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Our Ref: OM-LA/016

7 December 1999

MEMORANDUM

To: Members of the Staff

From: Tan L S

AMENDED PROVISIONS UNDER PUBLIC UTILITIES ACT AFFECTING LICENSED ELECTRICAL WORKERS (LEW) AND GUIDELINES/PRECAUTIONARY MEASURES TO BE TAKEN FOR EARTHWORKS IN CONJUNCTION WITH ELECTRICAL PROJECTS

I am attaching a PowerGrid's circular to LEWs dated 24 November 1999 in respect of the above subject matter.

The maximum fine for cable damage has been raised to $1 million and the Act also provides for an imprisonment term not exceeding 5 years.

All Project Managers and/or Assistant Project Managers are to ensure that the PowerGrid's Guidelines are strictly followed by the Contractors and Sub-Contractors for projects involving ground excavations, pilings, driving of earthing rods etc.

Tan L S

cc RT/LCT
cc Notice Board

enc

TLS/na

BCA
ISO 9000
CERT. NO.: 99/077
SS ISO 9001 : 1994

POWER GRID
A subsidiary of Singapore Power

TAN LEH SEONG @ TAN LAI SIONG
4
GREENWOOD PLACE
SINGAPORE 289129

24 November, 1999

Your Ref :
Our Ref : CDPU/LEW/118
Tel : 4700600
Fax : 4759400

Dear Sir/Mdm

AMENDED PROVISIONS UNDER PUBLIC UTILITIES ACT AFFECTING LICENSED ELECTRICAL WORKERS (LEW)

The Public Utilities (Amendment) Act 1999 will become operational on 15 Dec 99. The Act redefines the meaning of "earthworks " which will include, among other things, the sinking of earth rods into the ground. Over the past three years, there had been 11 cable damages caused by sinking of earth rods and among which were 5 incidents where transmission cables were damaged and caused voltage dips island-wide affecting many customers.

2 Besides, the Act also imposes duties on any person who carries out earthworks in the vicinity of PowerGrid's high-voltage (HV) electricity cables to give at least 7 days prior written notice to PowerGrid and be required to follow certain work procedures stipulated by the Act. A sample copy of the notice is enclosed for your reference. Persons who fail to comply with these requirements are liable for prosecution under the Act. You are requested to refer to the original Act for details and other changes.

3 Damage to cables arising from earthworks is a major concern as it can lead to power failures or voltage dips. Voltage dips could lead to shut down of some sensitive equipment in the production plants resulting in production and financial losses. To curb the frequency of cable damages, persons who damage or cause cables to be damaged can be prosecuted under Section 107(3) of the Act which carries a maximum fine of $1 million, raised from the previous fine of $200,000 provided for under this Section. The Section also provides for an imprisonment term not exceeding 5 years or both fines and imprisonment.

4 In view of the grave consequence of cable damage, we therefore urge you to take all possible precautions whenever earthworks are carried out so as to avoid causing damage to cables. For your convenience, we enclose a list of guidelines / precautionary measures that you should take into account before carrying out any earthworks. Please note that the list is not exhaustive. You are required to take extra precautions when needed. Kindly disseminate this letter and the list of guidelines / precautionary measures to be taken to your site supervisors and workers, including contractors and subcontractors.

5 Should you have any doubt or require clarification on the guidelines, please contact my engineers Mr. Dennis Koh at: 4700602 or Mr. Jason Tan at 4700601 or the undersigned at 4700600.

Yours faithfully

LEONG KUM SENG
MANAGER
OPERATIONS SUPPORT SECTION

(This is a computer-generated letter. No signature is required)

Encl:

GUIDELINES / PRECAUTIONARY MEASURES TO BE TAKEN FOR EARTHWORKS IN CONJUNCTION WITH ELECTRICAL PROJECTS

Prepared by Cable Damage Prevention Unit, PowerGrid Ltd

The Public Utilities Act was amended recently. The Amendment Act stipulates requirements and procedures that contractors or persons who carry out earthworks in the vicinity of PowerGrid's electricity cables have to follow prior to the earthworks. Persons who violate the provisions of the Act will be subjected to fine, imprisonment or to both. To reflect the grave consequence of damaging cable, the maximum fine has been raised from $0.2mil to $1mil.

The Amendment Act will come into operation on 15th December 1999.

The following guidelines / precautionary measures to be taken address some of the pressing issues which need the attention of Licensed Electrical Workers in order to avoid damaging cables while executing the electrical projects.

1. Licensed Electrical Workers (LEW) are expected to work closely with the site management, Licensed Cable Detection Workers (LCDW) as well as their electrical contractors to prevent cable damage in the course of their work.

2. **Some Changes Under the Public Utilities Act**

a) Definition of "earthworks"

"Earthworks" has been redefined to include excavation works which are carried out in the course of construction and engineering works, and the driving of any earth rod, casing or tube into the ground by whatever means. The provision of system earth for an electrical installation by driving earth rods will now come under the ambit of the Amendment Act. Also, soil investigation and testing work has also been included as earthworks. LEWs are required to pay special attention to the change of definition of the "earthworks" and consult their legal counsel if they are not sure whether their work is considered "earthwork" under the Amendment Act.

b) Submission of Notice prior to earthworks

i) The Act stipulates that any person, this includes LEW, who intends to carry out earthworks in the vicinity of high voltage cables is required to give a notice on the standard form to PowerGrid Ltd at least 7 days prior to such earthworks. A sample form is attached for your reference. You may make copies for your use.

ii) The duly completed notice form shall be submitted to the Cable Damage Prevention Unit of PowerGrid together with the cable detection drawing prepared by the LCDW who detected the cable. The earthwork site boundary shall be clearly shown in the drawing.

3 Precautionary Measures to be taken

a) Cable Markings

Cable markings on the ground provided by the LCDW are indications, though not necessary absolute, of cable locations in the vicinity. Proper enquiry shall be taken to ascertain exact positions of these cables to avoid damaging them before earthworks are carried out in the vicinity. This can be done through digging trial holes.

Trial Holes

i) Digging of trial holes is also earthwork under the Act. Trial holes shall be dug only after the prerequisite 7-day notices has been submitted to PowerGrid in conjunction with the intended earthwork and advice received from PowerGrid of the work.

ii) The purpose of trial holes is to ascertain the absence of cables or confirm cable positions before earthworks are carried out, including the sinking of earth rods

iii) Trial holes should be dug manually by hand using manual tools such as changkols.

iv) LEWs and electrical contractors should consult their LCDWs at the site to determine the location of the trial holes.

v) Trial holes should preferably be 1 metre by 1 metre in size and dug to a depth of at least 1.5 metre. If necessary, a cable detector should be used to confirm the presence of any cables below as the depth of the trial hole progresses. Further digging beyond the recommended 1.5 metre may be necessary if positive signals are detected.

vi) During the digging of trials holes, the LEW / site supervisory staff shall be presence to supervise the work.

b) Earthworks / Sinking of Earth Rods

i) Positions for earthworks and sinking of earth rods should be endorsed by LCDW. Their positions shall be marked on site clearly by the LCDW. LCDW's fresh endorsement and site marking shall be obtained if there is any change of the earth rod positions due to underground obstruction.

ii) LEWs and electrical contractors must ensure their supervisory staff and workers doing earthworks and sinking of earth rods are properly instructed to follow all the safety measures outlined in this guideline. If high voltage cables are in the vicinity and within a 2 metre range, a competent site supervisor shall be engaged to supervise the workers during the entire session when the earthworks or sinking of earth rods is undertaken.

ii) It is strongly recommended that a permit-to-work system is implemented at the site to control and manage any associated excavation works and sinking of earth rods. Such a system will require that workers apply formally for a Permit prior to actual performance of earthworks / sinking of earth rods. On receiving the "application", the supervising personnel will check for site conditions and ensure that every measures is implemented and complied with before authorising the earthworks/ sinking of earth rods.

c) Earth Plates

Subject to the relevant code of practices, LEWs may consider using earthing plates where transmission cables are present. This is to avoid multi-point penetration of the ground in the vicinity of high voltage cables that could increase the potential risks of damage to the cables.

Prepared & Issued by: Cable Damage Prevention Unit
PowerGrid Ltd
3 Pasir Panjang Road
Singapore

Tel: 4700601/2/3

Date: First Edition – November 1999

Notice for Commencement of Earthworks Within Vicinity of High Voltage Cables

To: Operations Support Section
3 Pasir Panjang Road, Singapore 118485
Fax: 4700649, 4759400

POWERGRID LTD
111 Somerset Road #08-05
Singapore 238164

1. Contractor's Particulars

_____
Name in Full

NRIC : _____

Contact No : _____ Pager No : _____

Fax No : _____ Designation : _____

Company's Name : _____

Company's Address : _____

_____

_____

2. Supervisor's Particulars

_____
Name of full-time Site Supervisor

Contact No : _____ Pager No : _____

3. Contract's Details

Principal : _____

Project Officer : _____

Contact No : _____ Pager No : _____

Contract Period From : _____ To: _____

Contract No : _____

Works Order No : _____
(to indicate if applicable)

4. LCDW's Particulars

Name of LCDW : _____

Tel No : _____ Pager No : _____

Licence No : _____ Expiry Date : _____

5. Works' Details

Location of Proposed Earthworks : _____

Duration From : _____ To : _____

Nature of Earthworks : _____

- ☐ Open trench excavation
- ☐ Sinking of earth rod, casing or tubes.
- ☐ Boring, Dredging, Jacking, Levelling, piling or tunnelling.
- ☐ Soil Investigation.
- ☐ Others (Pls specify) : _____

Cables Affected: 400/230/66/22/6.6kV as identified by LCDW

Distance of work area boundary from cables : _____ m

Depth of earthworks : _____ m

Actual Commencement Date (DD/MM/YY) : _____

Estimated Completion Date (DD/MM/YY) : _____

Is the work under S95A(6)? Yes/No* Already Commenced? Yes/No*

*(In the case of work carried out in the interest of public or private safety, described under S95A(6), this form must be submitted within 7 days after the earthwork had commenced).

6. Declaration
(Please read carefully)

a) Cable route plans have been obtained from PowerGrid Ltd.
b) Cable detection was conducted at site by the above declared LCDW
c) Cable locations/route were marked out at site by the LCDW.
d) My staff and I have been briefed by LCDW on Cable Damage Prevention.
e) I have briefed the supervisor(s), workers and excavator operator on measures to be taken to prevent cable from damaging.
f) EHV (Tel: 2909121) and CDPU (Tel: 4700601/602)will be informed when earthwork is approaching towards high voltage cable location.
g) I will stop all earthworks when electricity cables are damaged and immediately inform ESOC at Tel. 1800-7786666.

I hearby declare that I know and understand my duties under the provisions of the PU Act, and that the information in this notice and any attached documents are true, correct and complete to the best of my knowledge.

During the duration of the earthwork, I shall make myself readily contactable at the pager number given in this notice.

_____ _____
Date Contractor's Signature and Company Stamp

7. Fees

A fee of $20 will be charged for each Notice For Commencement Of Earthworks processed by PowerGrid Ltd.

An additional fee of $60 will be charged for consultation services provided by PowerGrid Ltd for sites where earthwork is in the vicinity of high voltage cables.

Please attach the following records together with your notice.
a) Cable Detection Drawing(From your LCDW)
b) A sketch showing your proposed site plan
c) The work schedule of your project