Database System Manual for Bridge & Tunnel
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<th>Title</th>
<th>Page</th>
</tr>
</thead>
<tbody>
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<td>1-4</td>
</tr>
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<td>1-4</td>
</tr>
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<td>2-12</td>
</tr>
<tr>
<td>3-1</td>
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<td>3-3</td>
</tr>
</tbody>
</table>
1 General Information

1.1 Database Operation Flow

This database system is the database for bridge and tunnel in Kyrgyz Republic. The database is operated on FileMaker software*. The data for the inspection of bridge should be stored in the database and managed by Asset Management Section (hereinafter as refer to AMS) in Road Maintenance Department (hereinafter as refer to RMD).

Database operation flow is shown in Figure 1-1.

Main menu of the database is shown in Figure 1-2. There are two types of database system, “Host PC version” and “iPad version”. The functions of the database system are as follows.

- To browse bridge passport data.
- To browse tunnel passport data.
- To record bridge inspection data.
- To record tunnel inspection data.
- To manage bridge passport data and inspection result. (only Host PC version)
- To input bridge inspection data. (only iPad version)
- To input tunnel inspection data. (only iPad version)
1.2 Database Structure

1.2.1 Database Equipment

The database system consists of a database server (MacBook Pro) and a portable hard disk for data backup. Database equipment is shown in Photo 1-1.

The database system consists of a database server (MacBook Pro) and a portable hard disk for data backup. Database equipment is shown in Photo 1-1.

(1) Database Server

The database server is MacBook Pro which is placed on the left in Photo 1-1. The software for database “FileMaker Server” is installed in this computer. This software can run only on two operating systems, Windows Server and Mac OS X. Windows Server is not popular in operating systems. Therefore, OS X is selected as an operating system for this database system.
The original database file should be stored in the database server. The location where original file should be stored is the folder which name is “Databases alias” on desktop.

(2) Operating Computer

The database server is a device just to store the original data file and the data files in it cannot be operated by MacBook Pro (database server computer). To manipulate the data files on the database server, an operating computer is needed. The operating computer is Windows PC of Dell. A database software, FileMaker Pro, should be installed to the operating computer because the software is necessary to access the database server and operate the database files.

(3) Storage for Data Backup

The database system has two external HDDs for data backup and automatically backs up the all data stored in the database server daily. The frequency of data backup can be changed, for example every 2 days, weekly, or monthly. Initial setting is daily.

1.2.2 Access to Equipment from Outside

The database system can accept 5 connections from iOS device, iPhone and/or iPad, in outside of the database system.

To access the database system by iOS device, application software, FileMaker Go, should be installed into the devices. FileMaker Go can be downloaded for free from App Store which is one of preinstalled applications in iOS device.

1.2.3 Installation Software

The software used in the database system is of FileMaker series, and three software shown below is necessary to use the database system.

(1) FileMaker server

This is software for database server. Detail information refers to URL below.

http://www.filemaker.com/products/filemaker-server/

(2) FileMaker Pro

This is software for database operation. Detail information refers to URL below.

http://www.filemaker.com/products/filemaker-pro/

Trial version of FileMaker Pro is prepared on the web site. it is possible to download from URL below.

http://info2.filemaker.com/FileMaker_Platform_Trial_Request.html

(3) FileMaker Go

This is an application for database operation from iOS device. Detail information refers to URL below.

http://www.filemaker.com/products/filemaker-go/

1.3 Database System

The database system for bridge and tunnel is divided into two main functions: Inspection and Browse as shown in Figure 1-3. Inspection function consists of Bridge List, Tunnel List, Passport Data and Bridge Inspection Sheet, Tunnel Inspection Sheet. Analysis function consists of Priority List, Priority Graph, Disaster Graph and Map Information. Responsibility for preparation of each information are shown in Table 1-1.
Table 1-1 Responsibility for Preparation of Each Information

<table>
<thead>
<tr>
<th>Institutions</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td>RMD</td>
<td>● To prepare the Short and Long-term Maintenance Management Plan by utilizing the Database.</td>
</tr>
</tbody>
</table>
| AMS          | ● To manage the Database System  
               ● To update the Database System as necessary  
               ● To provide the information on Database |
| RD/UADs      | ● To approve the inspection results by signature  
               ● To manage data collection activities by DEU |
| DEUs         | ● To carry out the inspection and input the disaster data |

1.4 Main Menu

Main Menu is shown in Figure 1-2. The functions and items in Table 1-2 are available from the main menu of the database system.

Table 1-2 Functions of Main Menu

<table>
<thead>
<tr>
<th>No.*</th>
<th>Function</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Bridge passport data can be browsed and added by MOTR officials.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>Bridge passport data can be browsed and added by oblast.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>Tunnel passport data can be browsed.</td>
<td></td>
</tr>
<tr>
<td>4.1</td>
<td>Inspection results of the bridge can be browsed.</td>
<td></td>
</tr>
<tr>
<td>4.2</td>
<td>Inspection results of the tunnel can be browsed.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Bridge and Tunnel passport data can be modified.</td>
<td>This function can be used by RMD</td>
</tr>
<tr>
<td>6</td>
<td>Collected data can be transferred to the server automatically in On-line field.</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>Database can be terminated.</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>Export Bridge Data</td>
<td></td>
</tr>
</tbody>
</table>

* No. corresponds to the number described in Figure 1-2
2 Input Method for Inspection and Passport

2.1 General

This chapter describes general information and an input method for the inspection and passport in detail. Inspection of the bridge and tunnel, and passport data of bridge and tunnel are collected in order to utilize for bridge and tunnel maintenance management and preparation of Short/Long-term Maintenance Management Plan. Also, the inspection with the tablet should be implemented in the site by DEU staff.

2.1.1 Passport Data

Passport data of bridge and tunnel is basic information for bridge and tunnel management, including such as bridge length, location, structural type.

The formats of bridge and tunnel are shown in Figure 2-1 and Figure 2-2.
Figure 2-1 Passport Data Format for Bridge
Figure 2-2 Passport Data Format for Tunnel
2.1.2 Bridge Inspection Sheet (Planned Inspection A)

Bridge inspection (Planned inspection A) should be conducted every 5 years to all bridge as the visual inspection (Details of bridge inspection are described in “Volume II: Bridge Maintenance Manual” prepared by the Project for Capacity Development for Maintenance Management of Bridges and Tunnels in the Kyrgyz Republic). The Inspection format of that is shown in Figure 2-3. The bridge condition of damages should be recorded to the format with the tablet so that the information is utilized to prepare for maintenance management plans of bridges.

![Figure 2-3 Bridge Inspection Format of Planned Inspection A](image)

2.2 Input Method for Bridge Inspection

2.2.1 Passport Data

2.2.1.1 Adding New Passport Sheet

When adding new passport data, select the “Add New Bridge Passport” button indicated in Figure 2-4. This will open a new passport sheet to add new bridge data as shown in Figure 2-5. In this sheet, the information such as Bridge No., Kilo Post and Bridge Type can be input and registered by tapping the “Add” button.
Figure 2-4 Adding the New Passport Data

Figure 2-5 New Passport Sheet
2.2.1.2 Input Method

The format of Bridge Passport Sheet is shown in Figure 2-6. Details of the input method for Bridge Passport Sheet are described as follows.

![Figure 2-6 Bridge Passport Sheet](image-url)
(1) **PLUAD/UAD**

PLUAD/UAD can be selected by the input space which is indicated as No.1 in Figure 2-6. Tap the input space and PLUAD/UAD can be selected from the list shown in below.

<table>
<thead>
<tr>
<th>PLUAD/UAD</th>
<th>RD No.1</th>
<th>RD No.2</th>
<th>RD No.3</th>
<th>RD No.4</th>
<th>UAD JAB</th>
<th>UAD BO</th>
<th>UAD OBI</th>
<th>UAD BNT</th>
<th>UAD OSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>PLUAD</td>
<td>UAD</td>
<td>UAD</td>
<td>UAD</td>
<td>UAD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD No.1</td>
<td>Chui region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD No.2</td>
<td>Naryn region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD No.3</td>
<td>Talas region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>RD No.4</td>
<td>Issyk-Kul region</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAD JAB</td>
<td>Bishkek_Osh</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAD Osh_Batken_Isfana</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAD_Bishkek_Nayn_Torugart</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>UAD_Osh_Sary_Tash_Irkeshtam</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(2) **DEP**

DEP can be selected by the input space which is indicated as No.2 in Figure 2-6. Tap the input space and DEP can be selected from the list shown in below.

<table>
<thead>
<tr>
<th>DEP</th>
<th>PLUAD</th>
<th>RD No.1</th>
<th>RD No.2</th>
<th>RD No.3</th>
<th>RD No.4</th>
<th>UAD JAB</th>
<th>UAD BO</th>
<th>UAD OBI</th>
<th>UAD BNT</th>
<th>UAD OSI</th>
</tr>
</thead>
<tbody>
<tr>
<td>DEP</td>
<td>PLUAD</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 1</td>
<td></td>
<td>DEP 8</td>
<td>DEP 3</td>
<td>DEP 6</td>
<td>DEP 12</td>
<td>DEP 5</td>
<td>DEP 2</td>
<td>DEP 32</td>
<td>DEP 16</td>
<td></td>
</tr>
<tr>
<td>DEP 25</td>
<td></td>
<td>DEP 4</td>
<td>DEP 19</td>
<td>DEP 17</td>
<td>DEP 9</td>
<td>DEP 13</td>
<td>DEP 34</td>
<td>DEP 21</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 28</td>
<td></td>
<td>DEP 7</td>
<td>DEP 36</td>
<td>DEP 27</td>
<td>DEP 22</td>
<td>DEP 46</td>
<td>DEP 39</td>
<td>DEP 37</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 40</td>
<td></td>
<td>DEP 10</td>
<td>DEP 47</td>
<td>DEP 31</td>
<td>DEP 23</td>
<td>DEP 41</td>
<td>DEP 44</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 42</td>
<td></td>
<td>DEP 20</td>
<td>DEP 11</td>
<td>DEP 48</td>
<td>DEP 50</td>
<td>DEP 26</td>
<td>DEP 955</td>
<td>DEP 45</td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 43</td>
<td></td>
<td>DEP 33</td>
<td>DEP 51</td>
<td>DEP 30</td>
<td>DEP 957</td>
<td>DEP 959</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 954</td>
<td></td>
<td>DEP 35</td>
<td>DEP 52</td>
<td>DEP 38</td>
<td>DEP 960</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>DEP 958</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>DEP 956</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(3) **Region**

Region can be selected by the input space which is indicated as No.3 in Figure 2-6. Tap the input space and Region can be selected from the list shown in below.

- CHUY
- YSYK-KOL
- NARYN
- OSH
- BATKEN
- JALAL-ABAD
- TALAS

(4) **Structure Soundness**

Structure soundness can be selected by the input space which is indicated as No.4 in Figure 2-6. Tap the input space and structure soundness can be selected from the list shown in below. Evaluation method of that is described in “Volume II: Bridge Maintenance Manual”.

2-7
(5) **Bridge No.**

Bridge No. can be inputted directly by the input space which is indicated as No.5 in Figure 2-6.

(6) **River/Stream Name**

River/Stream name can be inputted directly by the input space which is indicated as No.6 in Figure 2-6.

(7) **Road Category**

Road category can be selected by the input space which is indicated as No.7 in Figure 2-6. Tap the input space and road category can be selected from the list shown in below.

| International | National |

(8) **Construction Year**

Construction year can be inputted directly by the input space which is indicated as No.8 in Figure 2-6.

(9) **Road Name**

Road name can be selected by the input space which is indicated as No.9 in Figure 2-6. Tap the input space and road category can be selected by the list shown in Attachment-1.

(10) **Location (Km Post, Latitude, Longitude)**

Km post can be inputted directly by the input space which is indicated as No.10 in Figure 2-6. Also, latitude and longitude can be inputted automatically by internal GPS of the tablet.

(11) **Design Load**

Design load can be inputted directly by the input space which is indicated as No.11 in Figure 2-6.

(12) **Feature**

Feature of the bridge can be selected by the input space which is indicated as No.12 in Figure 2-6. Tap the input space and structure soundness can be selected from the list shown in below.
(13) Attachment (Water Pipe, Electric Cable, Communication Line etc.)

Attachment of the bridge such as water pipe, electric cable and communication line can be inputted directly by the input space which is indicated as No.13 in Figure 2-6.

(14) Bridge Length

Bridge length can be inputted directly by the input space which is indicated as No.14 in Figure 2-6.

(15) Road Width (Carriageway, Sidewalk)

Road width of carriageway and sidewalk can be inputted directly by the input space which is indicated as No.15 in Figure 2-6.

(16) Number of Span

Number of span can be inputted directly by the input space which is indicated as No.16 in Figure 2-6.

(17) Superstructure

The conditions of superstructure can be selected by the input space which is indicated as No.17 in Figure 2-6. The material, Structural Type-1 and Type-2 can be selected from the list shown in below. Also, number of girder and slab Number of span can be inputted directly by the input space.

<table>
<thead>
<tr>
<th>Contents</th>
<th>Concrete</th>
<th>Metal</th>
<th>Wood</th>
<th>Stone</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Girder</td>
<td>Slab</td>
<td>Box-Culvert</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Structural Type 1</td>
<td>Simple</td>
<td>Continuous</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

(18) Substructure

The conditions of substructure can be selected by the input space which is indicated as No.18 in Figure 2-6. The material and Structural Type-1 can be selected from the list shown in below. Also, height and number of substructure can be inputted directly by the input space.

<table>
<thead>
<tr>
<th>Item</th>
<th>Material</th>
<th>Structural Type 1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Contents</td>
<td>Concrete</td>
<td>Wall type</td>
</tr>
<tr>
<td></td>
<td>Metal</td>
<td>Multi pile</td>
</tr>
<tr>
<td></td>
<td>Wood</td>
<td>Single pier</td>
</tr>
<tr>
<td></td>
<td>Stone</td>
<td>Frame</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td></td>
</tr>
</tbody>
</table>
(19) Accessory

The conditions of bearing, expansion joint and bridge railing can be selected by the input space which is indicated as No.19 in Figure 2-6. They can be selected from the list shown in below.

<table>
<thead>
<tr>
<th>Item</th>
<th>Bearing</th>
<th>Expansion Joint</th>
<th>Railing</th>
</tr>
</thead>
<tbody>
<tr>
<td>Material</td>
<td>Concrete and Metal</td>
<td>Metal</td>
<td>Metal</td>
</tr>
<tr>
<td></td>
<td>Concrete and Rubber</td>
<td>Rubber</td>
<td>Concrete</td>
</tr>
<tr>
<td></td>
<td>Concrete</td>
<td>Buried</td>
<td>Metal and Concrete</td>
</tr>
<tr>
<td></td>
<td>Metal</td>
<td></td>
<td>Wood</td>
</tr>
</tbody>
</table>

(20) Overview Picture

When you tap the photo space, Camera function is executed automatically. After taking a photo, it is saved to the sheet automatically.

2.2.2 Inspection Sheet for Planned Inspection A

The format of Inspection Sheet is shown in Figure 2-7. Details of the input method for Bridge Passport Sheet are described as follows.
Figure 2-7 Inspection Sheet (1) of Bridge
(1) **Move to Inspection Sheet (2)**

Inspection Sheet (2) shown in Figure 2-8 can be displayed by the tapping the space which is indicated as No.1 in Figure 2-7. Main function of Inspection Sheet (2) is shown in Table 2-1.

![Figure 2-8 Inspection Sheet (2) of Bridge](image)

**Table 2-1 Function of Inspection Sheet (2)**

<table>
<thead>
<tr>
<th>No.*</th>
<th>Function</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Photo</strong></td>
<td>Camera function is executed automatically. After taking a photo, it is saved to the sheet automatically.</td>
</tr>
<tr>
<td>2</td>
<td><strong>Figure</strong></td>
<td>The damage figure can be drawn by handwriting.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>See Figure 2-9</td>
</tr>
<tr>
<td>3</td>
<td><strong>Member</strong></td>
<td>Inspector name can be inputted manually.</td>
</tr>
<tr>
<td>4</td>
<td><strong>Comment</strong></td>
<td>Some comments can be inputted manually.</td>
</tr>
</tbody>
</table>

* No. corresponds to the number described in Figure 2-8*
(2) Structure Element

Structure element such as girder and slab can be inputted directly by the input space which is indicated as No.2 in Figure 2-7.

(3) Comment

Some comment regarding to the photo can be inputted directly by the input space which is indicated as No.3 in Figure 2-7.

Inspections of tunnels are carried out in the same as described above when carrying out inspections of bridges.
3 Database Operation

3.1 Bridge Database System (Data Browsing)

3.1.1 National Map

After tapping the button of “Select bridge by PLUAD/UAD” from the Main Menu shown in Figure 1-2, a national map is displayed as shown in Figure 3-1.

![Figure 3-1 National Map](image)

(1) Imminent and Critical Bridge

The list of bridges evaluated “imminent” and “critical” shown in Figure 3-2 can be browsed by the “Critical/Imminent Bridge” button indicated as (1) in Figure 3-1.

![Figure 3-2 Imminent and Critical Bridge](image)
Figure 3-2 Bridge List of Imminent and Critical

(2) Diagram for Status of Bridge Structure Soundness

The diagram for the status of bridge structure soundness shown in Figure 3-3 can be browsed by tapping the “Structural Soundness Graph” button indicated as (2) in Figure 3-1. PLUAD/UAD can be selected by user from the button indicated as No.1 in Figure 3-3.

Figure 3-3 Diagram for Status of Bridge Structure Soundness

(3) Other Information

Other information regarding to bridges can be browsed by the buttons indicated as No.1 to No.5 in Figure 3-3. Description of them is shown in Table 3-1.
### Table 3-1 Description of Bridge Information

<table>
<thead>
<tr>
<th>No.*</th>
<th>Description</th>
<th>Remarks</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td><strong>Component Ratio in each PLUAD/UAD</strong></td>
<td><strong>See Figure 3-5</strong></td>
</tr>
<tr>
<td></td>
<td>The graph of bridge number by PLUAD/UAD can be browsed.</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td><strong>Number of Bridges in DEPs</strong></td>
<td><strong>See Figure 3-6</strong></td>
</tr>
<tr>
<td></td>
<td>The graph of bridge number by DEPs can be browsed.</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td><strong>Construction Year</strong></td>
<td><strong>See Figure 3-7</strong></td>
</tr>
<tr>
<td></td>
<td>The graph of bridge number by construction year can be browsed.</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td><strong>Number of Bridges by Length</strong></td>
<td><strong>See Figure 3-8</strong></td>
</tr>
<tr>
<td></td>
<td>The graph of bridge number by length can be browsed.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td><strong>Component Ratio in each Oblast</strong></td>
<td><strong>See Figure 3-9</strong></td>
</tr>
<tr>
<td></td>
<td>The graph of bridge number by Oblast can be browsed.</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td><strong>Information about the lengths of bridges served by UAD / RO</strong></td>
<td><strong>See Figure 3-10</strong></td>
</tr>
<tr>
<td></td>
<td>The histogram showing the total length of bridges for each UAD / RO and their percentage ratio</td>
<td></td>
</tr>
<tr>
<td>7-8</td>
<td><strong>The structural soundness of bridge in UAD / RO</strong></td>
<td><strong>See Figure 3-11</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Figure 3-12</strong></td>
</tr>
</tbody>
</table>

* No. corresponds to the number described in Figure 3-4

---

**Figure 3-5 Graph of Bridge Number by PLUAD/UAD**
Figure 3-6 Graph of Bridge Number by DEPs

Figure 3-7 Graph of Bridge Number by Construction Year
Figure 3-8 Graph of Bridge Number by Bridge Length

Figure 3-9 Graph of Bridge Number by Oblast
Figure 3-10 Graph of Bridge length served by UAD/RD

Figure 3-11 Diagrams "The structural soundness of bridges in UAD / RO"

Figure 3-12 Diagrams "The structural soundness of bridge by length"
3.1.2 DEPs Map

After tapping the button of PLUAD/UAD from national map, DEPs map is displayed as shown in Figure 3-13. The bridge list by soundness shown in Figure 3-14 can be browsed by the “Structural Soundness” button indicated as No.1 in Figure 3-14.

![Figure 3-13 DEPs Map](Image)

![Figure 3-14 Bridge List by Soundness](Image)
3.1.3 Bridge List of DEP

After tapping the button of DEP from DEPs map, the bridge list of DEP is displayed as shown in Figure 3-15. Also, the bridge passport sheet can be browsed by the button indicated as No.1 in Figure 3-15.

![Figure 3-15 Bridge List of DEP](image)
3.1.4 Bridge Inspection System

To start the bridge inspection, select the “Start Inspection” button indicated as No.1 in Figure 3-16. After tapping the button, the bridge inspection sheet is displayed and Planned Inspection A can be carried out on the site using iPad (iPad version).

Figure 3-16 Start Button of Inspection
3.2 Tunnel Database System (Data Browsing)

3.2.1 Location Map

After tapping the button of “Tunnel Selection” from the Main Menu shown in Figure 1-2, a location map of the tunnel is displayed as shown in Figure 3-17. Passport data of the tunnel can be browsed on the location map by tapping the tunnel name.

New tunnel inspection can be started by pressing the “Start inspection” button. On the “Passport of the tunnel” screen, indicated by #1 in Figure 3-18. After clicking this button, a form for conducting a tunnel inspection opens.