UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated January 2021
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SECTION 01 42 15

METRIC MEASUREMENTS
02/14

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NOTE: This guide specification covers the requirements for metric measurements in project specifications. Only use this section in metric system (SI) projects.

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 item(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

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 Reference Identifier (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 SI10	(2016) American National Standard for Use of the International System of Units (SI): The Modern Metric System

1.2 GENERAL

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NOTE: The Metric Conversion Act of 1975 (P.L. 94-168) designated the metric (SI) system as the preferred system of measurements in the United States. The Omnibus Trade and Competitiveness Act of 1988 (P.L. 100-418) amended the 1975 Act (P.L. 94-168) to include a requirement for each Federal agency "to the extent economically feasible ..., use the metric system of measurement..., except to the extent that such use is impractical or is likely to cause significant inefficiencies...".

Executive Order 12770 of July 25, 1991, Metric Usage in Federal Government Programs, assigned certain responsibilities to the Department of Commerce and to the Executive Branch departments and agencies toward implementation of P.L. 94-168 and P.L. 100-418. The Executive Order requires use of the metric system of measurement in Federal Government procurements, grants, and other business related activities "to the extent economically feasible" and further states that "Metric usage shall not be required to the extent that such use is impractical or is likely to cause significant inefficiencies or loss of markets to United States firms".

Public Law 104-289 of October 11, 1996, Savings in Construction Act of 1996 (110 Stat. 3411) states that "a Federal agency may require that specifications for the acquisition of structures or systems of concrete masonry be expressed under the metric system of measurement, but may not incorporate specifications, that can only be satisfied by hard-metric versions of concrete masonry units, .. unless.. 1) hard-metric specifications are necessary in a contract for the repair or replacement of parts .. in existence or under construction upon the effective date of the Savings in Construction Act of 1996; or 2) the

following 2 criteria are met: (A) the application requires hard-metric concrete masonry units to coordinate dimensionally into 100 millimeter building modules; and (B) the total installed price of hard-metric concrete masonry units is estimated to be equal to or less than the total installed price of using non-hard-metric concrete masonry units." The Savings in Construction Act of 1996 also contains similar requirements for recessed lighting fixtures.

This guide specification establishes the basis for Contractor compliance with the specified metric requirements and provides information necessary for the Contractor and Government administrative personnel to better understand the metric requirements. This guide specification is to be used in projects designated to use metric measurements.

ASTM SI10 have been used to the extent practicable in establishing the metric measurements in guide specifications.

The following is an illustration of designer choices for SI or I-P measurements:

SI MEASUREMENT	I-P MEASUREMENT
50 mm	2 inches
50.8 mm	2 inches

For the choices shown above, the metric measurement of 50 mm is a soft metric value, and 50.8 mm is a hard metric value.

The UFGS are prepared with both the SI and I-P measurements, including appropriate automation tagging. During the SPECSINTACT Editor viewing and SPECSINTACT printing process two automated options are available:

1) For individual sections in the project either all SI or all I-P units can be selected.

2) For all sections in the project either all SI or all I-P units can be used.

A third option for a mix of SI and I-P units in a section is not automatic and requires the removal of the measurement tags and the unwanted requirements on a case by case basis during the editing process.

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This project includes metric units of measurements. The metric units used are the International System of Units (SI) developed and maintained by the

General Conference on Weights and Measures (CGPM); the name International System of Units and the international abbreviation SI were adopted by the 11th CGPM in 1960. When both metric and English inch-pound (I-P) measurements are includedthe specification may contain measurements for products that are manufactured to an industry recognized rounded metric (hard metric) dimensions but are allowed to be substituted by I-P products, to indicate industry and/or Government standards, test values or other controlling factors, such as the code requirements where I-P values are needed for clarity, or to trace back to the referenced standards, test values or codes.

1.3 USE OF MEASUREMENTS IN SPECIFICATIONS

Measurements in specifications are either in SI or I-P units as indicated, except as otherwise authorized. When only SI or I-P measurements are specified for a product, procure the product in the specified units (SI or I-P) unless otherwise authorized by the Contracting Officer. The Contractor is responsible for all associated labor and materials when authorized to substitute one system of units for another and for the final assembly and performance of the specified work and/or products.

1.3.1 Hard Metric

Hard metric measurements are often used for field data such as distance from one point to another or distance above the floor. Products are considered to be hard metric when they are manufactured to metric dimensions or have an industry recognized metric designation.

1.3.2 Soft Metric

a. A soft metric measurement is a non-mathematical, industry related conversion. Soft metric measurements are used for measurements pertaining to products, test values, and other situations where the I-P units are the standard for manufacture, verification, or other controlling factor.

b. A soft metric measurement is also indicated for products that are manufactured in industry designated metric dimensions but are required by law to allow substitute I-P products.

1.3.3 Neutral

A neutral measurement is indicated by an identifier which has no expressed relation to either an SI or an I-P value (e.g., American Wire Gage (AWG) which indicates thickness but in itself is neither SI nor I-P).

1.4 COORDINATION

Bring discrepancies, such as mismatches or product unavailability, arising from use of both metric and non-metric measurements and discrepancies between the measurements in the specifications and the measurements in the drawings to the attention of the Contracting Officer for resolution.

1.5 RELATIONSHIP TO SUBMITTALS

Submittals for Government approval or for information only covers the SI or I-P products actually being furnished for the project. Submit the required drawings and calculations in the same units used in the contract documents describing the product or requirement unless otherwise

instructed or approved. Use ASTM SI10 as the basis for establishing metric measurements required to be used in submittals.

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