required easements and rights-of-way have been obtained from the owners of the properties across which the Section is to be constructed (including tenants who may reasonably be expected to object to such construction).

e. A statement that all necessary staking has been completed.

f. A statement that all necessary funds for prompt payment for the construction of the Section will be available.

g. Specific instruction as to location and extent of work to be performed on energized lines, i any.

The Contractor will not be required to dig holes, set poles, install anchors, install undergroun conduit, perform any plowing for the installation of underground cable, or dig trenches if there ar more than six (6) inches of frost in the ground nor to perform any construction on such days when i the judgment of the Owner snow, rain, or wind or the results of snow, rain, or frost make it impracticable to perform any operations of construction; provided further that the contractor will not perform any plowing for the installation of underground cable on public roads or highways if there ar more than two (2) inches of frost in the ground. To the extent of the time lost due to the condition described herein and approved in writing by the Owner, the time of completion set out above will b extended. The time for completion shall be extended for a period of any reasonable delay (other tha a delay resulting from the failure of the Contractor to secure sufficient labor) which is due exclusively to causes beyond the control and without the fault of the Contractor including acts of God fires, floods, inability to obtain materials, direction of the Owner to cease construction as herei provided, and acts or omissions of the Owner with respect to matters for which the Owner is solel responsible: Provided, however, that no such extension of time for completion shall be granted th Contractor unless within ten (10) days after the happening of any event relied upon by the Contracto for such an extension of time the Contractor shall have made a written request therefor in writing t the Owner, and provided further that no delay in such time of completion or in the progress of the work which results from any of the above causes, except acts or omissions of the Owner, shall result in any liability on the part of the Owner.

Section 2--Changes in Plans, Specifications and Drawings. The Owner may, from time to time during the progress of the construction of the Project, make such changes in, additions to, or subtractions from the Plans, Specifications, and Construction Drawings as conditions may warrant: Provided, however, that if the cost to the Contractor shall be materially increased by any such change or addition, the Owner shall pay the Contractor for the reasonable cost thereof in accordance with a construction contract amendment signed by the Owner and the Contractor, but no claim for additional compensation for any such change or addition will be considered unless the Contractor shall have made a written request therefor to the Owner prior to the commencement of work in connection with such change or addition.

Section 3--Supervision and Inspection.

a. The Contractor shall cause the construction work on the Project to receive constant supervision by a competent superintendent (hereinafter called the "Superintendent") who shall be present at all times during working hours where construction is being carried on. The Contractor shall also employ, in connection with the construction of the Project, capable, experienced, and reliable foremen and such skilled workmen as may be required for the various classes of work to be performed. Directions and instructions given to the Superintendent by the Owner shall be binding upon the Contractor.

b. The Owner reserves the right to require the removal from the Project of any employee of the Contractor if in the judgment of the Owner such removal shall be necessary in order to protect the interest of the Owner. The Owner shall have the right to require the Contractor to increase the number of his employees and to increase or change the amount or kind of tools and equipment if at any time the progress of the work shall be unsatisfactory to the Owner; but the failure of the Owner to give any such directions shall not relieve the Contractor of his obligations to complete the work within the time and in the manner specified in this Proposal.

c. The manner of performance of the work, and all equipment used therein, shall be subject to the inspection, tests, and approval of the Owner. The Owner shall have the right to inspect all payrolls and other data and records of the Contractor relevant to the work. The Contractor will provide all reasonable facilities necessary for such inspection and tests. The Contractor shall have an authorized agent accompany the inspector when final inspection is made and, if requested by the Owner, when any other inspection is made.

d. In the event that the Owner shall determine that the construction contains or may contain numerous defects, it shall be the duty of the Contractor, if requested by the Owner, to have an inspection made by an engineer approved by the Owner for the purpose of determining the exact nature, extent, and location of such defects.

Section 4--Defective Workmanship. The acceptance of any workmanship by the Owner shall not preclude the subsequent rejection thereof if such workmanship shall be found to be defective after installation, and any such workmanship found defective before final acceptance of the work or within

one (1) year after completion shall be remedied or replaced, as the case may be, by and at the expense of the Contractor. In the event of failure by the Contractor so to do, the Owner may remedy such defective workmanship and in such event the Contractor shall pay to the Owner the cost and expense thereof. The Contractor shall not be entitled to any payment hereunder so long as any defective workmanship, in respect of the Project, of which the Contractor shall have had notice, shall not have been remedied or replaced, as the case may be.

Section 5--Materials. At or prior to the commencement of construction of each Section, the Owner shall make available to the Contractor all materials for such Section which the Owner has on hand, and from time to time as such additional deliveries of materials, if any, are received by the Owner, the Owner shall make such materials available to the Contractor: Provided, however, that the Contractor or his authorized representative will give to the Owner a receipt in such form as the Owner shall approve for all materials furnished by the Owner to the Contractor. The Contractor will return to the Owner or reuse in the construction of other assembly units all materials removed from the lines under Section H - Conversion Assembly Units and Section I - Removal Assembly Units. Upon completion of each Section of the Project the Contractor will return to the Owner all materials, including usable materials as well as scrap, furnished by the Owner in excess of those required for the construction of the Section as determined from the Final Inventory approved by the Owner. The Contractor will reimburse the Owner at the current invoice cost to the Owner for loss and for breakage through Contractor's negligence of materials furnished by the Owner to the Contractor and for materials removed from the lines by the Contractor.

Section 6--Term of Contract. It is understood and agreed that, notwithstanding any other provisions of this Contract, the Contractor will not be required to commence any construction after the expiration of one year following acceptance of this Proposal by the Owner.

ARTICLE III--PAYMENT

Section 1--Payments to Contractor.

a. Within the first fifteen (15) days of each calendar month, the Owner shall make partial payment to the Contractor for construction accomplished during the preceding calendar month on the basis of completed Construction Units furnished and certified to by the Contractor and approved by the Owner solely for the purpose of payment: Provided, however, that such approval by the Owner shall not be deemed approval of the workmanship or materials. Only ninety percent (90%) of each such estimate approved during the construction of a Section shall be paid by the Owner to the Contractor prior to completion of the Section. Upon completion by the Contractor of the construction of a Section, the Contractor will prepare a Final Inventory of the Section showing the total number and character of Construction Units and, will certify it to the Owner together with a certificate of the total cost of the construction performed. Upon the approval of such certificates, the Owner shall make payment to the Contractor of all amounts to which the Contractor shall be entitled thereunder which shall not have been paid.

b. The Contractor shall be paid on the basis of the number of Construction Units actually installed at the direction of the Owner, as shown by the Inventory based on the Staking Sheets: Provided, however, that the total cost shall not exceed the maximum Contract price for the construction of the Project, unless such excess shall have been approved in writing by the Owner. It is understood and agreed that this maximum Contract price is _____ dollars ($ _____). It is also agreed that the Contractor shall not be entitled to any claim for damages on account of any reasonable additions to or subtractions from the Project, or of any delay occasioned thereby, or of any changes in the routing of the lines.

c. No payment shall be due while the Contractor is in default in respect of any of the provisions of this Contract and the Owner may withhold from the Contractor the amount of any claim by a third party against either the Contractor or the Owner based upon an alleged failure of the Contractor to perform the work hereunder in accordance with the provisions of this Contract.

Section 2--Certificate of Contractor and Indemnity Agreement - Line Extensions. Upon the Completion of Construction of any Section of the Project but prior to payment to the Contractor of any amount in excess of 90 percent (90%) of the total cost of all Construction Units comprising the completed Section, the Contractor shall deliver to the Owner in the form attached hereto, (1) a certificate that all

persons who have furnished labor in connection with the Project and subcontractors who have fu nished services for the Project have been paid in full, and (2) an agreement to hold the Owner harr less against any liens arising out of the Contractor's performance hereunder which may have be or may be filed against the Owner.

ARTICLE IV--PARTICULAR UNDERTAKINGS OF THE CONTRACTOR

Section 1. Protection to Persons and Property. The Contractor shall at all times take all reasonab precautions for the safety of employees on the work and of the public, and shall comply with all a: plicable provisions of Federal, State, and Municipal safety laws and building and construction code as well as the safety rules and regulations of the Owner. All machinery and equipment and oth physical hazards shall be guarded in accordance with the "Manual of Accident Prevention in Co: struction" of the Associated General Contractors of America unless such instructions are incon patible with Federal, State, or Municipal laws or regulations.

The following provisions shall not limit the generality of the above requirements:

a. The Contractor shall at no time and under no circumstances cause or permit any employee the Contractor to perform any work upon energized lines, or upon poles carrying energize lines, unless otherwise specified in accordance with Article II, Section 1, subsection g.

b. The Contractor shall so conduct the construction of the Project as to cause the least possibl obstruction of public highways.

c. The Contractor shall provide and maintain all such guard lights and other protection for th public as may be required by applicable statutes, ordinances, and regulations or by loca conditions.

d. The Contractor shall do all things necessary or expedient to protect properly any and a parallel, converging, and intersecting lines, joint line poles, highways, and any and all prop erty of others from damage, and in the event that any such parallel, converging and inter secting lines, joint line poles, highways, or other property are damaged in the course of th construction of the Project the Contractor shall at its own expense restore any or all of suc damaged property immediately to as good a state as before such damage occurred.

e. Where the right-of-way of the Project traverses cultivated lands, the Contractor shall limi the movement of his crews and equipment so as to cause as little damage as possible t crops, orchards, or property and shall endeavor to avoid marring the lands. All fences whic are necessarily opened or moved during the construction of the Project shall be replaced i as good condition as they were found and precautions shall be taken to prevent the escape c livestock. Except as otherwise provided in the descriptions of underground plowing an trenching assembly units, the Contractor shall not be responsible for loss of or damage t crops, orchards, or property (other than livestock) on the right-of-way necessarily inciden to the construction of the Project and not caused by negligence or inefficient operation of th Contractor. The Contractor shall be responsible for all other loss of or damage to crops orchards, or property, whether on or off the right-of-way, and for all loss of or damage t livestock caused by the construction of the Project.

f. The Project, from the commencement of work to completion, or to such earlier date o dates when the Owner may take possession and control in whole or in part as hereinafte provided shall be under the charge and control of the Contractor and during such period o control by the Contractor all risks in connection with the construction of the Project and th materials to be used therein shall be borne by the Contractor. The Contractor shall mak good and fully repair all injuries and damages to the Project or any portion thereof unde the control of the Contractor by reason of any act of God or other casualty or cause whethe or not the same shall have occurred by reason of the Contractor's negligence. The Contrac- tor shall hold the Owner harmless from any and all claims for injuries to persons or for damage to property happening by reason of any negligence on the part of the Contractor or any of the Contractor's agents or employees during the control by the Contractor of the Project or any part thereof.

g. Any and all excess earth, rock, debris, underbrush, and other useless material shall be re- moved by the Contractor from the site of the Project as rapidly as practicable as the work progresses.

h. Upon violation by the Contractor of any provisions of this section, after written notice of such violation given to the Contractor by the Owner, the Contractor shall immediately correct such violation. Upon failure of the Contractor so to do the Owner may correct such violation at the Contractor's expense.

i. The Contractor shall submit to the Owner monthly reports in duplicate of all accidents, giving such data as may be prescribed by the Owner.

j. The Contractor shall not proceed with the cutting of trees or clearing of right-of-way without written notification from the Owner that proper authorization has been received from the owner of the property, and the Contractor shall promptly notify the Owner whenever any landowner objects to the trimming or felling of any trees or the performance of any other work on his land in connection with the Project and shall obtain the consent in writing of the Owner before proceeding in any such case.

Section 2--Insurance. The Contractor shall take out and maintain throughout the construction period insurance in the following minimum requirements:

a. Workmen's compensation insurance covering all employees in statutory limits who perform any of the obligations assumed by the Contractor under the Proposal.

b. Public liability and property damage liability insurance covering all operations under the Proposal; limits for bodily injury or death not less than $100,000 for one person and $300,000 for each accident; for property damage, not less than $25,000 for each accident and $50,000 aggregate for accidents during the policy period.

c. Automobile liability insurance on all self-propelled vehicles used in connection with the contract, whether owned, nonowned, or hired; public liability limits of not less than $100,000 for one person and $300,000 for each accident; property damage limit of $10,000 for each accident.

The Owner shall have the right at any time to require public liability insurance and property damage liability insurance greater than those required in subsections b and c of this Section. In any such event, the additional premium or premiums solely as the result of such additional insurance shall be added to the contract price.

Upon request by the Owner, the Contractor shall furnish a certificate evidencing compliance with the foregoing requirements.

Section 3--Bond. If the estimated cost of the construction of a Section shall exceed $25,000, the Contractor agrees to furnish prior to the commencement of such construction, a bond in the penal sum not less than the estimated cost of such Section in the form attached hereto with a Surety or Sureties listed by the United States Treasury Department as acceptable sureties. In the event that the Surety or Sureties on the performance bond delivered to the Owner shall at any time become unsatisfactory to the Owner, the Contractor agrees to deliver to the Owner another or an additional bond.

Section 4--Delivery of Possession and Control to the Owner. Upon written request of the Owner, the Contractor will deliver to the Owner full possession and control of any portion of the Project provided the Contractor shall have been paid at least ninety percent (90%) of the cost of construction of such portion. Upon such delivery of possession and control to the Owner, the risks and obligations of the Contractor as set forth in Section 1f of this Article IV with respect to such portion so delivered to the Owner, shall be terminated; Provided, however, that nothing herein contained shall relieve the Contractor of any liability with respect to defective workmanship as specified in Article II, Section 4.

ARTICLE V--REMEDIES

Section 1--Completion on Contractor's Default. If default shall be made by the Contractor or by any subcontractor in the performance of any of the terms of this Proposal, the Owner, without in any manner limiting its legal and equitable remedies in the circumstances, may serve upon the Contractor and the Surety, if any, a written notice requiring the Contractor to cause such default to be corrected forthwith. Unless within twenty (20) days after the service of such notice upon the Contractor and the Surety, If any, such default shall be corrected or arrangements for the correction thereof satisfactory to the Owner shall be made, the Owner may take over the construction of the Project and prosecute the same to completion by contract or otherwise for the account and at the

expense of the Contractor, and the Contractor shall be liable to the Owner for any cost or expense excess of the Contract price occasioned thereby. In such event the Owner may take possession of a utilize, in completing the construction of the Project, any materials, tools, supplies, equipme: appliance, and plant belonging to the Contractor or any of its subcontractors, which may be situat at the site of the Project. The Owner in such contingency may exercise any rights, claims, or d mands which the Contractor may have against third persons in connection with this Proposal and f. such purpose the Contractor does hereby assign, transfer, and set over unto the Owner all su rights, claims, and demands.

ARTICLE VI--MISCELLANEOUS

Section 1--Patent Infringement. The Contractor will save harmless and indemnify the Owner fro any and all claims, suits, and proceedings for the infringement of any patent or patents covering a: equipment used in the work.

Section 2--Permits for Explosives. All permits necessary for the handling or use of dynamite c other explosives in connection with the construction of the Project shall be obtained by and at t: expense of the Contractor.

Section 3--Compliance with Statutes and Regulations. The Contractor will comply with all applicab: statutes, ordinances, rules, and regulations pertaining to the work. The Contractor acknowledge that it is familiar with the Rural Electrification Act of 1936, as amended, the so-called "Kick-Back Statute (48 Stat. 948), and regulations issued pursuant thereto, and 18 U.S.C. §§287,1001, as amende: The Contractor understands that the obligations of the parties hereunder are subject to the appli cable regulations and orders of Governmental agencies having jurisdiction in the premises.

Section 4. Equal Opportunity Provisions.

a. Contractor's Representations.

The Contractor represents that:

It has ☐, does not have ☒, 100 or more employees, and if it has, that

It has ☒, has not ☐, furnished the Equal Employment Opportunity--Employers Informatio Report EEO-1, Standard Form 100, required of employers with 100 or more employee pursuant to Executive Order 11246 and Title VII of the Civil Rights Act of 1964.

The Contractor agrees that it will obtain, prior to the award of any subcontract for mor than $10,000 hereunder to a subcontractor with 100 or more employees, a statement, signe by the proposed subcontractor, that the proposed subcontractor has filed a current report o: Standard Form 100.

The Contractor agrees that if it has 100 or more employees and has not submitted a repor on Standard Form 100 for the current reporting year and that if this Contract will amount t more than $10,000, the Contractor will file such report, as required by law, and notify th Owner in writing of such filing prior to the Owner's acceptance of this Proposal.

b. Equal Opportunity Clause. During the performance of this Contract, the Contractor agree: as follows:

(1) The Contractor will not discriminate against any employee or applicant for employmen because of race, color, religion, sex, or national origin. The Contractor will take affirma- tive action to ensure that applicants are employed, and that employees are treated durin employment without regard to their race, color, religion, sex, or national origin. Suc: action shall include, but not be limited to, the following: Employment, upgrading, demo- tion or transfer; recruitment or recruitment advertising; layoff or termination; rates o pay or other forms of compensation; and selection for training, including apprenticeship The Contractor agrees to post in conspicuous places, available to employees and appli- cants for employment, notices to be provided setting forth the provisions of this Equa Opportunity Clause.

(2) The Contractor will, in all solicitations or advertisements for employees placed by or or behalf of the Contractor, state that all qualified applicants will receive consideration fo employment without regard to race, color, religion, sex, or national origin.

(3) The Contractor will send to each labor union or representative of workers, with which it has a collective bargaining agreement or other contract or understanding, a notice to be provided advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

(4) The Contractor will comply with all provisions of Executive Order 11246 of September 24, 1965, and of the rules, regulations, and relevant orders of the Secretary of Labor.

(5) The Contractor will furnish all information and reports required by Executive Order 11246 of September 24, 1965, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to its books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.

(6) In the event of the Contractor's noncompliance with the Equal Opportunity Clause of this Contract or with any of the said rules, regulations, or orders, this Contract may be cancelled, terminated, or suspended in whole or in part, and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, or by rule, regulation, or order of the Secretary of Labor, or as provided by law.

(7) The Contractor will include this Equal Opportunity Clause in every subcontract or purchase order unless exempted by the rules, regulations, or order of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, so that such provisions will be binding upon each subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance: Provided, however, That in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

c. Certificate of Nonsegregated Facilities. The Contractor certifies that it does not maintain or provide for its employees any segregated facilities at any of its establishments, and that it does not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Contractor certifies further that it will not maintain or provide for its employees any segregated facilities at any of its establishments, and that it will not permit its employees to perform their services at any location, under its control, where segregated facilities are maintained. The Contractor agrees that a breach of this certification is a violation of the Equal Opportunity Clause in this Contract. As used in this certification, the term "segregated facilities" means any waiting rooms, work areas, restrooms and washrooms, restaurants and other eating areas, timeclocks, locker rooms and other storage or dressing areas, parking lots, drinking fountains, recreation or entertainment areas, transportation, and housing facilities provided for employees which are segregated by explicit directive or are in fact segregated on the basis of race, color, religion, or national origin, because of habit, local custom, or otherwise. The Contractor agrees that (except where it has obtained identical certifications from proposed subcontractors for specific time periods) it will obtain identical certifications from proposed subcontractors prior to the award of subcontracts exceeding $10,000 which are not exempt from the provisions of the Equal Opportunity Clause, and that it will retain such certifications in its files.

ection 5--Franchises and Rights-of-way. The Contractor will be under no obligation to obtain or sist in obtaining any franchises, authorizations, permits, or approvals required to be obtained by Owner from Federal, State, County, Municipal or other authority; any rights-of-way over private nds or any agreements between the Owner and third parties with respect to the joint use of poles, ossing or any other matter incident to the construction and operation of the Project.

ction 6--Nonassignment of Contract. The Contractor will not assign the Contract effected by an ceptance of this Proposal or any part thereof or enter into any contract with any person, firm or rporation for the performance of the Contractor's obligations thereunder, or any part thereof, thout the approval in writing of the Owner.

Section 7--Definitions.

a. The term "Owner" shall also include an engineer employed by the Owner, or a firm or engineer retained by the Owner, and designated by the Owner to act in that capacity. The Contractor will be notified in writing by the Owner of those designated to act for the Owner at the time of acceptance of this Proposal.

b. The term "Completion of Construction" shall mean full performance by the Contractor of the Contractor's obligations under the contract and all amendments and revisions thereof relating to any Section of the Project or to the Project except the Contractor's obligations in respect of (i) Certificate of Contractor and Indemnity Agreement - Line Extensions under Article III, Section 2 hereof and (ii) the Final Inventory referred to in Article III, Section 1a hereof.

c. The term "Completion" shall mean full performance by the Contractor of the Contractor's obligations under the Contract and all amendments and revisions thereof relating to any Section of the Project or to the Project.

Section 8--Extension to Successors and Assigns. Each and all of the covenants and agreements contained in the Contract effected by the acceptance of the Proposal shall extend to and be binding upon the successors and assigns of the parties thereto.

Long Ridge LLC
(Contractor)

By Paul Perkins
~~(President)~~ MANAGER

P.O. Box 505
Mt. Sterling KY 40353
(Address)

ATTEST:

Johnny Perkins Jr
~~(Secretary)~~ MANAGER

Date of Proposal 11-15-95

This Proposal must be signed with the full name of the Contractor. If the Contractor is a partnership, the Proposal must be signed in the partnership name by a partner. If the Contractor is a corporation, the Proposal must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the Corporation.

CONSTRUCTION UNITS - NEW CONSTRUCTION

SECTION 1 -- POLE UNITS

A pole unit consists of the installation of one pole. The first two digits indicate the length of the pole; the third digit shows the classification per A.S.A. (Example: 25-6 means a pole 25 feet long, class 6.)

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
20' 25'	$ 90.00 $ 95.00	55'	$ 195.00	Resag Neutral	$ 25.00
30'	$ 115.00	60'	$ 230.00		
35'	$ 125.00	65'	$ 280.00		
40'	$ 145.00	70'	$ 350.00		
45'	$ 155.00	75'	$ 425.00		
50'	$ 170.00				

POLE TOP ASSEMBLY UNITS

A pole top assembly unit consists of the installation of the hardware, crossarms and their appurtenances, insulators, etc., except tie wire, required to support the primary conductors.

SECTION A - 1ø		SECTION B - 2ø		SECTION C - 3ø	
UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
A1	$ 25.00	B-1 SH B1	$ 35.00 $ 35.00	C1	$ 50.00
A1-1	$ 30.00	B1-1	$ 40.00	C1-1	$ 60.00
A2	$ 35.00	B2	$ 60.00	C1-2	$ 65.00
A3	$ 45.00	B-5 B3	$ 80.00 $ 70.00	C1-3	$ 80.00
*A4-W A4	$ 155.00 $ 95.00	*B4-1 W B4-1	$ 220.00 $ 160.00	C2-2	$ 100.00
*A5-1 W A5-1	$ 75.00 $ 45.00	*B5-1 W B5-1	$ 100.00 $ 80.00	C3	$ 100.00
*A5-2 W A5-2	$ 78.00 $ 48.00	*B7 W B7	$ 150.00 $ 80.00	C3-1	$ 120.00
*A5-2A W A5-2A	$ 77.00 $ 47.00	*B7-1 W B7-1	$ 165.00 $ 85.00	*C4-1 W C4-1	$ 400.00 $ 230.00
*A5-3 W A5-3	$ 77.00 $ 47.00	B8-W B8	$ 290.00 $ 160.00	*C5-1 W C5-1A C5-1	$ 200.00 $ 115.00
*A5 W A5	$ 77.00 $ 47.00	B7-3 B7-3W	$ 60.00 $ 165.00	C-2	$ 85.00
**INCLUDES WIRES		C7-3 C7-3W			

POLE TOP ASSEMELY UNITS - *(Continued)*

SECTION A - 1ø		SECTION B - Vø		SECTION C - 3ø	
UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
*A-6 W	$ 155.00			C7-4	$ 155.00
A6	$ 90.00			*C7-W	$ 200.00
				C7	$ 120.00
*A-7 W	$ 180.00			*C7-1 W	$ 215.00
A7	$ 80.00			C7-1	$ 135.00
*A7-1 W	$ 190.00			*C8-W	$ 425.00
A7-1	$ 90.00			C8	$ 225.00
*A-8 W	$ 195.00			*C8-1 W	$ 430.00
A8	$ 95.00			C8-1	$ 235.00
A9	$ 65.00			*C8-2 W	$ 440.00
				C8-2	$ 235.00
A9-1	$ 55.00			*C8-3 W	$ 460.00
				C8-3	$ 250.00
*A7-3 W	$ 145.00			*C8-4 W	$ 475.00
A7-3	$ 60.00			C9	$ 80.00
				C8-5	$ 215.00
				C9-2	$ 80.00
				C9-1	$ 70.00
				C9-3	$ 70.00
				*C7-3 W	$ 200.00
				C7-3	$ 125.00
				*C5-8 W	$ 475.00
				C5-8	$ 280.00
				DCC1-3	$ 180.00
				DCC4-1	$ 465.00
				DCC8	$ 455.00
				DCC1	$ 170.00
				DCC2	$ 180.00
				DPC15	$ 170.00
				DCC1-2	$ 165.00
				DCC2-2	$ 225.00

** INCLUDES WIRE

SECTION G - TRANSFORMER ASSEMBLY UNITS

A transformer assembly unit consists of the installation of the transformer, its protective equipment and its hardware and leads with their connectors and supporting insulators and pins. This unit does not include the installation of the pole top, secondary, service, or grounding assemblies.

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
CSP-3	$ 65.00				
CSP-5	$ 65.00	CSP 50	$ 175.00	G312	$ 400.00
CSP 10	$ 70.00	G150	$ 410.00	M7-13 2 POLE BARK	$ 795.00
CSP 15	$ 85.00	G210	$ 280.00	G167 +	$ 310.00
CSP 25	$ 95.00	G310	$ 395.00	G10 + G39	$ 30.00
CSP 37.5	$ 145.00	G311	$ 400.00	G136 - ALL	$ 30.00
CSP-75	$ 200.00	G330	$ 400.00		
CSP-100	$ 210.00	G340	$ 665.00		

SECTION J - SECONDARY ASSEMBLY UNITS

A secondary assembly unit consists of the installation of the hardware, insulators, etc., to support the secondary conductor or cable. It does not include the installation of the secondary conductor or cable, or of any hardware, insulators, etc., required to support service conductors or cable.

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
ALL J's	$ 15.00				
J'S W	$ 68.00				

SECTION K - SERVICE ASSEMBLY UNITS

A service assembly unit consists of the installation of the hardware, insulators, etc. to support the service conductors or cable. It does not include the installation of the service conductor or cable, or of any hardware, insulators, etc. required to support secondary conductors or cable.

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
ALL K's	$ 20.00				
ALL K "C"	$ 20.00				
(TPX)					
K'S W	$ 68.00				

Section M - MISCELLANEOUS ASSEMBLY UNITS

A miscellaneous assembly unit consists of the installation of an additional unit needed in the Pro for new line construction but not otherwise listed in the Proposal. This section includes the instal tion of grounding assemblies, fuse cutouts, reclosers, sectionalizers, switches, capacitors, re lators, metering and other assembly units.

Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price
UMZ-5	$ 350.00	M5-8	$ 32.00	M3-24A	$ 625.00
UM5	$ 100.00	M5-13	$ 15.00	M3-25A	$ 645.00
M2-1	$ 30.00	M5-15	$ 25.00	M26-5	$ 55.00
M2-2	$ 25.00	M5-16	$ 29.00	M8	$ 100.00
M5et	$ 12.00	M5-20	$ 24.00	M2-1N	$ 35.00
M5-6	$ 32.00	M5-23	$ 15.00	M2-9	$ 30.00
M5-9	$ 36.00	M3-1A	$ 40.00	M42-12 M33-6	$ 15.00 $ 350.00
M5-10	$ 40.00	M3-10 M3-10A	$ 110.00 $ 110.00	M9-13	$ 425.00
M5-5	$ 13.00	M3-11	$ 425.00	M9	$ 35.00
M5-2	$ 13.00	M3-12	$ 465.00	M9-11	$ 200.00
M5-4	$ 13.00	M3-11A	$ 375.00	M8-15	$ 350.00
M5-1	$ 6.50	M3-12A	$ 465.00	M8-6	$ 150.00
M5-7	$ 13.00	M3-23	$ 300.00	M7-13	$ 700.00

Section R--RIGHT-OF-WAY CLEARING UNITS

R1-10. The unit is 1,000 feet in length and 10 feet in width (to be measured on one side of the pol line) of actual clearing of right-of-way. This includes clearing of underbrush, tree removal, an such tree trimming as is required so that the right-of-way, except for tree stumps which shall no exceed _____ in height, shall be clear from the ground up on one side of the line of pole carrying primary conductors.

This unit does not include clearing or trimming associated with secondaries or services which is included with conductor units. The length of actual clearing shall be measured in a straight line paralle to the horizontal line between stakes and across the maximum dimension of foliage cleared projecte to the ground line. All trees and underbrush across the width of the right-of-way, as designated by the Owner shall be considered to be grouped together as a single length in measuring the total length of clearing. Spaces along the right-of-way in which no trees are to be removed or trimmed or under brush cleared shall be omitted from the total measurement. All length thus arrived at, added together and divided by 1,000, shall give the number of 1,000-foot R1-10 units of clearing. This unit includes the removal or topping, at the option of the Contractor, of danger trees outside of the right of-way when so designated by the Owner. (Danger trees are defined as dead or leaning trees which, in falling, will affect the operation of the line.) The Contractor shall not remove or trim shade, fruit, or ornamental trees unless so directed by the Owner.

Section R--RIGHT-OF-WAY CLEARING UNITS (Continued)

R1-10. This unit is identical with R1-10 except that width is 20 feet (to be measured 10 feet on each side of the pole line).

R1-30. This unit is identical with R1-10 except that width is 30 feet (to be measured 15 feet on each side of the pole line).

R1-40. This unit is identical with R1-10 except that width is 40 feet (to be measured 20 feet on each side of the pole line).

RC1-10, RC1-20, RC1-30, RC1-40. These units are identical to the respective R1 units except that chemical treatment of stumps is required in addition to the clearing of underbrush, tree removal and tree trimming.

Additional Requirements (When specifying R1 units denote type of disposal (AorB).)

a. Trees, brush, branches and refuse shall, without delay, be disposed of by such of the following methods as the Owner will direct (Owner to strike out methods not to be used):

1. Burned
2. Piled on one side of right-of-way
3. Roller chopped and left on right-of-way in such a manner as not to obstruct roads, ditches, drains, etc.
4. Other (describe)_____

b. Trees that are felled shall be cut to commercial wood lengths, stacked neatly, and left on the right-of-way for the landowner. Commercial wood length means the length designated by the Owner but in no case shall it be required to be less than _____ (_____) feet. Brush, branches, and refuse shall, without delay, be disposed of by such of the following methods as the Owner will direct (Owner to strike out methods not to be used):

1. Burned
2. Piled on one side of right-of-way
3. Roller chopped and left on right-of-way in such a manner as not to obstruct roads, ditches, drains, etc.
4. Other (describe) _____

Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price

Section S--SUBSTATION ASSEMBLY UNITS

A substation assembly unit consists of the complete substation ready for connection of the line conductors, as shown on the substation drawings attached.

Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price

Section UD--UNDERGROUND CABLE ASSEMBLY UNITS

An underground cable assembly unit consists of the installation of 1000 feet of cable for undergrc primaries, secondaries or services. It does not include the plowing, trenching and backfilling. the termination of the primary cable which are provided for in other assembly units. It includes labor for the termination, connection and sealing of secondary and service cables and conductors shown in the specifications and construction drawings, and the labor for making all primary, secc ary and service cable splices (buried cable may be spliced only when and where permitted by Owner).* In computing the compensation to the Contractor for underground cable assembly un only the distance between stakes, paralleling the cable shall be used. The number of units so cc puted includes all installation of cable in all specified trenches, risers, conduits, crossings, m holes, transformers, terminal housings and meter boxes.** The conductor or cables listed are manufacturer's designation of types, size, voltage rating and material. The Contractor and Owner shall jointly perform cable acceptance tests on installed cable in accordance with the spec cations using test equipment furnished by the _____.
(Owner to insert Owner or Contractor).

☐ *Owner check here if primary splices are permitted.

☐ *Owner check here if secondary and service splices are permitted.

☐ **Owner check here if 12 feet of service conductor is to be left as a coil three feet from building with ends capped instead of connection to meter box.

Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price

Section UG - UNDERGROUND TRANSFORMER ASSEMBLY UNITS

An underground transformer assembly unit consists of the installation of the transformer, its hou ing, warning sign, switches, over-current protective devices, grounding loop, and its hardware a leads with their connectors and supporting insulators. This unit also includes the installation primary cable terminations but not of lightning arresters, fault indicators or ground rods, nor do it include any trenching. For pad-mount transformers, it does not include installation of the pa drainable material, backfilling, compaction, or site preparation which are included in the pad a sembly units. For submersible transformers it includes the installation of cable terminations, of t enclosure and cover, of drainable material (when specified)* and the excavation.

☐ *Owner check here if drainable material is specified.

Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price

utilities, this unit will be suffixed by the letter "T". This will be applicable only those areas predesignated by the Owner on the detail maps herein. All plowing outsi of the predesignated area on the map, regardless of the difficulty in placement actua experienced, will be inventoried as the regular UR1-S (D) units. If field conditio show the existence of rock to prevent the placing of the cable in soil to the depth r quired in the specifications the Owner may specify UR2-R units. Where more than o cable is to be installed in the slot, the UR1-S unit designation should be modified a suffix corresponding to the number of cables installed. For example, UR1-S(D) for 3 cables plowed at one time.

UR2-S (D&W) Trenching Assembly Unit, Soil - Consists of one (1) lineal foot of trenching in so measured parallel to the surface of the ground, to a specified depth (D) and width (W in inches, including the excavation, and backfilling and compacting. This unit includ all labor required in the repair and/or replacement of streets, roads, drives, fence lawns, shrubbery, watermains, pipes, pipelines and contents, underground power a telephone facilities, buried sewerage and drainage facilities, and any other proper damaged by the trenching, except as specifically provided for in other units. NOT Where in the judgment of the Owner greater than normal difficulty will be involved trenching because of the presence of underground facilities of other utilities, this un will be suffixed by the letter "T". This will be applicable only in those areas pr designated by the Owner on the detail maps herein. Where more than one cable is be installed in the trench, the regular UR2-S unit designation should be modified b a suffix corresponding to the construction drawing for the type of cable placeme desired.

UR2-R (D&W) Trenching Assembly Unit, Rock - Consists of one (1) lineal foot of trenching in roc measured parallel to the surface of the ground, to specified depth (D) and width (W in inches, including the excavation, and backfilling and compacting to place cable the depth specified in the Specifications. This unit will be specified by the Owner on when field conditions at the site show the existence of rock at a depth preventing th placing of the cable in soil to the depths required in the Specifications. This unit in cludes all labor required in the repair and/or replacement of streets, roads, drive fences, lawns, shrubbery, watermains, pipes, pipelines and contents, undergrou power and telephone facilities, buried sewerage and drainage facilities, and any othe property damaged by the trenching, except as specifically provided for in other unit This unit does not include underground cable facilities installed in the trench c cable bedding assembly units, when required.

UR-3 Cable Bedding Assembly Unit - Consists of the installation of one (1) lineal foot of two-inch bed of clean sand or soil placed in the trench under the cable and a fou inch layer of clean sand or soil backfill over the cable to the width of the trench NOTE: The exact location and number of units shall be determined by the Owner afte the trenches are open in those areas where rock or other conditions make specia bedding necessary.

UR-4a Pavement Assembly Unit, Asphalt - Consists of the labor necessary to remove an restore one (1) lineal foot of asphalt pavement, measured along the route of the cable including any trenching necessary to place the cable at the required depth. All wor shall be performed in accordance with the requirements of State or local authorities

UR-4c Pavement Assembly Unit, Concrete - Consists of the labor necessary to remove an restore one (1) lineal foot of concrete pavement, measured along the route of the cable including any trenching necessary to place the cable at the required depth. All wor shall be performed in accordance with the requirements of State or local authorities

UR-5 ( ) Underground Pipe Crossing Assembly Unit - Consists of the installation of one (lineal foot of steel pipe, of the inside diameter, in inches, specified in the last digit c the assembly unit designation, installed in place. This unit includes the pushing c pipe and any excavation, backfilling and tamping necessary for the installation of th pipe. The pipe will be installed at the depth specified by the Owner. The installation c underground cable in the pipe is not included in this unit.

UR6 Underground Nonpipe Crossing Assembly Unit - Consists of the labor in providing a hole in soil one (1) foot in length of a diameter sufficient to accommodate the cable to be installed therein. The depth of the hole below the surface of the ground shall be specified by the Owner. This unit includes any excavation, backfilling and tamping necessary for the installation. This unit may be used where the permanent installation of a steel pipe under the UR-5 unit is not required. The installation of underground cable in the pipe is not included in this unit.

Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price

CONSTRUCTION UNITS--LINE CHANGES

The general heading of Line Changes applies to the changing of existing lines or portions there from their existing phasing, wire size, and type to new phasing, wire size, and type and the remov of existing lines or portions thereof and replacing with new lines in close proximity thereto. In ge: eral line changes involve three types of assembly units as follows:

Section H--Conversion assembly units;

Section I--Removal assembly units;

Section N--New construction assembly units on existing lines or in replacing lines.

The assembly units that are included in Sections H, I, and N are defined by symbols and descriptio: which follow together with the applicable descriptions included under New Construction. Where t descriptions are not correct or sufficiently explicit, or when special units are not covered by Co: struction Drawings, descriptions have been provided by the Owner in the respective sections.

Work included in these sections shall be performed under a schedule of deenergization and opera ing procedures as set forth by the Owner at the time of release of any Section involving work c existing lines. The Contractor will so plan and perform its work that it will be possible to safe reenergize all lines involved at the expiration of the time limits set up in the schedule to resur service to all consumers being served prior to deenergization. Prior to commencement of work eac day on lines to be deenergized, and upon completion of work each day on such lines, the Contracto will notify the Owner thereof in writing or in such other manner as the circumstances permit.

Section H--CONVERSION ASSEMBLY UNITS

Conversion assembly units are pole-top assemblies and cover the furnishing of all labor for chang ing an existing assembly unit to a new assembly unit, utilizing certain items of materials of th existing assembly unit on poles to be left in place. Any materials removed from the existing as sembly units which are not required in the construction of the conversion assembly unit are to b reused by the Contractor in the construction of other assembly units, or returned to Owner's ware house, as directed by the Owner.

Conversion assembly units are specified by the prefix H with the new construction assembly un designation shown first and the existing assembly unit designation shown last. For example, a H B1-A1 signifies the conversion of an existing A1 assembly unit to a B1 assembly unit (as was define in the description of construction assembly units). In this instance the Contractor utilizes the exist ing pin-type insulator, single upset bolt and neutral spool and installs the additional crossarm crossarm pins, braces, machine bolt, carriage bolts, lag screw, and insulator supplied by the Owne required for the new unit. The Contractor transports the pole-top pin and two machine bolts to th warehouse or uses them on the Project as directed by the Owner.

The Conversion assembly units also include the furnishing of all labor in the transferring, re sagging and retying of conductors from one position on the pole to a different position on the pol where such transfers are required. Where replacement of conductor is required, the existing con ductor will be removed under Section I and the new conductor installed under Section N.

Where replacement of a pole is required, the existing pole and pole-top assembly will be remove under Section I and the new pole and pole-top assembly will be installed according to Section N ar no H units will be involved.

Conversion assemblies are listed in three subsections for converting pole-top assemblies from sing to V phase, single to three phase, and V to three phase. The following descriptions apply to onl those conversion units not sufficiently explicit:

Unit	Description

Section H - CONVERSION ASSEMBLY UNITS (Continued)

Subsection H (B-A) 1 ø to v ø		Subsection H (C-A) 1 ø to 3 ø		Subsection H (C-B) v ø to 3 ø	
Unit No.	Unit Labor Price	Unit No.	Unit Labor Price	Unit No.	Unit Labor Price

Section I--REMOVAL ASSEMBLY UNITS

Removal assembly units cover the furnishing of all labor for the removal of existing units of co: struction from existing lines, disassembling into material items, and all labor and transportati for the returning of all materials to the warehouse of the Owner in an orderly manner or transpor ing elsewhere to the site of the Project for reuse in the prosecution of this Contract as directed the Owner.

The unit removal prices shall include all labor required to reinstall in accordance with specific tions any conductors temporarily detached. The Contractor will reinstall at his own expense a: other units removed by him for his own convenience.

The removal units are specified by the prefix I and followed by the assembly unit designation existing assembly unit to be removed. For example, an I-A1 signifies the removal of an A1 assemb unit. The following special notes apply to specific removal units:

a. Poles. All poles of the same height, regardless of pole class, are designated by the sar unit. Thus an I-30-foot pole signifies the removal of a 30-foot pole of any class. The Contract is not required under this unit to remove from the pole any ground wire or pole numbering a tached to the pole. This unit includes the refilling and tamping of holes in a workmanlike mann unless they are to be reused.

b. Pole-top Assemblies. The unit of removal of pole-top assemblies includes, in addition the removal of the assembly itself, any necessary handling, resagging, and retying of conducto in those cases where an existing pole-top assembly will be removed and replaced by a new pole top assembly and where any existing conductor is to be reused.

The unit of removal of pole-top assemblies also includes any holding or handling of mainline c tap conductors at tap lines, angles, and deadends where such is involved, and the reinstalling such conductor in accordance with the Specifications; for example, an I-A5-4 will include the dis connection of the tap conductors, snubbing off the tap line at the nearest practical point and th reconnection and resagging of these tap conductors if necessary to the new tap assembly whe installed. The new unit of construction, however, will be specified separately in Section N.

c. Conductor. The conductor removal unit covers the removal of 1,000 feet of conductor c cable and reeling or coiling it in a workmanlike manner in such a way that it can be reused b the Contractor or the Owner. The Owner will furnish to the Contractor reels if it is to be re turned to the Owner's warehouse on reels. The removal unit for each size of conductor or cabl is shown by the prefix I followed by D and the conductor or cable type; thus an I-D 6ACW signifies the removal unit for 1,000 feet of 6 A Copperweld-copper conductor.

d. Guys. All guys regardless of length, type of attachment, or size of guy strand are specifie by the same unit; thus an I-E signifies the removal of any guy.

e. Anchors. Only anchor rods are to be removed by the Contractor in anchor removal units The anchors will be left in the ground; thus an I-F signifies the removal of any anchor rod. the rod cannot be unscrewed, the end of the rod shall either be cut off or bent down so that th rod will be at least 18 inches below ground.

f. Transformers. The unit for removal of transformer assembly units is divided into two sec tions, (1) Conventional Transformer Assembly, and (2) Self-protected Transformer Assembl Only one unit is specified for each type, and all sizes of transformers from 1 to 15 kVA with each group will be covered by the same unit. "Self-protected" refers to transformers where a protective equipment is mounted on or within the transformer. "Conventional" refers to trans formers where protective equipment is mounted separately from the transformer. The unit designated by the prefix I followed by the description of the unit to be removed; thus, I-Conventional signifies the removal of a conventional transformer assembly for any size trans former from 1 to 15 kVA.

g. Secondary Units. The unit for removal of secondary assemblies includes, in addition to th removal of the assembly itself, all necessary handling such as untying, resagging, and retying c secondary conductor or cables where existing secondary conductor or cable is to be reused.

In addition, the unit for removal of the secondary assembly includes the handling or holding any conductor at tap lines where such is involved, and the reinstalling of such tap conductor accordance with the Specifications.

h. Service Unit. The unit for removal of service assemblies includes, in addition to the removal of the assembly itself, all necessary handling such as untying, resagging, and retying of service conductor or cable where existing service conductor or cable is to be reused.

The following descriptions apply only to those removal units not sufficiently explicit:

Unit	Description

SECTION I - REMOVAL ASSEMBLY UNITS (continued)

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
M3-12A	$ 265.00	6 ACWC	$ 140.00	3/0	$ 235.00
M3-11A	$ 115.00	#4 ACSR	$ 140.00	336.4	$ 280.00
M5-1	$ 4.00	2-3 STR.	$ 185.00	1/0 Oua	$ 200.00
M5-2	$ 10.00	1/0 ACSR	$ 145.00	UM5	$ 100.00
M5-4	$ 12.00	#2 ACSR	$ 140.00	M3-25	$ 365.00
M5-5	$ 10.00	6 WP	$ 100.00	M2-2	$ 20.00
M5-6	$ 20.00	#4 TPLX	$ 165.00	M2-1H	$ 20.00
M5-8	$ 20.00	#2 TPLX	$ 170.00	M2-1	$ 20.00
M5-9	$ 25.00	1/0 TPLX	$ 185.00	DCC8	$ 200.00
M5-10	$ 30.00	RPTS	$ 20.00	DCC12	$ 90.00
M5-13	$ 5.00	4/0 TPLX	$ 205.00	DCC-1	$ 90.00
M5-14 M5-15	$ 20.00 $ 15.00	4/0 ODPLX	$ 240.00	RETURN POLE TO STOCK RPTS	$ 20.00
M5-16	$ 15.00	6 DPX	$ 115.00		
M5-20	$ 12.00	4 WP	$ 100.00		
M5-21	$ 5.00	2 WP	$ 110.00		
M7-11	$ 265.00	8 WP	$ 100.00		
M8-1 M7-13	$ 475.00	ROCK	$ 18.00		
M8-6 M8-15	$ 125.00 $ 315.00	25	$ 40.00		
M-8 M9-11	$ 75.00 $ 100.00	M-8	$ 80.00		
M9-12	$ 280.00	M3-23	$ 85.00		
M9-13	$ 300.00	TOP POLE	$ 50.00		
M26-5	$ 20.00	M3-24	$ 305.00		
8 ACWC	$ 140.00	1/OU.P.T.PX			

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE
20-9	$ 40.00			*C8-W	$ 285.00
25' Poles	$ 40.00	A9	$ 50.00	C8	$ 100.00
30' "	$ 50.00	A9-1	$ 50.00	*C8-1 W	$ 295.00
				C8-1	$ 110.00
35' "	$ 55.00	B1	$ 30.00	*C8-2 W	$ 285.00
				C8-2	$ 100.00
40' "	$ 65.00	B1-5A	$ 30.00	*C8-3 W	$ 295.00
		B1-1	$ 32.00	C9	$ 55.00
45' "	$ 70.00	B2	$ 35.00	*C7-3 W	$ 165.00
				C7-3	$ 70.00
50' "	$ 80.00	B3	$ 60.00	C9-2	$ 70.00
				"E" UNITS	$ 25.00
55' "	$ 90.00	*B4 W	$ 235.00	E3-10	$ 1.50
		B4 B4-1	$ 125.00	"F" UNITS	$ 22.00
60' "	$ 110.00	*B5 W	$ 120.00	E1 - INS	$ 5.00
		B5	$ 65.00	CON.3-25KVA	$ 75.00
65' "	$ 125.00	*B7 W	$ 125.00	37½	
		B7	$ 65.00	CONV. 50 KVA	$ 100.00
70 "	$ 140.00	*B7-1 W	$ 140.00		
A1	$ 20.00	B7-1	$ 80.00	CSP 105-3 to	
A1-1	$ 22.00	*B8 W	$ 200.00	CSP 100	$ 145.00
		B8	$ 100.00	105-25	$ 70.00
A2	$ 24.00	B5-1 W	$ 125.00		
		B9	$ 50.00	G210	$ 155.00
A3	$ 27.00	B5-1	$ 70.00		
		B9-1	$ 50.00	G310	$ 185.00
*A4 W	$ 180.00			G340	$ 265.00
A4	$ 50.00	C1	$ 35.00	G312	$ 90.00
*A5 W	$ 90.00	C1-2	$ 40.00		
A5	$ 25.00	C1-1	$ 45.00	"J" UNITS	$ 15.00
*A5-1 W	$ 90.00	C2-2	$ 75.00		
A5-1	$ 25.00	C2	$ 70.00	"K" UNITS	$ 15.00
*A5-2 W	$ 95.00	C1-3	$ 50.00	(basket)	
A5-2	$ 28.00	C3	$ 60.00	M5-et	$ 7.00
*A5-3 W	$ 90.00	*C4 W	$ 250.00		
A5-3	$ 25.00	C4	$ 140.00	M3-1A	$ 50.00
*A5-4 W	$ 90.00	*C4-1 W	$ 250.00		
A5-4	$ 25.00	C4-1	$ 140.00	M3-4	$ 25.00
*A6 W	$ 180.00	*C5-1 W	$ 130.00		
A6	$ 50.00	C5-1	$ 90.00	M3-3	$ 175.00
*A7 W	$ 100.00	*C5 W	$ 130.00		
A7	$ 50.00	C5	$ 90.00	M3-10	$ 70.00
*A7-1 W	$ 110.00	*C7 W	$ 149.00	M3-41	$ 70.00
A7-1	$ 60.00	C7	$ 65.00	M3-11	$ 135.00
*A8 W	$ 180.00	*C7-1 W	$ 170.00	M-8	$ 65.00
A8	$ 58.00	C7-1	$ 80.00	M3-12	$ 250.00
		B7-3	$ 70.00	G-10	$ 30.00
** Includes wires		B7-3W	$ 130.00	G-39	$ 30.00
		C7-3	$ 65.00	G136	$ 30.00
		C7-3W	$ 149.00	G-9	$ 30.00
		J'S W	$ 70.00	G-106	$ 30.00
		K'S W	$ 70.00	G-105	$ 30.00
				CONV 75	$ 130.00
				CONV 100	$ 145.00

Section N--NEW ASSEMBLY UNITS

The purpose of this section is to list complete new units of construction where such units are to be added to existing lines or installed in replacing lines.

The units as covered by this section are the same as the units described in Construction Units--New Construction, except that these units are prefixed by the letter N.

For example, an N40-6 unit covers the furnishing of all labor for the installation of a 40-6 pole either in an existing distribution line being operated by the Owner or in a new line being constructed to replace an existing distribution line being operated by the Owner.

The following descriptions apply only to those new units not sufficiently explicit:

Unit	Description
	THIS SECTION INCLUDES HOURLY RATES FOR WORK OTHER THAN INSTALLATION/RETIREMENT ON UNIT PRICE BASIS:
	HOURLY RATE FOR EMERGENCY HELP IN STORM OUTAGES ONLY:
	Working Foreman $ 33.00 Journey Lineman 32.00 Apprentice Lineman 24.00 Operator 23.00 Bucket 20.00 Digger 20.00 Pickup Truck 12.00
	HOURLY RATES FOR WORK ORDERS, MEMBERSHIP EXTENSION, ETC.:
	Working Foreman $ 35.00 Journeyman Lineman 34.00 Apprentice Lineman 26.00 Operator 25.00 Bucket 24.00 Digger 24.00 Service Truck 15.00

SECTION H - NEW ASSEMBLY UNITS *(Continued)*

UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE	UNIT NO.	UNIT LABOR PRICE

ACCEPTANCE

The undersigned hereby accepts the foregoing Proposal of Long Ridge LLC
_____, Dated November 16, 1995, to construct the rural electri
Project _____ 1995-1996 Line Extensions.

Big Sandy Rural Electric Cooperative Corporatior
(Owner)

By John E. Shepherd
CHAIRMAN

Secretary

November 16, 1995
Date of Contract

ACORD. CERTIFICATE OF INSURANCE

OP ID: EB
PERDU-1

DATE (MM/DD/YY)
11/14/95

PRODUCER

R. Roeding & Co. Inc.
34 Chancellor Dr
Crestview Hills KY 41017-0900

Edward T. Roeding
Phone No. 606-341-0202 Fax No.

THIS CERTIFICATE IS ISSUED AS A MATTER OF INFORMATION ONLY AND CONFERS NO RIGHTS UPON THE CERTIFICATE HOLDER. THIS CERTIFICATE DOES NOT AMEND, EXTEND OR ALTER THE COVERAGE AFFORDED BY THE POLICIES BELOW.

INSURED

LONGRIDGE LLC
PO Box 519
Mt. Sterling KY 40353

COMPANIES AFFORDING COVERAGE

COMPANY A: Ohio Casualty

COMPANY B: Fireman's Fund Insurance

COMPANY C:

COMPANY D:

COVERAGES

THIS IS TO CERTIFY THAT THE POLICIES OF INSURANCE LISTED BELOW HAVE BEEN ISSUED TO THE INSURED NAMED ABOVE FOR THE POLICY PERIOD INDICATED. NOTWITHSTANDING ANY REQUIREMENT, TERM OR CONDITION OF ANY CONTRACT OR OTHER DOCUMENT WITH RESPECT TO WHICH THIS CERTIFICATE MAY BE ISSUED OR MAY PERTAIN, THE INSURANCE AFFORDED BY THE POLICIES DESCRIBED HEREIN IS SUBJECT TO ALL THE TERMS, EXCLUSIONS AND CONDITIONS OF SUCH POLICIES. LIMITS SHOWN MAY HAVE BEEN REDUCED BY PAID CLAIMS.

TYPE OF INSURANCE	POLICY NUMBER	POLICY EFFECTIVE DATE (MM/DD/YY)	POLICY EXPIRATION DATE (MM/DD/YY)	LIMITS	
GENERAL LIABILITY					
[X] COMMERCIAL GENERAL LIABILITY	[redacted]	03/11/95	03/11/96	GENERAL AGGREGATE	$ 2000000
[ ] CLAIMS MADE [X] OCCUR				PRODUCTS - COMP/OP AGG	$ 2000000
[ ] OWNER'S & CONTRACTOR'S PROT				PERSONAL & ADV INJURY	$ 1000000
				EACH OCCURRENCE	$ 1000000
				FIRE DAMAGE (Any one fire)	$ 50000
				MED EXP (Any one person)	$ 5000
AUTOMOBILE LIABILITY					
[X] ANY AUTO	[redacted]	03/11/95	03/11/96	COMBINED SINGLE LIMIT	$ 1000000
[ ] ALL OWNED AUTOS				BODILY INJURY (Per person)	$
[ ] SCHEDULED AUTOS				BODILY INJURY (Per accident)	$
[X] HIRED AUTOS				PROPERTY DAMAGE	$
[X] NON-OWNED AUTOS					
GARAGE LIABILITY				AUTO ONLY - EA ACCIDENT	$
[ ] ANY AUTO				OTHER THAN AUTO ONLY:	
				EACH ACCIDENT	$
				AGGREGATE	$
EXCESS LIABILITY				EACH OCCURRENCE	$ 1000000
[X] UMBRELLA FORM	[redacted]	03/11/95	03/11/96	AGGREGATE	$ 1000000
[ ] OTHER THAN UMBRELLA FORM					$
WORKERS COMPENSATION AND EMPLOYERS' LIABILITY				STATUTORY LIMITS	
				EACH ACCIDENT	$ 100000
THE PROPRIETOR/ PARTNERS/EXECUTIVE OFFICERS ARE: [ ] INCL [ ] EXCL	[redacted]	03/11/95	03/11/96	DISEASE - POLICY LIMIT	$ 500000
				DISEASE - EACH EMPLOYEE	$ 100000
OTHER					
Property	[redacted]	03/11/95	03/11/96	Building	$80000
				Building	$40000

DESCRIPTION OF OPERATIONS/LOCATIONS/VEHICLES/SPECIAL ITEMS

CERTIFICATE HOLDER

BIGRECC

Big Sandy RECC
PO Box 1476
Paintsville KY 41240

CANCELLATION

SHOULD ANY OF THE ABOVE DESCRIBED POLICIES BE CANCELLED BEFORE THE EXPIRATION DATE THEREOF, THE ISSUING COMPANY WILL ENDEAVOR TO MAIL 30 DAYS WRITTEN NOTICE TO THE CERTIFICATE HOLDER NAMED TO THE LEFT, BUT FAILURE TO MAIL SUCH NOTICE SHALL IMPOSE NO OBLIGATION OR LIABILITY OF ANY KIND UPON THE COMPANY, ITS AGENTS OR REPRESENTATIVES.

AUTHORIZED REPRESENTATIVE

Edward T. Roeding

HOLD HARMLESS AGREEMENT

Long Ridge LLC agrees to defend, indemnify and hold harmless BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION and its directors, officers, agents, and employees from all claims of whatsoever nature or kind, including those brought by employees of Long Ridge LLC agents, and subcontractors. Long Ridge LLC agrees to defend and pay all costs in defending these claims, including attorney fees.

Further, Long Ridge LLC agrees to maintain public liability and property damage insurance (including automobile public liability and property damage insurance) to cover the obligations set forth above. The minimum insurance limits of liability shall be $1,000,000 bodily injury and property damage. BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION shall receive a minimum 30 day notice in the event of cancellation of insurance required by the agreement. Long Ridge LLC shall furnish a certificate of insurance to BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION showing that the above obligations and requirements are provided for by a qualified insurance carrier, and showing BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION as an additional insured on such insurance.

Long Ridge LLC
Contractor

BY: Paul Perkins
~~VICE PRESIDENT~~ MANAGER

DATE: 11-15-95

BIG SANDY RURAL ELECTRIC COOPERATIVE CORPORATION

BY: Bruce A Davis
PRESIDENT/GENERAL MANAGER

5. This bond is made for the benefit of all persons, firms and corporations who or which may furnish or perform any labor for or on account of the construction to be performed under the Construction Contract and any amendments thereto, and they, and each of them, are hereby made obligees hereunder with the same force and effect as if their names were written herein as such, and they and each of them may sue hereon.

In witness whereof, the undersigned have caused this instrument to be executed and their respective corporate seals to be affixed and attested by their duly authorized representatives this _____ day of _____, 19_____.

Long Ridge LLC (SEAL)
(Principal)

Attest: By _____

_____
(Secretary)

_____ (SEAL)
(Surety)

Attest: By _____

_____
(Secretary)

_____
(Address of Surety's Home Office)

By _____
(Resident Agent of Surety)

Signatures: The Contractor's Bond must be signed with the full name of the Contractor. If the Contractor is a partnership the Contractor's Bond must be signed in the partnership name by a partner. If the Contractor is a corporation the Contractor's Bond must be signed in the corporate name by a duly authorized officer and the corporate seal affixed and attested by the Secretary of the corporation. A typewritten copy of all such names and signatures shall be appended.

Power of Attorney: The Contractor's Bond must be accompanied by a power of attorney authorizing execution on behalf of the Surety and, in jurisdictions so requiring should be countersigned by a duly authorized resident agent of the Surety.

CERTIFICATE OF CONTRACTOR
AND INDEMNITY AGREEMENT
(Line Extensions)

Paul Perkins, *certifies that he is the*

Manager, *of*
TITLE OR DESIGNATION*

Long Ridge LLC, *the Contractor, in a contract dated*
NAME OF CONTRACTOR

November 16, 19 95 *entered into between the Contractor and*

Big Sandy Rural Electric Cooperative Corp., *the Owner, for the construction of a rural electric*
NAME OF REA BORROWER

Project (hereinafter referred to as Project), which bears the Project Designation

19 Line Extensions, *and that he is authorized to and does make this Certificate and Indemnity Agreement on behalf of said Contractor in order to induce the Owner to make payment to the Contractor, in accordance with the provisions of the said contract.*

Undersigned further says that all persons who have furnished labor in connection with the Section of the Project represented by the Final Inventory dated _____, *in the amount of* $_____, *have been paid in full; that all manufacturers, materialmen and subcontractors which furnished any materials or services, or both, for the said Section of the Project have been paid in full; that no lien has been filed against the Project and no person has any right to claim any lien against the Project.*

Undersigned further says that if the Owner pays the Contractor the contract price for the said Section of the Project the Contractor will indemnify and hold harmless and does hereby undertake and agree to idemnify and hold harmless the Owner from any claim or lien arising out of the negligence or other fault of the Contractor in respect of the performance of the contract which may have been or may be filed against the Owner.

Paul Perkins
SIGNATURE OF CONTRACTOR

---

*President, Vice-President, Partner or Owner, or, if signed by other than one of foregoing, Power of Attorney signed by one of the foregoing should be attached. Indicate applicable designation.

SUPPLEMENTAL CONTRACT
FOR
ADDITIONAL PROJECT

November 16, 1995
DATE

TO: Long Ridge LLC
CONTRACTOR

Pursuant to Article I, Section 2 of the Contractor's Proposal dated _____, *for the rural electric Project* _____, *we request that you construct Additional Project No.* _____, *consisting of approximately the following system improvement and line extension work:* _____

The Additional Project is to be constructed in accordance with all of the provisions of the Contractor's Proposal, except:

1. *The time for completion of the Additional Project shall be* _____.
2. *The prices for Construction Units for the Additional Project are as shown in Appendix A attached hereto.*

Please indicate your acceptance of the foregoing by signing below, return two signed copies and retain one copy.

Sincerely,

Big Sandy Rural Electric
Cooperative Corporation
OWNER

By John E. Shepherd
PRESIDENT, VICE PRESIDENT*
Chairman of the Board

Enclosures

ACCEPTANCE:

Long Ridge LLC
CONTRACTOR

By Paul Perkins
~~PRESIDENT~~, VICE PRESIDENT, PARTNER*
MANAGER

11-15-95
DATE

**Strike out inapplicable designation*

REA FORM 792c REV 5-70

* U. S. GOVERNMENT PRINTING OFFICE : 1972 O - 486-165

Attachment C

Photographs