

Seminar on Underground Space Use

Singapore 5 – 6 November 2012

Tentative Programme

Seminar Objective: Introduction for engineers, architects, planners and public administrators to the use of underground space to increase liveability and sustainability in urban areas and in other key public resource regions. The seminar will identify key issues that need to be considered when using underground space and will show how these key issues are dealt with on a worldwide basis.

Background: This course outline has been developed by the ITA Committee on Underground Space (ITACUS) in conjunction with the ITA Committee on Education and Training (ITA-CET).

Monday 5 November 2012

Session I: Introduction and Overview

09.00-09.45: Welcome and Opening: ITA and concerned country representatives (Han Admiraal and ??)
The opening session will include information on ITA, ITACUS and ITA-CET activities as well as information about underground space use issues in Singapore.

09.45-10.30: Solutions and missed opportunities (Han Admiraal)
The subject matter for this course will first be explored by looking at a few examples where underground space use has made a significant difference to a local area or a region together with a few examples where hindsight has indicated that a real opportunity was missed. These themes will then be returned to in greater detail in the rest of the course.

10.30-11.00: Coffee Break

11.00-11.45: A history of underground space use (Ray Sterling)
This section is intended to give a historical perspective on underground space use and also to present a classification of uses. It will present the very wide range of types of underground facilities – from large-scale infrastructure to earth-sheltered homes and from shallow structures in soil to deep underground structures in rock.

11.45-12.30: Brief overview of construction methods (Ray Sterling)
For the non-specialist in underground construction or geotechnical engineering, this section will give the major categories of construction methods but it will try to also provide an indication of how the construction method influences what can be done, what the construction disturbance is, and some specific influences on design and/or cost.

12.30-14.00: Lunch

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Session 2: Advantages and Disadvantages / Sustainability and Need for Planning

14.00-14.45: Sustainability issues (Han Admiraal)

This section will examine underground space use in the context of sustainability and present some examples of how regions can use underground space to enhance sustainability.

14.45-15.30: Detailed exploration of potential advantages and disadvantages: Part 1 (Jean Paul Godard)

This section will provide a detailed examination of the potential advantages of underground space uses and how these may be assessed in comparison with other planning and construction alternatives.

15.30-16.00: Coffee Break

16.00-16.30: Detailed exploration of potential advantages and disadvantages: Part 2 (Jean Paul Godard)

This section will provide a detailed examination of the potential advantages of underground space uses and how these may be assessed in comparison with other planning and construction alternatives.

16.30-17.30: Key planning and design issues for individual underground facilities (Monique Labbé)

This section will look at the importance of design issues at a project level in terms of creating successful underground facilities that are accepted at the least as functional and safe solutions and at best as exciting and stimulating environments in their own right.

17.30-18.00: Questions and Answers

This is a chance for open discussion on any topics from the day.

Tuesday 6 November 2012

Session 3: Planning and cost-benefit issues for broad-scale underground space use

09.00-09.45: Above or under-ground in the case of mass transit systems infrastructure? (Jean Paul Godard)

Because of their importance in the urban life of cities, the evaluation of when mass transit systems are (or should be) placed underground is examined in detail.

09.45-10.30: Legal and compensation issues for underground space (Ray Sterling)

This section will discuss issues regarding the legal ownership of underground space and how easements for the use of underground space for public infrastructure are handled around the world. Included will be a discussion on liability issues for underground space use and special situations such as the reuse of space after mineral extraction.

10.30-11.00: Coffee break

Session 3: Planning and cost-benefit issues for broad-scale underground space use (continued)

11.00-11.45: Human factors and risk (Han Admiraal)

This section will present the framework for considering human factors and risk elements in design including psychological issues, physiological issues, fire and life safety and disaster protection.

11.45-12.30: Master planning for underground space use in Helsinki: Part 1 (Ilkka Vähäaho)

In the first of three sessions, the presentations will cover the why and how of the underground space master planning in Helsinki. This is the most comprehensive and well developed underground master plan for a major city anywhere in the world.

12.30-14.00: Lunch

Session 4: Guidance for planning and design of underground spaces

14.00-14.45: Master planning for underground space use in Helsinki: Part 2 (Ilkka Vähäaho)

In the second of three sessions, the presentations will cover the why and how of the underground space master planning in Helsinki. This is the most comprehensive and well developed underground master plan for a major city anywhere in the world.

14.45-15.30: Master planning for underground space use in Helsinki: Part 3 (Ilkka Vähäaho)

In the third of three sessions, the presentations will cover the why and how of the underground space master planning in Helsinki. This is the most comprehensive and well developed underground master plan for a major city anywhere in the world.

15.30-16.00: Coffee Break

16.00-16.45: Other underground space use planning issues and examples (Ray Sterling)

Following the detailed presentation on the master planning of Helsinki, this session will provide a summary of other examples of mined space planning around the world – including such issues as the geological impact on planning approaches and the difficulties of initiating planning efforts in smaller cities.

16.45-17.30: Assessment of examples and opportunities

This will be a class participation discussion session. The participants will be given the chance to show that they can apply the information received in the course to identify key opportunities and evaluate design approaches.

17.30-18.00: Closing Remarks

This section will provide the opportunity for additional questions, discussions and closing remarks.