

PART 1 - GENERAL

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| <u>1.1 INSTALLATION/
START-UP CHECK
LISTS</u> | <ul style="list-style-type: none">.1 Include the following data:<ul style="list-style-type: none">.1 Product manufacturer's installation instructions and recommended checks..2 Special procedures as specified in relevant technical sections..3 Items considered good installation and engineering industry practices deemed appropriate for proper and efficient operation..2 Equipment manufacturer's installation/start-up check lists are acceptable for use. As deemed necessary by Departmental Representative supplemental additional data lists will be required for specific project conditions..3 Use check lists for equipment installation. Document check list verifying checks have been made, indicate deficiencies and corrective action taken..4 Installer to sign check lists upon completion, certifying stated checks and inspections have been performed. Return completed check lists to Departmental Representative. Check lists will be required during Commissioning and will be included in Building Maintenance Manual (BMM) at completion of project..5 Use of check lists will not be considered part of commissioning process but will be stringently used for equipment pre-start and start-up procedures. |
| <u>1.2 PRODUCT
INFORMATION (PI)
REPORT FORMS</u> | <ul style="list-style-type: none">.1 Product Information (PI) forms compiles gathered data on items of equipment produced by equipment manufacturer, includes nameplate information, parts list, operating instructions, maintenance guidelines and pertinent technical data and recommended checks that is necessary to prepare for start-up and functional testing and used |
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1.2 PRODUCT INFORMATION (PI) REPORT FORMS (Cont'd)	.1 (Cont'd) during operation and maintenance of equipment. This documentation is included in the maintenance manual at completion of work.
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.2	Prior to Performance Verification (PV) of systems complete items on PI forms related to systems and obtain Departmental Representative's approval.
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1.3 PERFORMANCE VERIFICATION (PV) FORMS	.1 PV forms to be used for checks, running dynamic tests and adjustments carried out on equipment and systems to ensure correct operation, efficiently and function independently and interactively with other systems as intended with project requirements.
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.2	PV report forms include those developed by Contractor records measured data and readings taken during functional testing and Performance Verification procedures.
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.3	Prior to PV of integrated system, complete PV forms of related systems and obtain Departmental Representative's approval.
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1.4 SAMPLES OF COMMISSIONING FORMS	.1 Amec Foster Wheeler will develop and provide to Contractor required project-specific Commissioning forms in electronic format complete with specification data.
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.2	Revise items on Commissioning forms to suit project requirements.
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.3	Samples of Commissioning forms and a complete index (produced to date) is noted as follows.
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FORM NO.	FORM NAME
M01	Fire Extinguishers
M02	Wet Pipe Sprinkler System
M03	Dry Pipe/Pre-Action Sprinkler System
M04	Domestic Water System and Plumbing Fixtures
M05	Sanitary Drainage, Waste and Vent System
M06	Domestic Hot Water Heaters and Storage Tanks
M07	Plumbing Pumps

1.4 SAMPLES OF .3 (Cont'd)
COMMISSIONING FORMS
(Cont'd)

FORM NO.	FORM NAME
M08	Thermal Insulation - Piping
M09	Thermal Insulation - Ducting
M10	Thermal Insulation - Equipment
M11	HVAC System Cleaning
M12	Air Distribution Systems
M13	Commercial Fans
M14	Fume Extraction Fan (Soldering Station)
M15	Air Balancing Report
M16	Heat Recovery Ventilators
M17	Condensing Units (Variable Refrigerant Flow (VRF) System)
M18	Indoor VRF Units (FC's)
M19	Condensing Units (Backup AC System for E&I Electronic Room)
M20	Indoor AC Units (Backup AC System for E&I)
M21	Duct Heaters/Reheat Coils
M22	Control Point Verification Report
M23	Centralized VRF Building Control System
M24	Centralized VRF Building Control System - Field Instrumentation - Condensing Units
M25	Centralized VRF Building Control System - Field Instrumentation - Indoor FC Units
M26	Centralized VRF Building Control system - Field Instrumentation - HRV's
M27	Centralized VRF Building Control System - Field Instrumentation - Heating
M28	Emergency Generator Ventilation Controls
M29	Emergency Generator Fuel Monitoring
M30	Fuel Tank and Piping

1.5 CHANGES AND
DEVELOPMENT OF NEW
REPORT FORMS

- .1 When additional forms are required, but are not available from Departmental Representative develop appropriate verification forms and submit to Departmental Representative for approval prior to use.
- .1 Additional commissioning forms to be in same format as provided by Departmental Representative.

- 1.6 COMMISSIONING FORMS
- .1 Use Commissioning forms to verify installation and record performance when starting equipment and systems.
 - .2 Strategy for Use:
 - .1 Departmental Representative provides Contractor project-specific Commissioning forms with Specification data included.
 - .2 Contractor will provide required shop drawings information and verify correct installation and operation of items indicated on these forms.
 - .3 Confirm operation as per design criteria and intent.
 - .4 Identify variances between design and operation and reasons for variances.
 - .5 Verify operation in specified normal and emergency modes and under specified load conditions.
 - .6 Record analytical and substantiating data.
 - .7 Verify reported results.
 - .8 Form to bear signatures of recording technician and reviewed and signed off by Departmental Representative.
 - .9 Submit immediately after tests are performed.
 - .10 Reported results in true measured SI unit values.
 - .11 Provide Departmental Representative with originals of completed forms.
 - .12 Maintain copy on site during start-up, testing and commissioning period.
 - .13 Forms to be both hard copy and electronic format with typed written results in Maintenance Manual.
- 1.7 LANGUAGE
- .1 To suit the language profile of the awarded contract.
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PART 2 - PRODUCTS

2.1 NOT USED .1 Not Used.

PART 3 - EXECUTION

3.1 NOT USED .1 Not Used.