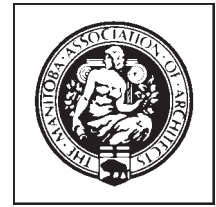




Winnipeg
Construction
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BUILDING MANITOBA SINCE 1904

Technical Bulletin

Prepared jointly by the Manitoba Association of Architects
and the Winnipeg Construction Association,
and intended as guidelines to increase awareness of
recommended industry practices.



Technical Bulletin #15

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Subject: Operations and Maintenance Manuals

The MAA/WCA Joint Committee, at the request of the Mechanical Contractors Association of Manitoba, in September 1991, began a review of the industry practices regarding the specifying of, and supplying of, Operation and Maintenance manuals for projects in Manitoba.

The review indicated clearly that there have been no standards in place, and that the resulting variance in the type of information and material requested and supplied has resulted in delays and extra costs for contractors and owners alike.

The basic format recommended by MCAM was circulated to a wide range of designers, contractors and owners in Winnipeg, including the associations representing design professionals. Based on the responses received, the Joint MAA/WCA Committee has approved the issuance of Technical Bulletin #15 as the recommended standard for Operations and Maintenance manuals.

The requirements outlined below provide a consistent and acceptable method for ensuring that the manuals contain the basic information required, and that the number of manuals requested is reasonable.

A. Operations and Maintenance Manuals

Prior to substantial performance of the work the contractor shall compile, organize and review for content and completeness four (4) copies of the Operation and Maintenance Manuals, and shall submit these to the Consultant. Manuals shall be written in the English language (or language of the contract) and shall be made up as the follows:

1. Bind data in three ring loose leaf binders with heavy duty covers for 8 1/2" x 11" (215 x 280 mm) paper.
2. Enclose title sheet, labelled "Operation and Maintenance Manual", project name, date, list of contents.
3. Organize contents into applicable sections of work to parallel project specification breakdown. Mark after each section using tab index sheets with clear mylar tabs on index paper with mylar reinforced holes. The spine of the binder should be labelled and should include the project name, related section and an indication of multi-volumes (ie. 1 of 3), if applicable. Appropriate sleeves for computer media should also be included if needed.
4. A complete Table of Contents for the entire manual and one for the respective binder shall appear at the front of each binder. Material in each section shall be organized such that all information, instructions, etc., for a particular piece of equipment are together in the one location in the manual. Delete or cross out information, which is not applicable to the project. Whenever photocopy reproductions are the only alternative, reproduction shall be first-class quality, on heavyweight, fine quality bond paper.

5. Names, addresses and phone numbers of subcontractors, suppliers and authors of reports. For all equipment, list manufacturer's name and address and equipment supplier's name.

B. Information To Be Included In Operation & Maintenance Manual

1. Description, operation and maintenance instructions for all equipment and systems, including parts list. Indicate information such as make, size, capacity, etc. Instructions shall be complete for installation, operation, and maintenance (including safety measures) for all equipment and machinery that require regular normal maintenance.
2. List correct lubrication schedules, show type of bearings, grade of oil or grease required and how often lubrication is needed.
3. Technical information and data including non-propriety wiring diagrams of all panels and control circuits, sequence of operations, design calculations, performance characteristics, data and capacities (i.e., pump curves, fan curve, air and fluid balance data, equipment operating data, test data, manufacturer's ratings, etc.
4. Specific Equipment including Extended Warranty Certificates where Applicable:

Mechanical Equipment

- i. Valve directory as specified under heading "Identification of Valves".
- ii. Equipment schedule (Directory) as specified under heading "Identification of Equipment".

Electrical Equipment

General Equipment

C. Shop Drawings Record

Owner to receive one (1) separately bound copy of approved shop drawings.

D. Instruction of Operating Staff

1. Contractor/Subcontractors shall instruct representatives of owner in the commissioning, operation, maintenance of all equipment, products, etc. by means of instructional type visits to the sites to train owner operators, representatives to be familiar with all aspects of equipment/products.
 2. Instructions shall include complete "hands-on" operational runs, start-ups, shut downs, cycling, etc. of all equipment, products, forming part of the work.
 3. Contractor shall record dates, instructions given, list owner attendees, and forward report to Consultant. Owner to arrange for adequate knowledgeable personnel to attend scheduled instructional meetings. Engineer to specify duration of training time when project is being tendered.
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E. Exceptions

The success of these standards for Operating and Maintenance Manuals is directly dependent upon the compliance of owners, design representatives and contractors. It is, however, recognized that some of those owners that have major operations, and are frequent buyers of equipment, may have different requirements for O & M Manuals than is provided through this bulletin. In those specific situations, the design authority may vary the requirements accordingly.

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