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Preparing Activity: NASA Superseding  
UFGS-23 22 13.35 (May 2010)

## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2011

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### SECTION 23 22 13.35 40

#### STEAM TRAPS 02/11

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NOTE: This 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: 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	(2010a) Standard Specification for Carbon Steel Forgings for Piping Applications
ASTM A216/A216M	(2008) Standard Specification for Steel Castings, Carbon, Suitable for Fusion Welding, for High-Temperature Service
ASTM A278/A278M	(2001; R 2006) Standard Specification for Gray Iron Castings for Pressure-Containing Parts for Temperatures Up to 650 degrees F (350 degrees C)

## 1.2 GENERAL REQUIREMENTS

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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.

Submit [manufacturer's catalog data](#) for steam traps in accordance with referenced standards contained in this section.

Submit [installation drawings](#) for steam traps in accordance with the manufacturer's published instructions.

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.

## 1.3 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. Submittals should be kept to the minimum required for adequate quality control.

A "G" following a submittal item indicates that the submittal requires Government approval. Some submittals are already marked with a "G". Only delete an existing "G" if the submittal item is not complex and can be reviewed through the Contractor's Quality Control system. Only add a "G" 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.

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.] 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, [\_\_\_\_\_]]

## PART 2 PRODUCTS

### 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.

## 2.2 TRAP APPLICATION

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

## 2.3 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.

## 2.4 TRAP TYPE, CONSTRUCTION, AND MATERIALS

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.

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].

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

#### [2.4.1 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.

#### ] [2.4.2 Type F&T

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

Balance thermostatic elements, pressure type, 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.

#### ] [2.4.3 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 TRAP INSTALLATION

Install traps in accordance with the manufacturer's instructions.

#### 3.2 COMPONENT INSTALLATION

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

-- End of Section --