METHOD, SYSTEM, PROGRAM, RECORDING MEDIUM, DEVICE, AND DATABASE FOR CONSTRUCTION MANAGEMENT

BACKGROUND OF THE INVENTION

1. TECHNICAL FIELD

[0001] The technology of the present disclosure relates to a management technology for managing a construction plan or the like including regular repair work and inspection of, for example, an oil refining plant.

2. DESCRIPTION OF THE RELATED ART

[0002] Regular repair work of an oil refining plant and inspection thereof are performed by stopping the operation of a part or all of the plant including various pieces of equipment as construction targets. In order to minimize a period during which the operation is stopped, management of a construction plan and construction progress is required. For this progress management, it is necessary to grasp the plant equipment, to refine the construction plan including the regular repair work and the inspection, and to speed up the processing.

[0003] Regarding information management of construction work, it is known that equipment information indicating an appearance of equipment in a power plant or a position in the plant is stored in an information storage unit, and when any maintenance work, which has been performed, is being performed, or is scheduled to be performed, is specified, equipment information related to the specified maintenance work is presented from among the equipment information in the information storage unit (e.g., Patent Literature 1).

CITATION LIST

PATENT LITERATURE

[0004] Patent Literature 1: JP 2005-321882 A

SUMMARY

[0004a] In an aspect, the present disclosure refers to a construction management method for managing construction work using a computer, the construction management method comprising:

generating a database specified by equipment information, and storing, in the database, at least position information of pieces of equipment, drawing information of the pieces of the equipment, and construction information among the equipment information associated by management information;

specifying position information associated with an inputted construction request form number from the position information, and selecting drawing information associated with the construction request form number from the drawing information;

presenting the drawing information associated with the construction request form number and presenting selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit; and

associating, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, and adding instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number.

[004b] In an aspect, the present disclosure refers to a construction management system that manages construction work using a computer, the construction management system comprising:

a memory unit configured to store a database specified by equipment information, and store, in the database, at least position information of pieces of equipment, drawing information of the pieces of equipment, and construction information among the equipment information associated by management information, for each piece of the equipment information;

a server configured to specify position information associated with an inputted construction request form number from the position information, select drawing information associated with the construction request form number from the drawing information, present the drawing information associated with the construction request form number and present selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit, associate, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, add instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number, and store the drawing information in the database; and

an information terminal including the information presentation unit.

[0004c] In an aspect, the present disclosure refers to a program, which is executed by a computer, for causing the computer to execute:

a function to generate a database specified by equipment information, and store, in the database, at least position information of pieces of equipment, drawing information of the pieces of the equipment, and construction information among the equipment information associated by management information, for each piece of the equipment information;

a function to specify position information associated with an inputted construction request form number from the position information, and select drawing information associated with the construction request form number from the drawing information;

a function to present the drawing information associated with the construction request form number and present selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit; and

a function to associate, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, add instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number, and store the drawing information in the database.

[0004d] In an aspect, the present disclosure refers to a recording medium storing any one, or two or more of the database included in the construction management method according to the above aspects, the database included in the construction management system according to the above aspects, and the program according to the above aspects.

[0004e] In an aspect, the present disclosure refers to a construction management device that manages construction work using a computer, the construction management device comprising:

a device housing;

a memory unit configured to store a database specified by equipment information, and store, in the database, at least position information of pieces of equipment, drawing information of the pieces of the equipment, and construction information among the equipment information associated by management information, for each piece of the equipment information;

a processing unit configured to specify position information associated with an inputted construction request form number from the position information, select drawing information associated with the construction request form number from the drawing information, present the drawing information associated with the construction request form number and present selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit, associate, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, add instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number, and store the drawing information in the database; and

the information presentation unit,

wherein two or more of the memory unit, the processing unit, and the information presentation unit are mounted in the device housing.

[0005] The regular repair work of the oil refining plant and the inspection thereof are performed by a plant owner (construction/inspection orderer) and a partner company in charge of the regular repair work and the inspection thereof, and a large number of personnel are sent from the plant owner side and the partner company.

[0006] The number of targets of the regular repair work and the inspection thereof increases depending on the scale of the oil refining plant. In a case where a single oil refining plant has a plurality of plants and there are several thousands of equipment drawings showing the construction targets, there is a problem in that it takes a considerable time to specify construction

points and collate the construction points with spool drawings.

[0007] Construction planning and progress management of construction work including a preparation process to an actual process are deeply involved in speeding up the construction work. There is a problem in that a time loss in the preparation process hinders improvement in the efficiency of the construction work, reduces a time for the main actual process, and causes an increase in construction cost, a decrease in construction quality, and the like. In addition, in the construction work and the inspection thereof, if processing in the construction process or the progress management takes time, there is a problem in that not only the progress of the construction work is hindered but also the quality of the construction work is affected.

[0008] Such problems are not disclosed in Patent Literature 1 or the like, and the management method described in Patent Literature 1 cannot solve such problems at all.

[0009] The inventors of the present disclosure have found that it is possible to reduce a time required for a preparation process by facilitating a collation process between drawing information and construction information including a construction plan, construction contents, inspection contents, and the like with respect to the presence of an enormous amount of drawing information showing a construction-target plant and its equipment, thereby making it possible to advantageously suppress construction cost and avoid quality degradation.

[0010] In view of the above problems and findings, an object of the present disclosure is to improve the efficiency and work quality of regular repair work, inspection, and the like.

[0011] In order to achieve the above object, according to one example of a construction management method of the present disclosure, a construction management method is for managing construction work using a computer, the method including: generating a database specified by equipment information, and storing, in the database, at least position information, drawing information, and construction information among the equipment information associated by management information; specifying position information indicating an equipment position from the position information, and selecting drawing information specified by the position information from the drawing information; and adding association between the position information specified on the drawing information and the construction information, and instruction information indicating the association, to the drawing information.

[0012] The construction management method may further include: deploying the drawing information on an image presented on an information presentation unit; accepting selection of the instruction information from the image, and reading at least the construction information specified by the equipment position from the database; and presenting the construction information on the image.

[0013] The construction management method may further include: writing message

information into the drawing information on an image presented on an information presentation unit; storing the message information in the database in association with the drawing information; and presenting the message information together with the drawing information on the image.

[0014] In the construction management method, the construction information may include at least any one, or two or more of a construction plan, a construction content, and an inspection content.

[0015] In order to achieve the above object, according to one example of a construction management system of the present disclosure, a construction management system manages construction work using a computer, the system including: a memory unit configured to store a database specified by equipment information, and store, in the database, at least position information, drawing information, and construction information among the equipment information associated by management information, for each piece of the equipment information; a server configured to specify position information indicating an equipment position from the position information, select drawing information specified by the position information from the drawing information, add association between the position information specified on the drawing information and the construction information, and instruction information indicating the association, to the drawing information, and store the drawing information in the database; and an information terminal including an information presentation unit configured to present at least any one, or two or more of the position information, the drawing information, and the construction information.

[0016] In order to achieve the above object, according to one example of a program of the present disclosure, a program is executed by a computer, the program causing the computer to execute: a function to generate a database specified by equipment information, and store, in the database, at least position information, drawing information, and construction information among the equipment information associated by management information, for each piece of the equipment information; a function to specify position information indicating an equipment position from the position information, and select drawing information by the position information; and a function to add association between the position information specified on the drawing information and the construction information, and instruction information indicating the association, to the drawing information, and store the drawing information in the database.

[0017] The program may further cause the computer to execute: a function to deploy the drawing information on an image of an information presentation unit; a function to accept selection of the instruction information from the image, and read at least the construction information specified by the equipment position from the database; and a function to present the

construction information on the image of the information presentation unit.

[0018] The program may further cause the computer to execute: a function to write message information into the drawing information on an image presented on an information presentation unit; a function to store the message information in the database in association with the drawing information; and a function to present the message information together with the drawing information on the image.

[0019] In order to achieve the above object, one example of a recording medium of the present disclosure is a recording medium storing any one, or two or more of the database included in the construction management method, the database included in the construction management system, and the program.

[0020] In order to achieve the above object, one example of a construction management device of the present disclosure is a construction management device that manages construction work using a computer, the device including: a device housing; a memory unit configured to store a database specified by equipment information, and store, in the database, at least position information, drawing information, and construction information among the equipment information associated by management information, for each piece of the equipment information; a processing unit configured to specify position information of an equipment position from the position information, select drawing information by the position information, add association between the position information specified on the drawing information and the construction information, and instruction information indicating the association, to the drawing information, and store the drawing information in the database; and an information presentation unit configured to present at least any one, or two or more of the position information, the drawing information, and the construction information, wherein two or more of the memory unit, the processing unit, and the information presentation unit are mounted in the device housing.

[0021] In order to achieve the above object, one example of a database of the present disclosure is a database that is specified by equipment information, the database including: a first data storage unit configured to store at least position information, drawing information, and construction information among the equipment information associated by management information, for each piece of the equipment information; and a second data storage unit configured to store the management information.

[0022] According to the present disclosure, any one of the following effects can be obtained.

(1) Drawing information corresponding to a construction point and the like can be selected based on the position information indicating the equipment position. The association between the position information specified on the drawing information and the construction information, and the instruction information thereof can be recognized from the drawing

What is claimed is:

1. A construction management method for managing construction work using a computer, the construction management method comprising:

generating a database specified by equipment information, and storing, in the database, at least position information of pieces of equipment, drawing information of the pieces of the equipment, and construction information among the equipment information associated by management information;

specifying position information associated with an inputted construction request form number from the position information, and selecting drawing information associated with the construction request form number from the drawing information;

presenting the drawing information associated with the construction request form number and presenting selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit; and

associating, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, and adding instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number.

2. The construction management method according to claim 1, further comprising:

creating a construction management table after selection completion of the selection button.

3. The construction management method according to claim 1, further comprising:

writing message information into the drawing information associated with the construction request form number by selecting and operating a message input button on a construction/inspection instruction screen or a construction/inspection content presentation screen that is presented on the information presentation unit, the drawing information associated with the construction request form number, the selection buttons, and the message input button being set on the construction/inspection instruction screen or the construction/inspection content presentation screen;

storing the message information in the database in association with the drawing information associated with the construction request form number; and

presenting the message information together with the drawing information associated

with the construction request form number on the construction/inspection instruction screen or the construction/inspection content presentation screen.

4. The construction management method according to claim 1, wherein the construction information includes at least any one, or two or more of a construction plan, a construction content, and an inspection content.

5. A construction management system that manages construction work using a computer, the construction management system comprising:

a memory unit configured to store a database specified by equipment information, and store, in the database, at least position information of pieces of equipment, drawing information of the pieces of equipment, and construction information among the equipment information associated by management information, for each piece of the equipment information;

a server configured to specify position information associated with an inputted construction request form number from the position information, select drawing information associated with the construction request form number from the drawing information, present the drawing information associated with the construction request form number and present selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit, associate, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, add instruction information indicating that the construction point is associated with the construction information to the drawing information associated with the construction request form number, and store the drawing information in the database; and

an information terminal including the information presentation unit.

6. A program, which is executed by a computer, for causing the computer to execute:

a function to generate a database specified by equipment information, and store, in the database, at least position information of pieces of equipment, drawing information of the pieces of equipment, and construction information among the equipment information associated by management information, for each piece of the equipment information;

a function to specify position information associated with an inputted construction request form number from the position information, and select drawing information associated with the construction request form number from the drawing information;

a function to present the drawing information associated with the construction request

form number and present selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit; and

a function to associate, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, add instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number, and store the drawing information in the database.

7. The program according to claim 6, for further causing the computer to execute:

a function to create a construction management table after selection completion of the selection button.

8. The program according to claim 6, for further causing the computer to execute:

a function to write message information into the drawing information associated with the construction request form number by selecting and operating a message input button on a construction/inspection instruction screen or a construction/inspection content presentation screen that is presented on the information presentation unit, the drawing information associated with the construction request form number, the selection buttons, and the message input button being set on the construction/inspection instruction screen or the construction/inspection content presentation screen;

a function to store the message information in the database in association with the drawing information associated with the construction request form number; and

a function to present the message information together with the drawing information associated with the construction request form number on the construction/inspection instruction screen or the construction/inspection content presentation screen.

9. A recording medium storing any one, or two or more of the database included in the construction management method according to any one of claims 1 to 4, the database included in the construction management system according to claim 5, and the program according to any one of claims 6 to 8.

10. A construction management device that manages construction work using a computer, the construction management device comprising:

a device housing;

a memory unit configured to store a database specified by equipment information, and store, in the database, at least position information of pieces of equipment, drawing information of the pieces of the equipment, and construction information among the equipment information associated by management information, for each piece of the equipment information;

a processing unit configured to specify position information associated with an inputted construction request form number from the position information, select drawing information associated with the construction request form number from the drawing information, present the drawing information associated with the construction request form number and present selection buttons for selection of inspection or construction, on a construction plan input screen presented on an information presentation unit, associate, with selection of a selection button from the selection buttons, a construction point specified on the drawing information associated with the construction request form number with the construction information, add instruction information indicating that the construction point is associated with the construction information to the construction point on the drawing information associated with the construction request form number, and store the drawing information in the database; and

the information presentation unit,

wherein two or more of the memory unit, the processing unit, and the information presentation unit are mounted in the device housing.