

The following standard specification is intended to be edited according to the specifics of the project. Brackets [] and areas shaded in gray [e.g. format] indicate requirements that are optional depending upon the type of system being provided or per instructions associated with the [] and project requirements. Consult with University's Representative and campus stakeholders.

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SECTION 23 08 00 COMMISSIONING OF HVAC

PART 1 - GENERAL

1.1 DESCRIPTION

- A. Commission all systems and equipment listed in the table below per the requirements of Section 01 91 00 Commissioning. The Installation/Start-up Verification (ISV) and Functional Performance Test (FPT) forms listed are required [and templates will be provided by the University].

[Edit the table and the checklists as required by the project.]

Equipment/System	ISV Form	FPT Form
Testing, Adjusting, and Balancing for HVAC	ISV-23 05 93	FPT-23 05 93
Instrumentation and Control for HVAC (Building EMS)	ISV-23 09 00-1	FPT-23 09 00
Instrumentation and Control for HVAC (Laboratory Air Flow Control Systems)	ISV-23 09 10-2	FPT-23 09 10
Control Air Compressor for HVAC	ISV-23 09 43	
Chilled Water Systems	N/A	FPT-23 21 00-1
Heating Water Systems	N/A	FPT-23 21 00-2
Hydronic Piping (Chilled Water and Heating Hot Water)	ISV- 23 21 13	N/A
Hydronic Pumps CHW	ISV-23 21 23	w/ FPT-23 21 00-1
Hydronic Pumps HHW	ISV-23 21 23	w/ FPT-23 21 00-2
Steam and Condensate Heating Piping	ISV-23 22 13	N/A
Metal Ducts	ISV-23 31 13	N/A
HVAC Fans	ISV-23 34 00	w/ FPT-23 73 00
Air Terminal Units - Commercial	ISV-23 36 23	w/ FPT-23 73 00
Air Terminal Units - Laboratory	ISV-23 36 33	w/ FPT-23 73 00
Heat Exchangers for HVAC CHW	ISV-23 57 00-1	w/ FPT-23 21 00-1
Heat Exchangers for HVAC HHW	ISV-23 57 00-2	w/ FPT-23 21 00-2
Cooling Towers	ISV-23 65 00	w/ FPT-23 65 00
Air Handling Systems	N/A	FPT-23 73 00
Packaged, Outdoor, Central-Station Air-Handling Units	ISV 23 74 13	FPT-23 74 13
Custom-Packaged, Outdoor, Central Station Air-Handling Units	23 75 13	FPT-23 75 13
Evaporative Air-Cooling Equipment	23 76 00	FPT-23 76 00
Split-System Air-Conditioners	ISV-23 81 26	N/A

Fan Coil Units	ISV-23 82 19	FPT-23 82 19
Induction Units	ISV-23 82 26	w/ FPT-23 73 00

1.2 RELATED WORK AND DOCUMENTS

- A. Section 01 79 00 Demonstration and Training
- B. Section 01 91 00 Commissioning
- C. Division 23 Heating, Ventilating, and Air Conditioning

1.3 COMMISSIONING DEFINITIONS AND ABBREVIATIONS

- A. Refer to Section 01 91 00 Commissioning.

1.4 REFERENCE STANDARDS

- A. Sheet Metal and Air Conditioning Contractors National Association (SMACNA) Guidelines
- B. American Society for Testing and Materials (ASTM)
- C. Associated Air Balance Counsel (AABC) Guidelines for Balancing Procedures and Documentation

1.5 SUBMITTALS

- A. Submit commissioning documents for all equipment and systems listed in table above per the requirements of Section 01 91 00 Commissioning.

PART 2 - PRODUCTS

2.1 INSTRUMENTATION

- A. Refer to Section 01 91 00 Commissioning.

PART 3 - EXECUTION

3.1 INSTALLATION/START-UP VERIFICATION

- A. Perform all checks and tests included in the ISV checklists and complete the checklists as specified in Section 01 91 00 Commissioning.

3.2 FUNCTIONAL PERFORMANCE TESTS

- A. Perform all checks and tests included in the FPT checklists and complete the checklists as specified in Section 01 91 00 Commissioning.

3.3 TRAINING OF UNIVERSITY PERSONNEL

- A. Provide training of University's personnel for the number of hours specified in the table below and as specified in Section 01 79 00 Demonstration and Training.

PROJECT TITLE
CONTRACT TITLE
UNIVERSITY OF CALIFORNIA, DAVIS
CITY, CALIFORNIA

PROJECT NO: 0000000
GRANT NO: 0000000

[Edit the table as required by the project. Project Manager to coordinate with DCM Engineering and O&M Facilities]

Equipment/System	Section Number	Orientation Hours	Training Hours	DVD Recording
Instrumentation and Control for HVAC (Building EMS)	23 09 00	TBD	TBD	N/A
Instrumentation and Control for HVAC (Laboratory Air Flow Control Systems)	23 09 10	TBD	TBD	N/A
Chilled Water Systems	23 21 00	2	4	N/A
Heating Water Systems	23 21 00	2	4	N/A
Condenser Water Systems	23 21 00	2	4	N/A
Steam and Condensate Systems	23 22 13	1	2	N/A
Air Handling Systems	23 73 00	4	8	N/A

END OF SECTION 23 08 00