

Interim Report of Investigation of Pile Installation Data Manipulation (Outline)

Fact-Finding Committee
Asahi Kasei Corp.
February 9, 2016

Overview of Investigation

- I. Background for establishment of the fact-finding committee
 - To investigate the data manipulation found in pile installation work for a condominium complex in Yokohama, Kanagawa, Japan
 - To investigate the facts related to data manipulation among the similar pile installation projects performed by Asahi Kasei Construction Materials Corp. over the past approximately 10 years (projects subject to investigation)
- II. Purposes of investigation and its organizational structure
 - Regarding the abovementioned project in Yokohama: Investigation in accordance with results of investigation by the independent commission
 - Regarding other projects subject to investigation:
 - a. Investigating whether or not there was data manipulation
 - b. Confirming the safety of structures in the case of data manipulation being found
 - c. Investigating the causes of data manipulation
 - d. Studying measures to prevent recurrence

Matters Investigated and Method of Investigation

- I. Investigation of whether or not there was data manipulation in projects subject to investigation
 - Collecting installation reports from branch offices of Asahi Kasei Construction Materials and relevant external parties to the Tokyo Head Office of Asahi Kasei Construction Materials
 - Visual confirmation of graphs and numerical tables of installation data by multiple people
 - Comparing results of investigation by Asahi Kasei Construction Materials with results of investigation by prime contractors, and confirming whether there was data manipulation
 - Interviewing people involved in pile installation work, and comparing interview results with results of data verification
- II. Investigating the causes of data manipulation in projects subject to investigation
 - Interviews with relevant parties: Site agents of projects subject to investigation and other personnel of Asahi Kasei Construction Materials relevant to the precast concrete pile installation business (56 people in total)
 - Investigation of related documents: Minutes of management meetings of Asahi Kasei Construction Materials, internal company regulations, relevant electronic data stored on file servers of Asahi Kasei Construction Materials
- III. Record date of investigation
 - Record date of this report: February 8, 2016

Preconditions of Data Manipulation

- Methods of confirming that bearing stratum is reached
 - Boring exploration
 - Confirmation by test drilling (when installing test pile)
 - Obtaining ammeter values of auger motor
 - Observation of changes in vibration and sound of auger motor
- Measuring apparatus used to obtain installation data
 - Analog ammeter (providing paper record of data but no electronic data)
 - Integral ammeter (providing both paper record of data and electronic data)
 - Flowmeter (providing both paper record of data and electronic data)
 - Integrated control equipment (providing both paper record of data and electronic data)
- Chief engineers and site agents
 - Role of chief engineers: Directing the management of technical aspects of construction work
 - Role of site agents: Supervising the overall process of pile installation work, and ensuring thorough execution of work and management of safety

Investigation Results: Summary of Data Manipulation

I. Number of projects in which manipulation of data was found

→ 360 projects out of 3,052 projects

II. Specific methods of data manipulation

1. Analog ammeter: Methods of data manipulation in case of failure to obtain paper record of data
 - a. Ammeter data from another pile is copied in full
 - b. Ammeter data from 2 or more other piles are partially copied, then cut and pasted together
 - c. Spurious ammeter wave patterns are drawn by hand to embellish the data obtained by a. or b. above
2. Integral ammeter, flowmeter, and integrated control equipment: Method of data manipulation in case of failure to obtain both paper record of data and electronic data
For portions where data is lacking, data from other piles is copied, partially with further embellishment by manually typing in spurious data. The pile number is retyped and the table of manipulated data is printed out and attached to the installation report.

Result: Analysis of the Cause

I. Circumstances conducive to occurrence of lack of data

- Environment conducive to occurrence of lack of data
 - Pile installation sites become wet, muddy, and dirty
 - Measuring apparatus are placed outdoors where they are exposed to the elements
- Factors related to operation of measuring apparatus
 - Mistakes in operation such as forgetting to turn on the power switch
 - Running out of ink or paper due to poor management
- Poor communication between site agents and other workers
- Factors related to handling of installation data
 - Characteristics of data recording media (paper or flash memory card)
 - Tendency to depend on electronic data, vulnerable to mishandling
 - Site agents not given spaces and environments conducive to proper storage and handling of installation data
 - Site agents not organizing installation data for long periods of time, but organizing all installation data at once after installation work was complete, etc.

II. Absence of clear measures to deal with lack of data

- Procedures for handling of installation data and rules for dealing with lack of data not clarified and applied strictly
 - No arrangements agreed with contractors with regard to dealing with lack of data
- Failure to perform effective confirmation to prevent manipulation of installation data
- Absence of internal rules regarding handling of data, absence of confirmation system to prevent manipulation of installation data
- Failure to perform training on the necessity and importance of installation data, on technicians' ethics, and on compliance
- Insufficient awareness related to acquiring and handling installation data

III. Poor recognition of importance of installation data among site agents, etc.

- Tendency among site agents to treat installation data lightly
 - Ammeter data not the only criterion for judging when bearing stratum is reached
 - Work procedures which ensure that the necessary amount of cement milk is injected
- Atmosphere which discourages site agents from reporting lack of data to Asahi Kasei Construction Materials or to contractors

IV. Issues of management of pile business at Asahi Kasei Construction Materials

- Insufficient awareness of occurrence of lack of data
 - Inability to implement measures to deal with lack of data
- Problems related to system for sharing information on problem cases
 - Inability to establish thorough systems to share awareness of problems, identify the causes, and prevent recurrence
- Problems from immobilization of personnel
 - Personnel becoming immobilized due to severe business climate and high degree of specialization, resulting in failure to perceive problems in workflow

Measures to Prevent Recurrence

- I. Sound acquisition and handling of installation data
 - Improvement of measuring apparatus
 - Implementation of measures regarding protection of measuring apparatus
 - Revision of duties and positioning of site agents to prevent omission of operation of measuring apparatus
 - Establishment of system enabling all on-site workers to exhibit teamwork, revision of division of roles
 - Study of system for swiftly sending electronic installation data from pile installation sites to offices
- II. Formulation of rules to deal with lack of data
 - Preparation of line of reporting
 - Preparation of supplementary methods to confirm the quality of installation
 - Preparation of arrangements to allocate costs if work is suspended
- III. Establishment of proper management system
 - Preparation of rules for daily handling of installation data
 - Preparation of rules for Asahi Kasei Construction Materials to aggregate the original installation data
 - Implementation of site inspections and audits including perspective of unflinching acquisition and handling of installation data
 - Promotion of communication between personnel of Asahi Kasei Construction Materials and workers at each site including site agents
- IV. Performing training of site agents and other workers
 - Performing training on technicians' ethics and compliance to eliminate tendency to treat installation data lightly
 - Performing training on operation of equipment
 - Periodically confirming the skills and abilities of site agents, etc., and performing follow-up training
- V. Measures regarding organizational, personnel, and awareness problems at Asahi Kasei Construction Materials
 - Heightening awareness of compliance through training on compliance and ethics for officers and employees of Asahi Kasei Construction Materials
 - Renewal of internal system for information sharing, identification of the cause, and preventing recurrence if a problem occurs
 - Adopting a configuration to increase opportunities for employees involved in the pile business to be seen by people of other organizations
 - Creating a more open atmosphere, preventing ossification of concepts