

**Memorandum for the Review Committee on Quality Assurance Issues
Relating to Fresh Water Supply of Public Housing Estates
of the Hong Kong Housing Authority**

**Contract Arrangements for Building Contracts relating to Fresh Water
Supply System in Housing Authority's Public Housing Developments**

PURPOSE

This paper informs Members about the contract arrangements for building contracts relating to fresh water supply system in the Housing Authority (HA)'s public housing developments.

BACKGROUND

2. The plumbing installation works for the HA's public housing developments mainly comprise of fresh water and flushing water supply systems and sanitary fittings. This paper describes the contract arrangements to procure the works in respect of fresh water supply system in the building contracts for the HA's capital works new works projects. This paper covers contract arrangements for building contracts mainly in pre-contract stage corresponding to **Step 6 of the Flow Chart in Annex 1 of Paper No. RC 6/2015**. This paper should be read in conjunction with **Paper No. RC 15/2015** regarding procurement matters.

CONTRACT ARRANGEMENTS

Relationship amongst the HA, Main Contractor and Sub-contractors

3. The HA adopts a conventional design-tender-build procurement approach, with its own professional staff preparing design and tender documentation, and then engage a main contractor to execute construction works. Contract administration is executed by the HA's own professional staff taking up the role of Contract Manager.

4. For capital works new works building contracts, the HA enters into a contractual relationship with the main contractor by direct written contract under which the main contractor is fully responsible for carrying out of the works required. The main contractor is permitted under the General Conditions of Contract for the building contracts to sub-contract a part of the Works. The sub-contracting of any part of the Works shall not relieve the main contractor from any of his liabilities or obligations under the Contract.

5. The HA adopts the nominated sub-contracting arrangement for certain works of the building contract such as building services installation works requiring relatively high expertise in technical skills. Under the nominated sub-contracting arrangement, the HA selects the sub-contractor on behalf of the main contractor for carrying out the specialised work through competitive tendering and then nominates the sub-contractor to the main contractor for entering into a nominated sub-contract with the sub-contractor. The HA does not have a direct contractual relationship with the nominated sub-contractor (NSC).

6. The HA adopts modular flat design for domestic blocks and the plumbing installations are designed with water pipes surface mounted (i.e. exposed). Hence, plumbing installations for public housing developments are generally simple and relatively straight forward for construction. Therefore, the nominated sub-contracting arrangement is not adopted for plumbing installation works, and the main contractor has been taking up such construction in line with usual practice of the building industry.

7. It is a common practice for the main contractor to employ domestic sub-contractor to carry out the plumbing installation works for public housing developments. Similar to NSC, the HA does not have a direct contractual relationship with the domestic sub-contractor.

8. However, the building contract confers the Contract Manager of the contract full power to order removal of any sub-contractor from the site and/or the Works if in his opinion he considers it necessary, which power shall not be exercised unreasonably. Also, the Contract Manager has the liberty to object and require the main contractor to remove any person employed by the main contractor or the sub-contractor for the execution of the works, if that person misconducts himself or is incompetent or negligent in the proper performance of his duties, or if his employment is otherwise considered to be undesirable.

Lump Sum Contract with Bills of Quantities

9. The building contract between the HA and main contractor for the public housing developments is in the form of Lump Sum Contract with Bills of Quantities (BQ)¹. During tender stage, the main contractor is required to price the items in the BQ of the tender document. The works for fresh water supply system is designed by the project team and measured by the Surveyor; the measured items are billed under plumbing works section of the superstructure works in the BQ.

Standard Method of Measurement

10. The Surveyor follows a set of standard method of measurement in the preparation of BQ to itemize, describe and quantify the materials and workmanship, representing the works to be executed, for contractor to price. Contractors are fully aware of the standard method of measurement when they price the BQ as it is clearly stated in the tender document.

11. The current standard method of measurement is the Hong Kong Standard Method of Measurement of Building Works – Fourth Edition (HKSMM4)², which was published by the Hong Kong Institute of Surveyors in 2005 to replace the previous Third Edition (HKSMM3) issued in 1979. The HKSMM has been widely used in the construction industry, such as major quantity surveying firms including Rider Levett Bucknall Ltd. and Langdon & Seah Hong Kong Ltd. for projects in the private sector, and the Architectural Services Department and Hong Kong Housing Society for projects in the public sector. The HA has switched to the HKSMM4 from HKSMM3 since 15 March 2013 for capital works new works contracts.

Measurement of Copper Pipework in Fresh Water Supply System

12. The general coverage rules of the pipework section in HKSMM4 have stipulated that the rates are deemed to include joints in the running lengths and everything necessary for all jointing. The relevant pages in HKSMM4 are at **Annex**. Accordingly, jointing materials such as solders for integral solder capillary joints are not required to be measured separately in the BQ.

1 BQ is a document that provides an extensive and itemised trade list, including a description and quantity, of the components or items required for a construction project.

2 HKSMM4 was authorized between the Hong Kong Institute of Surveyors, the Hong Kong Construction Association Ltd., the Hong Kong Government Architectural Services Department, the Hong Kong Institution of Engineers, the Hong Kong Electrical & Mechanical Contractors' Association, the Chartered Institution of Building Services Engineers, and the Association of Cost Engineers (Hong Kong Region).

13. This measurement approach is similar to that in other work trades e.g. the iron tying wire used for fixing steel reinforcement, and the screws, bolts, nuts and washers for fixing framed steel and metal works like railings shall not be measured separately.

14. One of the major revisions in HKSMM4 in respect of pipework is that copper pipe fittings (e.g. bends and tees, etc.) of diameter less than or equal to 54mm are not required to be measured separately as their costs are to be covered in the rates of the related copper pipes measured. This revised approach is a further simplification of that in HKSMM3 where copper pipe fittings are measured separately. For any copper pipe fitting exceeding 54mm diameter, it will still be measured as an “extra over” item (in number) of the related copper pipe in accordance with the HKSMM4. On the other hand, ancillary items like valves and taps for the fresh water supply system remain to be measured (in number) separately.

Payment of Materials on Site

15. According to the contract conditions, the main contractor is entitled to interim payment which, inter alia, includes the estimated value of materials for inclusion in the permanent work and not being prematurely delivered to and being properly stored on site. In respect of the fresh water supply system, only valves and taps that have been delivered to site but not yet fixed in position can be counted and paid as materials on site in monthly interim payments to the main contractor. Upon further review and agreement with the Hong Kong Construction Association and other HA’s active building contractors, valves and taps are no longer items for payment of materials on site for building contracts with tenders returned after 1 April 2015. Thereafter, the works of fresh water supply system will only be valued and certified for payment by the Surveyor when the work is executed satisfactorily.

16. The contractual arrangement for payment of materials on site mentioned in paragraph 15 does not allow the main contractor to apply interim payment for the sundry material items as referred to in paragraphs 12 and 13. Accordingly, the quantities and the stock of such sundry material items are not required to be checked on site by the Surveyor and Contract Management team employed by the HA for payment purpose. Notwithstanding this normal practice and given the recent discovery of non-conforming solder materials in the incidents, the HA will require tightened supervision of solder materials when they are delivered and distributed for use by workers on site.

INFORMATION

17. This paper is for Members' information.

Miss Michelle LAU
Secretary, Review Committee
Tel. No.: 2761 7928
Fax No.: 2761 0019

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(d) Pipework

INFORMATION PROVIDED	MEASUREMENT RULES	DEFINITION RULES	COVERAGE RULES	SUPPLEMENTARY INFORMATION
<p>1. Generally (a) Any regulations, rules, bye-laws and the like with which the installations are required to comply.</p>	<p>M.1 Composite supports are measured in kg and the number stated.</p>	<p>D.1 Pipes run in chases, unless otherwise described, do not include cutting away and making good.</p>	<p>C.1 Work is deemed to include: (a) Joints in the running lengths (b) Joints between pipes of differing materials (c) Connections of pipework to equipment (d) Everything necessary for all jointing (e) Cutting and jointing to puddle flanges (f) Wall floor and ceiling plates</p>	<p>S.1 Method of jointing S.2 Method of fixing and brackets and methods of support S.3 Wall floor and ceiling plates</p>

(d) Pipework (continued)

CLASSIFICATION TABLE		MEASUREMENT RULES	DEFINITION RULES	COVERAGE RULES	SUPPLEMENTARY INFORMATION
2. Pipework	1. Type, size and method of joining				
		<p>1. Laid in ducts</p> <p>2. Laid in trenches</p> <p>3. Laid in chases</p> <p>4. Embedded in in-situ concrete</p> <p>5. Embedded in screeds</p> <p>6. Suspended</p> <p>7. Fixed to walls or columns</p> <p>8. Laid on floors</p> <p>9. Others</p>	<p>D.2 Final supports are any element between the structure or the support structure and the pipe.</p> <p>D.3 The term 'pipework fittings' is deemed to include:</p> <p>(a) Bends</p> <p>(b) Elbows</p> <p>(c) Branches</p> <p>(d) Reducers</p> <p>(e) Tees</p> <p>(f) Reducing bends</p> <p>(g) Reducing tees</p> <p>(h) Caps</p> <p>(i) Flanges and the like</p>	<p>C.2 Pipework is deemed to include:</p> <p>(a) Fittings for pipes ≤ 50 mm diameter (or 54 mm diameter in the case of copper pipes), including connections</p> <p>(b) Any flanges, unions or other devices used solely for erection purposes</p> <p>(c) Final supports</p> <p>(d) Made bends</p> <p>(e) Pipe anchors and guides</p> <p>C.3 Cutting and jointing pipes to fittings are deemed to be included.</p>	

(d) Pipework (continued)

CLASSIFICATION TABLE		MEASUREMENT RULES	DEFINITION RULES	COVERAGE RULES	SUPPLEMENTARY INFORMATION
3. Extra over pipework, other than copper, for fittings > 50 mm diameter	1. Bends 2. Elbows 3. Branches 4. Reducers 5. Tees 6. Reducing bends 7. Reducing tees 8. Caps 9. Flanged ends 10. Others				C.4. The rates for reducing fittings are deemed to include additional reducing fittings to attain the required sizes.
	nr				
4. Extra over copper pipes for fittings > 54 mm diameter					
5. Extra over pipes other than circular					
6. Accessories	1. Gullies 2. Roof outlets 3. Floor outlets 4. Rainwater heads 5. Aprons 6. Cows 7. Gratings to outlets and rainwater heads 8. Traps 9. Puddle flanges 10. Others	1. Type and size stated			C.5. Cutting and fitting to pipes and fittings are deemed to be included.
	nr				
7. Ancillaries	1. Valves 2. Flow meters 3. Flow switches 4. Strainers 5. Others				
	nr				
8. Flexible and extensible pipework	1. Type, size and length stated				
9. Expansion loops and compensators	1. Type and size stated				
	nr				
10. Flow and return header pipes	1. Length and size stated and number and size of each branch stated				
	nr				S.4 Method of construction and method of jointing ends