

Verification Testing and Overseas Research to Promote Further Utility Pole Removal

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1. Introduction

To improve the disaster prevention properties of roads, ensure safe and pleasant traffic space, form beautiful scenery, and encourage tourism, we have, for a long time, promoted the removal of more utility poles from roads by placing electrical power lines underground. However, utility pole removal in Japan lags behind that in major overseas cities (see Fig.). The NILIM works to more aggressively promote the removal of utility poles by clarifying trends in related systems and technologies in foreign countries, in addition to conducting verification testing to reduce costs by resolving technical problems. This report outlines these activities.

2. Overseas research of legal systems and technology trends in utility pole removal

We are examining research literature and sending fact-finding missions regarding legal systems and technology trends in foreign cities where utility pole removal is nearly 100% complete: London, Paris, and Singapore. In particular, while interviewing road administrators and electric utility operators etc. in each city, we collected information about undergrounding policy and technical standards such as cable depths and horizontal position, and undergrounding methods that offset distance from communication lines, cable specifications, and safety measures.

3. Verification testing of low cost utility pole removal methods

As methods of removing utility poles that are less costly than the multipurpose electric cable method that has been used in Japan until now, we are considering adopting methods of underground installation such as burying electric cables etc. at more shallow levels or directly under the road pavement, or a laying method using compact boxes. So a technical study committee¹⁾ was formed to study technical challenges to introducing such new utility pole removal methods, and it has been working in cooperation with the Ministry of Internal Affairs and Communications,

Ministry of Economy, Trade and Industry, electric utilities, electric communication companies, and other concerned organizations.

So this year, we conducted accelerated loading tests to verify the impact on road functions and on electric supply and communication functions, in a case where the road is subjected to cyclic loading equivalent to 10 years of use, which is the design service lifetime of pavement (see Photo). We constructed tests of roads with light traffic (fewer than 250 large vehicles per day) where electric power cables and communication cables are placed inside pavement, either directly or in pipes or where compact boxes were constructed to protect the electric cables. The results show that electric cables etc. can be placed at a more shallow level than stipulated in the current technical standards.

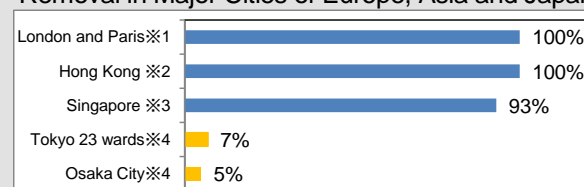
4. Future efforts

We will continue to investigate technical studies to introduce low cost utility pole removal methods in the field, and will revise technical standards etc.

[Sources]

1) State of Deliberations by the Low Cost Utility Pole Removal Methods Technology Study Committee,
<http://www.nilim.go.jp/lab/ucg/koho/index.html>

Figure: Information about the progress of Utility Pole Removal in Major Cities of Europe, Asia and Japan



※1 Conditions in 2004 provided by Japan Electric Power Information Center (cable length based)

※2 Conditions in 2004 provided by Infrastructure Development Institute-Japan Investigation (cable length based)

※3 Conditions in 1998 provided by Overseas Electric Power Industry Statistics (cable length based)

※4 State at end of FY2013 provided by Ministry of Land, Infrastructure, Transport and Tourism investigation (road length based)

(http://www.mlit.go.jp/road/road/traffic/chicyuka/genjo_01.htm)



Photo : Accelerated loading tests for pavement and underground cables