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USACE / NAVFAC / AFCEC / NASA                      UFGS-23 22 13.35 40 (February 2014)  
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Preparing Activity:    NASA                      Superseding  
   UFGS-23 22 13.35 40 (February 2011)  
   UFGS-23 22 13.35 (May 2010)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated October 2014

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#### STEAM TRAPS

02/14

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### SECTION 23 22 13.35 40

#### STEAM TRAPS 02/14

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NOTE: This guide specification covers the requirements for steam traps.

Adhere to UFC 1-300-02 Unified Facilities Guide Specifications (UFGS) Format Standard when editing this guide specification or preparing new project specification sections. Edit this guide specification for project specific requirements by adding, deleting, or revising text. For bracketed items, choose applicable items(s) or insert appropriate information.

Remove information and requirements not required in respective project, whether or not brackets are present.

Comments, suggestions and recommended changes for this guide specification are welcome and should be submitted as a Criteria Change Request (CCR).

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#### PART 1 GENERAL

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NOTE: If Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.

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Section 23 00 00 AIR SUPPLY, DISTRIBUTION, VENTILATION, AND EXHAUST SYSTEMS applies to work specified in this section.

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NOTE: Show schedule of normal condensing rate in the drawings. Specify the equipment and capacity safety factor. Number each trap sequentially with the prefix ST. Thermodynamic traps are not acceptable due to pressure limitations.

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## 1.1 REFERENCES

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NOTE: This paragraph is used to list the publications cited in the text of the guide specification. The publications are referred to in the text by basic designation only and listed in this paragraph by organization, designation, date, and title.

Use the Reference Wizard's Check Reference feature when you add a RID outside of the Section's Reference Article to automatically place the reference in the Reference Article. Also use the Reference Wizard's Check Reference feature to update the issue dates.

References not used in the text will automatically be deleted from this section of the project specification when you choose to reconcile references in the publish print process.

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The publications listed below form a part of this specification to the extent referenced. The publications are referred to within the text by the basic designation only.

### ASTM INTERNATIONAL (ASTM)

ASTM A105/A105M	(2013) Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A216/A216M	(2014) Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service
ASTM A278/A278M	(2001; R 2011) Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650 degrees F (350 degrees C)

## 1.2 SUBMITTALS

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NOTE: Review Submittal Description (SD) definitions in Section 01 33 00 SUBMITTAL PROCEDURES and edit the following list to reflect only the submittals required for the project.

The Guide Specification technical editors have designated those items that require Government approval, due to their complexity or criticality, with a "G." Generally, other submittal items can be reviewed by the Contractor's Quality Control System. Only add a "G" to an item, if the submittal is sufficiently important or complex in context of the project.

For submittals requiring Government approval on Army projects, a code of up to three characters within the submittal tags may be used following the "G" designation to indicate the approving authority. Codes for Army projects using the Resident Management System (RMS) are: "AE" for Architect-Engineer; "DO" for District Office (Engineering Division or other organization in the District Office); "AO" for Area Office; "RO" for Resident Office; and "PO" for Project Office. Codes following the "G" typically are not used for Navy, Air Force, and NASA projects.

An "S" following a submittal item indicates that the submittal is required for the Sustainability Notebook to fulfill federally mandated sustainable requirements in accordance with Section 01 33 29 SUSTAINABILITY REQUIREMENTS.

Choose the first bracketed item for Navy, Air Force and NASA projects, or choose the second bracketed item for Army projects.

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Government approval is required for submittals with a "G" designation; submittals not having a "G" designation are [for Contractor Quality Control approval.] [for information only. When used, a designation following the "G" designation identifies the office that will review the submittal for the Government.] Submittals with an "S" are for inclusion in the Sustainability Notebook, in conformance to Section 01 33 29 SUSTAINABILITY REQUIREMENTS. Submit the following in accordance with Section 01 33 00 SUBMITTAL PROCEDURES:

#### SD-03 Product Data

Manufacturer's Catalog Data[; G][; G, [\_\_\_\_\_]]

#### SD-02 Shop Drawings

Installation Drawings[; G][; G, [\_\_\_\_\_]]

#### SD-07 Certificates

Listing of Product Installation[; G][; G, [\_\_\_\_\_]]

Steam Traps[; G][; G, [\_\_\_\_\_]]

Trap Bodies and Components[; G][; G, [\_\_\_\_\_]]

### 1.3 QUALITY ASSURANCE

Submit listing of product installation for steam traps, indicating at least [five] [\_\_\_\_\_] installed units, similar to those proposed for use, that have been in successful service for a minimum of [five] [\_\_\_\_\_] years.

## PART 2 PRODUCTS

Submit manufacturer's catalog data for steam traps in accordance with

referenced standards contained in this section.

## 2.1 MATERIALS

Ensure that traps exposed to weather are freezeproof.

Submit certificates for steam traps and trap bodies and components showing conformance with the referenced standards contained in this section.

Provide cast iron trap bodies for pressures 860 kilopascal 125-psi wsp and under in accordance with ASTM A278/A278M, Class 30.

Provide welded end connection trap bodies of [cast steel in accordance with ASTM A216/A216M, Grade WCB] [forged carbon steel in accordance with ASTM A105/A105M].

## 2.2 EQUIPMENT

### 2.2.1 Trap Type And Construction

Provide trap bodies and components with a primary working steam pressure (wsp)-rating equal to or in excess of the maximum wsp of the steam system to which they are applied.

Ensure traps have permanent external identification of service indicating rating and orifice size.

#### [2.2.1.1 Type IB

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**NOTE: Select applicable type of trap and delete  
those not used in project.**  
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Provide inverted bucket traps with AISI 300 Series corrosion-resistant steel floats and operating mechanisms, and hardened 13 percent chrome corrosion-resistant steel seats and valves.

Provide bimetallic type thermostatic elements.

Design traps to permit removal and replacement of all operating and wearing parts without disturbing piping connections to trap body.

Provide strainers as an integral part of the body.

Provide bodies with plugged priming and draining openings.

Provide test cocks.

#### ] 2.2.1.2 Type F&T

Provide float and thermostatic traps with AISI 300 series corrosion-resistant steel, heliarc-welded floats and operating mechanisms, with 13 percent chrome corrosion-resistant hardened steel seats and valves.

Balance pressure type thermostatic elements, with corrosion-resistant alloy bellows charged with a fluid that provides the most rapid response to changes in temperature.

Make bellows suitable for service with condensate having a pH of 6.0.

Design traps to permit removal and replacement of all operating and wearing parts without disturbing piping connections to trap body.

Design bellows to permit removal while hot without overexpansion and shield from direct blast of steam and condensate.

Fit bodies with drain plug.

#### ] [2.2.1.3 Type T

Balance thermostatic traps, pressure type, with corrosion-resistant alloy bellows charged with a fluid that provides the most rapid response to change in temperature.

Make bellows suitable for service with a condensate having a pH of 6.0. Shield bellows from direct blast of steam and condensate and design to permit removal while hot without overexpansion.

Provide hardened valves and valve seats made of 13 percent chrome corrosion-resistant steel.

Design traps to permit removal and replacement of all operating and wearing parts without disturbing piping connections.

#### ] PART 3 EXECUTION

##### 3.1 INSTALLATION

Submit installation drawings for steam traps in accordance with the manufacturer's published instructions.

Install traps and trap components in accordance with the manufacturer's instructions.

##### 3.1.1 Trap Application

<u>SERVICE</u>	<u>TRAP TYPE</u>
Steam mains, risers, branches	Type IB, inverted bucket with thermostatic air vent where
Steam mains, risers, and branches, weather-exposed and subject to freezing	Refer to drawings
Steam coils associated with fans	Type F&T, float and thermo-static
Steam coils not associated with fans and not subject to freezing	Type T, thermostatic
Hot-water converter	Type F&T, float and thermo-static
Flash tank	Type IB, inverted bucket

##### 3.1.2 Trap-Sizing Criteria

Size traps in steam mains, risers, and branches to provide an actual capacity, under normal operating conditions, of not less than three times

the normal condensing rate.

Size traps draining underground steam mains to provide an actual capacity, under normal operating conditions, of not less than four times the normal condensing rate.

Size traps in steam mains, risers, and branches, weather-exposed and subject to freezing, to provide an actual capacity, under normal operating conditions, of two times normal condensing rate and duplex. Provide two identical traps, sized appropriately at each drainage point.

Size traps draining steam coils under modulating control to provide an actual capacity, under conditions normal to the system and including 3.5 kilopascal 1/2-pound per square inch (psi) coil pressure, of two times normal condensing rate and capable of opening at maximum coil steam pressure.

Size traps in all other services to provide an actual capacity, under normal operating conditions, of three times normal condensing rate.

Trap safety factors are minimal. Increase safety factor where necessary to ensure proper system drainage for a given application. Do not decrease without written approval of the Contracting Officer.

-- End of Section --