

CAPITAL DEVELOPMENT AUTHORITY  
ISLAMIC REPUBLIC OF PAKISTAN

INSTRUCTION FOR DRAWING DISTRIBUTION PIPES  
IN ISLAMABAD WATER SUPPLY

JULY 1971

Prepared for  
OVERSEAS TECHNICAL COOPERATION AGENCY  
GOVERNMENT OF JAPAN

by  
JAPAN SURVEY TEAM FOR WATER SUPPLY  
IN ISLAMABAD

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## I. PREFACE

For the water work service, a complete drawing of water pipe system plays a very important role. In addition to being indispensable for the work of pipe laying, the drawing is absolutely necessary as a reference source in the maintenance of all water supply system and the leakage control, and also in replacement and expansion of existing pipe system. In the case of the water work system in Islamabad, no complete unified drawing has been prepared with respect to the existing distribution pipes laid in the city. Unavailability of such drawing has to date inconvenienced various works concerning the prevention of water leakage, operation of water supply and other various phases of maintenance. In order to improve the present situation and to make necessary preparations for future expansion, it is of urgent necessity that drawings of water pipe system should be completed so as to furnish a basis for the sound management of water work service.

Because of the reason stated above the Japanese Survey Team undertook the planning and executing of the completion of drawings on the existing water pipe system in Islamabad. First of all, the Team conducted a field survey on the basis of pipe line drawings (1/1000, 1/500) kept in file for an original plan of pipe laying at Capital Development Authority. Efforts were made by reconnaissance to obtain an accurate data on the existing pipe line system and recorded them carefully. The Team brought these records to Japan in order to work out drawings reflecting existing water pipe system in Islamabad as accurate as possible by supplementing and correcting the original drawings obtained from CDA.

Since the time available at Islamabad did not permit the Team to complete the reconnaissance survey, it is necessary for CDA staff to continue to undertake the work until such drawings are completed. It is therefore considered useful to outline the principle herewith upon which

the Team worked in making drawings and which should also be followed for future undertakings.

Nihon Suido Consultants Co., Ltd., Tokyo, who provided majority of the field survey team, was commissioned by Government of Japan through Overseas Technical Cooperation Agency to prepare this instruction and drawings of existing distribution pipe lines for water supply in Islamabad.

## II GENERAL

The basis of the work in the city planning drawings which were made out in the early part of the development of Islamabad. And, as stated earlier, there are several discrepancies, when compared with existing conditions including those of topographical features. The location of pipes indicated in these drawings are those originally planned and, therefore, are fairly discrepant from the actual status. Although almost all the drawings indicate sub-sectors (1/4 sectors), those which are in existence are varied in size. In these drawings, peripheral portions are omitted or are indicated quite ambiguously. Thus, it is scarcely possible to obtain accurate information on the connection of pipes laid across borderlines between adjoining sectors by merely joining the drawings of two relevant sectors.

Topography has also certain discrepancies particularly in the case of areas in which the ground was levelled whereas the height of ground surface become different, and also in the areas where roads were constructed after pipe lines were laid. Thus, it is the enormous task to complete the revised drawings of existing status which can only be attained by the continued effort for some time in the future, and it is hoped that the following method of drawing distribution pipes as employed in making revised drawings shall provide engineering efficiency in performing such undertakings.

"Design Standards for Civil Engineering Drawings" by the Japanese Society of Civil Engineers and "Standards for Display of Water Pipe System and Water Service Equipments" by the Japan Water Works Association are used as a basis of making revised drawings. Each area is shown in a drawing paper of "A1" size (591 x 840 mm), copied out of the drawings brought to Japan from Islamabad, with the upper side of each drawing paper facing north. Vertical and horizontal lines are entered to represent longitudes and latitudes so that correct alignment between the drawings of two adjoining sectors may be accomplished with the aid of these lines. Further, the systematized drawing numbers and the overall guide drawing "Key Plan for Drawing Number", will enable to indicate the relationship of individual drawings without difficulty. The standards referred to above are described below in details.

### III. ESSENTIALS FOR THE MAKING OF DRAWINGS

#### 1. Size of Drawing:

The existing water pipes system is to be drawn out on a number of drawing papers. If these drawing papers are not uniform in size, they inconvenience the work of drawing and complicate the handling. Thus, drawing papers of one same size should be used. The "Design Standards for Civil Engineering Drawing" require the final dimensions of these drawings to conform to A0 - A6 (Table 1) of JIS.\* For the convenience of handling, drawings of A1 size are normally used.

\* "Japan Industrial Standards".

#### 2. Scale of Drawing:

The following 19 kinds of scale are adopted as standards. Selection of the scale depends solely on the objective of drawing.

1/1, 1/2, 1/5, 1/10, 1/20, 1/25, 1/30, 1/40, 1/50,  
1/100, 1/200, 1/250, 1/300, 1/500, 1/600, 1/1000,  
1/2500, 1/3000, and 1/5000.

The scales which are generally used in water work system drawings are shown in Table 2. As regards the drawings made out with respect to the existing distribution pipe system, scale of 1/1000 is used by taking into account the convenience of future feasibility design work. Large-block drawings are made out to the scale of 1/5000 for the possible multi-purpose use in the future.

#### 3. Signs:

The signs for the pipe lines and valves to be indicated in general pipe line drawings are in accordance with "Standard for Display of Water Pipes and Service Equipments" by Japan Water Works Association,

which are as follows:

(Signs of Pipe Line)

1. Type of pipe and pipe diameter

Both type of pipe and pipe diameter are indicated by characters. These characters are written along continuous lines representing pipe lines in such way that they may be read from the front side or from the right side of drawing.

2. Pipe lines

The line of pipe is indicated by one continuous line.

3. Valves and other items

Valves and other items are represented by patternized signs (Table 3).

4. Title block

On each drawing, a title block is provided at the right lower corner. As a rule, this title block should be filled with project name, work name, structure name, drawing name, drawing No., scale, designer, planner, name of draftman, signature of responsible person, name of organization which has made out the drawing, date of drawing and other necessary particulars. For the present drawings, however, only those particulars which are indispensable are entered, since the drawings are intended to complete the existing piping drawings, cf. Fig. 1.



GOVERNMENT OF PAKISTAN CAPITAL DEVELOPMENT AUTHORITY	
ISLAMABAD WATER SUPPLY	
DISTRIBUTION PIPE LINES	
SECTOR G7-2, G7-3	
SCALE	1 : 1000
DATE	JULY 1971
DRG. NO.	09 - 15

Fig. 1. Example of a title of drawings






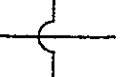
Table-1

Symbol of Size	Standard Size of Drawings in mm
A0	841 x 1189
A1	594 x 841
A2	420 x 594
A3	297 x 420
A4	210 x 297
A5	148 x 210
A6	105 x 148

Table 2 Various Scales Used to Drawings  
for Water works

Drawings	Scale
<u>Plannning of Water Works</u>	
Location Map	1 : 50 000
Plan of Water Supply Service Area	1 : 10 000 - 1 : 50 000
General Plan	1 : 10 000 - 1 : 25 000
Plan of Intake Facilities, of Purifi- cation Plant and Surroundings	1 : 1 000 - 1 : 5 000
General Plan of Intake Place, of Purification Plant and of Distribu- tion Facilities	1 : 100 - 1 : 1 000
Water Flow Diagram	V.1 : 100 - 1 : 200 H. _____
General Plan of Main Structure	1 : 100 - 1 : 500
Detail Drawings of Main Structure	1 : 10 - 1 : 100
Plan of Pipe Laying	1 : 1 000 - 1 : 10 000
Vertical Plan of Main Pipe Laying	V. 1 : 200 - 1 : 400 H. 1 : 10 000 - 1 : 20 000
General Plan of Attendant Facilities	1 : 10 - 1 : 200
Plan of Network for Hydraulic Calculation	_____
<u>Designing for Water Works</u>	
General Plan	1 : 1 000 - 1 : 25 000
Plan of Intake, of Purification Facilities and Surroundings	1 : 1 000 - 1 : 5 000
General Plan of Intake, of Purifica- tion Plant and of Distribution Facilities	1 : 100 - 1 : 1 000
Water Flow Diagram	V. 1 : 100 - 1 : 200 H.
Detail Drawings of Structure	1 : 5 - 1 : 100
General Plan of Pipe Laying	1 : 1 000 - 1 : 10 000
Plan of Pipe Laying	1 : 500 - 1 : 5 000
Plan of Cross-Over Pipe Laying Facilities and Surroundings	1 : 50 - 1 : 500
Detail Plan of Cross Over Pipe Laying Facilities and Surroundings	1 : 10 - 1 : 200
Detail Drawing of Architecture	1 : 5 - 1 : 200
Detail Drawings of Other Facilities	1 : 5 - 1 : 200
Earth Works	1 : 50 - 1 : 200

Table - 3

<u>CIP <math>\phi</math> 6"</u>	Cast iron pipe diameter 6 inches
<u>PRCC <math>\phi</math> 9"</u>	Pre-stressed cement concrete pipe diameter 9 inches
	Stop Valve
	Fire Hydrant
	Air Valve
	Drain Valve
	River Crossing
	Cross

