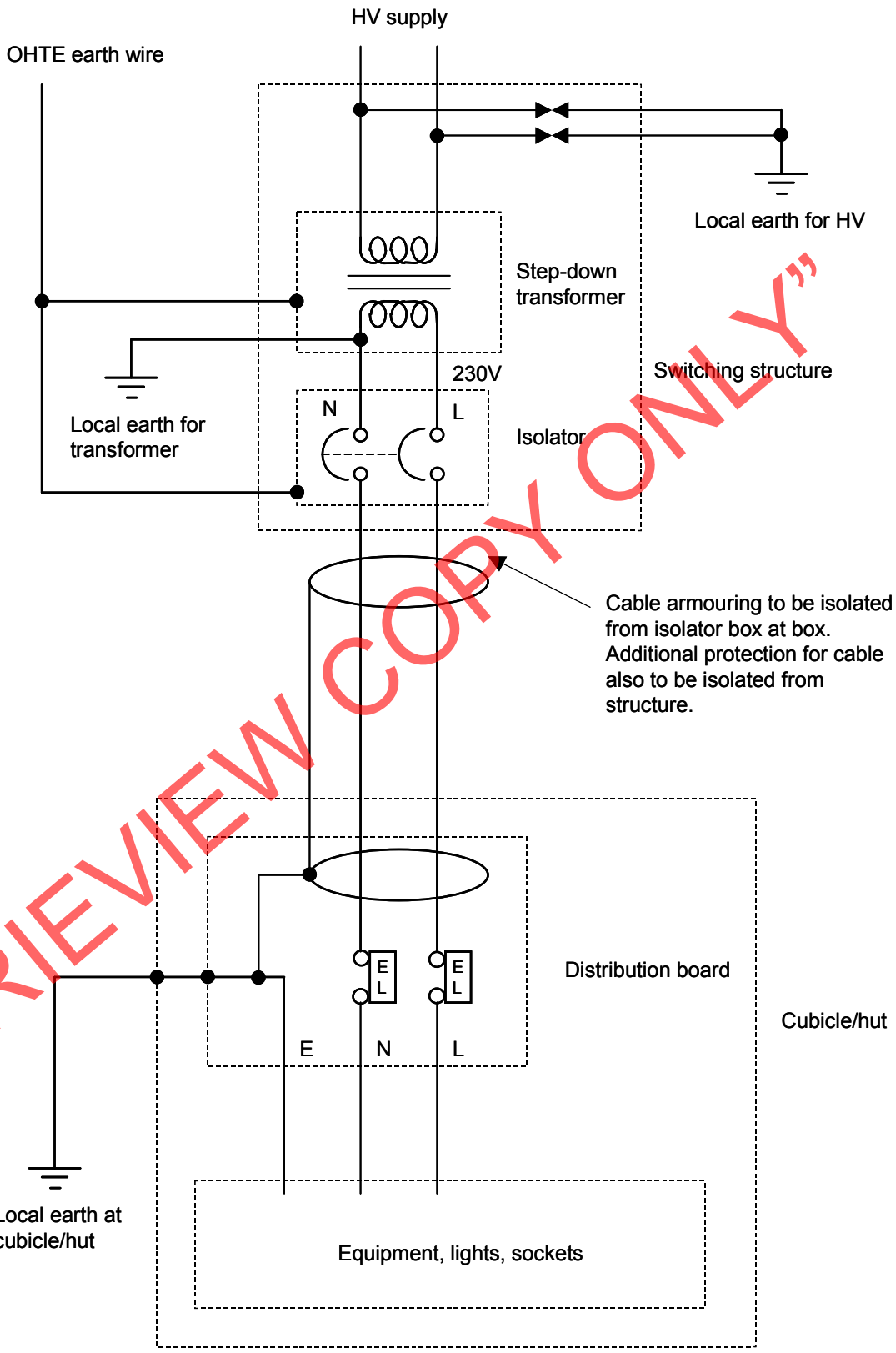
APPENDIX A: TYPICAL POWER SUPPLY TO CUBICLE/HUT/ENCLOSURE FOR DC ELECTRIFIED AREAS.



APPENDIX B: CHARACTERISTICS OF THE QUALITY OF THE 230V AC POWER SUPPLY AT VARIOUS RAILWAY TRACK SIDE INSTALLATIONS

1 Introduction

1.1 The following is a typical representation of the power supply expected in the vicinity of a traction power line. These characteristics are to be taken into consideration when purchasing power equipment (such as UPS, chargers etc.) for Spoornet's industrial applications.

1.2 The data used in these guidelines was extracted from the findings of a Quality of Power Supply investigation on the 230V supply at Elands Bay - Loop 2 on the 50kV AC OREX line.

2 The uninterruptible power supply

2.1 The power equipment shall not be adversely affected by odd voltage harmonics between the 3rd and 13th harmonics of which can reach amplitudes as indicated in the following table. The THD can reach maximum amplitudes up to 27%.

2.2 The power equipment shall not be subject to degradation when exposed to the voltage Dips with deviations to the magnitudes of –50 % on all the phases.

3 Typical Voltage harmonics on the 230V supply

Table 1	Typical Daily Values of Harmonics and THD on the OREX 230V Supply
Harmonic and THD	Highest Daily Values (%)
3rd	12
5th	9
7th	8
11th	14
13th	4
THD	27

4 Typical voltage dips on the 230V supply

Table 2	Daily Voltage Dips on the OREX 230V Supply			
Time	NRS048	Phases	Duration	Deviation (%)
25:50.8	X	ABC	0.040 s	-28.6
59:53.6	X	ABC	0.020 s	-22.6
59:53.7	X	ABC	0.030 s	-22.6
59:53.7	X	ABC	0.030 s	-25
59:53.8	X	ABC	0.030 s	-27
59:53.9	X	ABC	0.020 s	-25.6
21:59.9	Y	ABC	0.070 s	-15.3
59:53.9	X	ABC	0.020 s	-30.8
59:53.9	X	ABC	0.030 s	-28.6
59:54.0	X	ABC	0.030 s	-32.5
22:00.1	Y	ABC	0.030 s	-15.3
59:54.0	X	ABC	0.030 s	-33.6
59:54.1	X	ABC	0.020 s	-32.2
59:54.1	X	ABC	0.020 s	-34.4
22:00.2	Y	ABC	0.110 s	-15.3
59:54.2	X	ABC	0.020 s	-34.9
59:54.2	X	ABC	0.020 s	-36.5
59:54.2	X	ABC	0.030 s	-39.5
59:54.3	X	ABC	0.030 s	-39
22:00.6	Y	ABC	0.110 s	-15.4
59:54.3	X	ABC	0.020 s	-39
59:54.3	X	ABC	0.060 s	-41.8
22:06.5	Y	ABC	0.380 s	-16.4

5 Voltage dip window

The table below is the typical Voltage Dip Window for the classification of Dips taken from the Quality of Supply standards NRS 048-2.