

## Minutes (Draft) of the Second Meeting of the Committee on Utilization of Seawater in Concrete Construction

■ Date: 15:00 to 17:00, Mon, Dec 3, 2012

■ Place: JCI Conference Room

■ Attendees: Nobuaki Otsuki (Chair), Hidenori Hamada (Vice Chair), Nobufumi Takeda (Administrator), Keiichi Imamoto (Administrator), Toru Yamaji (Administrator), Takashi Habuchi (Administrator), Yoshikazu Akira (member), Yoshitaka Ishikawa (member), Tatsumi Ohta (member), Tadatsugu Kage (member), Keizaburo Katano (member), Kazuya Koga (member), Tsuyoshi Saito (member), Takumi Sawada (member), Yasuhiro Dan (member), Kazuto Fukudome (member), Seiji Funahashi (member), Hiroshi Minagawa (member), Yutaka Tadokoro (Correspondent), Takahiro Nishida (minutes keeper)

JCI Secretariat: Ryo Okada

### ■ Handouts

2-1 Proceedings (Draft) of the Second General Meeting

2-2 Minutes of the first General Meeting

2-3 Minutes of WG1

2-4 Minutes of the Second WG2+WG3 Meeting

2-5 Contents of WG2

2-6 Contents of WG3

2-7 Minutes of WG4 Meeting

2-8 Important Matter about Construction (Postscript by Dr. Habuchi)

2-9 First Questionnaire Result from Overseas Correspondent Members

2-10 Budget of the Committee on Utilization of Sea Water in Concrete Construction

### ■ Proceedings

#### 1. Greeting by the Chair

The Chair, Prof. Otsuki, greeted the membership prior to the committee meeting.

## 2. Confirming Minutes of Last Meeting

Dr. Nishida, explained the last minutes according to the handout 2-2.

## 3. Report of the Research Committee

The Vice Chair, Prof. Hamada, explained about last research committee. The following questions were reported.

- There are few members from architectural field. Is it enough? (Prof. Uji)
- What are the purposes of overseas correspondent members? (Prof. Sogo)
- Is it also dealt with the concrete rubble from Tohoku earthquake disaster? (Prof. Kitsutaka)
- Is there the plan of the field survey? etc.

Dr. Minagawa, gave additional explanation about concrete rubble from Tohoku earthquake disaster. Since the chloride ion in concrete rubble is located only near the surface and there is plans to use these materials for storm surge barrier or base course material.

## 4. Report from each Working Group

### WG1 (Survey Group)

According to Handout 2-3, Dr. Hamada (Vice Chair) reported progress of WG1. The contents of activities are followings.

- (1) Collecting and collating research results concerning Hashima (Gunkan Jima) in Nagasaki City.
- (2) Collecting and collating information on existing facilities such as lighthouse facilities built with seawater-mixed concrete.
- (3) Drawing up survey and test plans for existing structures
- (4) Collecting and collating case studies of chloride-induced damage attributable to sea sand in the Okinawa area.
- (5) Collecting and collating other countries' codes and standards concerning mixing concrete with seawater
- (6) Conducting research on technologies for utilizing magnesium
- (7) Collecting case studies in other countries of the use of special mixing

water other than seawater

(8) Collecting information about the influence which seawater has on ASR.

Discussions related to WG1 activities:

- There is an example of construction of the concrete which uses fly ash in the Ube harbor. The concrete has the possibility of sea-water mixed concrete. (Dr. Ishikawa)
- There is an example of preplaced-aggregate concrete etc. Moreover, in the case of underwater concrete, there might be many cases which seawater was used as mixing water. (Dr. Dan)
- About the example of Okinotori Island, WG4 describes construction method and WG1 describes physical properties of concrete. (Dr. Nishida)
- About lighthouse facilities, reference collection is performed by an Japan Cement Association. (Dr. Dan)
- A possibility of field survey is further examined.

WG2 (Evaluation Group) & WG3 (Performance Improvement Group)

According to Handout 2-4 to 2-6, Dr. Takeda (Administrator) and Dr. Yamaji (Administrator) explained progress of joint WG. The papers of the considerable number are collected at present. From now on, an assignment is determined based on a table of contents (Handout 2-5 & 2-6), and the contents will be examined.

Discussions related to WG2 and WG3 activities:

- The physical properties of bamboo reinforcement depend greatly on the felling season. (Dr. Koga) The data of the bamboo material used by plaster work are sent to Dr. Takeda and Dr. Mr. Matsuo.
- The test specimen exposed to the Kagoshima harbor may be used. (Dr. Yamaji)
- The influence of mixing seawater on freezing and thawing resistance is considered small because the water with chloride is difficult to be ice. (Dr. Nishida)

WG4 (Manufacturing and Construction Group)

According to Handout 2-7 and 2-8, Dr. Habuchi explained the progress of WG4.

Especially, the important matter for every item like the Handout 2-8 is extracted.

Discussions related to WG4:

- What kind of elements is assumed to be a minor compositions of sea-water? (Dr. Takeda) > It is mainly chloride ion. (Dr. Habuchi)
- In the case of curing under sea water, there is also a report that the reaction rate of slag becomes high and becomes a precise structure of hydrates after 91 days. (Dr. Saito)
- About the influence of heat of hydration, Obayashi corporation and Toa corporation are examining.

Questionnaire Result from Overseas Correspondent Members

According to Handout 2-9, Dr. Nishida reported questionnaire result from overseas correspondent members.

The explanation was the reply having been obtained from almost all overseas correspondent members (7/8 persons), and it is considered that there are high demand to concrete mixed with seawater around the world.

An additional questionnaire is planned. If you need further information of oversea situation of construction, you can contact to Mr.Sawada or Dr. Nishida.

Now, the information about the regulation value of chloride ion is due to be corrected.

Others

From Dr. Takeda, there was a question about the possibility of sea water use in the architectural field.

Under the present circumstances, there was a reply that use in Japan is difficult by the Building Standard Law etc. (Dr. Koga)

Bangladesh is considering construction of a cyclone shelter. In this structure, bamboo reinforcement is discussed. There is an possibility to use sea-water mixed concrete in this structure. (Dr. Imamoto)

A future schedule is as follows.

General meeting : 15:00-17:00, March 15, 2013

Administrators' meeting : 15:00-17:00, February 4, 2013

WG1 meeting : 10:00-13:00, February 4, 2013

WG2 & WG3 meeting : 15:00-17:00, February 20, 2013

WG4 meeting : 10:00-13:00, February 28, 2013