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NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

NASA/KSC-26 05 19.33 98 (July 2020)

Preparing Activity: NASA

Superseding
NASA/KSC-26 05 19.33 98 (February 2014)
NASA/KSC-26 05 19.00 98 (October 2007)

UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated July 2023

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SECTION 26 05 19.33 98

MINERAL-INSULATED (MI) CABLE
07/20

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NOTE: This specification covers the requirements for this KSC local specification covers mineral insulated (MI) electrical cables.

This section is not to be changed but used in its entirety whenever (MI) cable is required on the project. Notes are for designer information and do not appear in the final project specification.

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.

Recommended changes to a NASAKSC Master Specification Section should be submitted as a Criteria Change Request (CCR) to the appropriate Technical Proponent (TP) through the SpecsIntact Help Desk.

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PART 1 GENERAL

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NOTE: If Section 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL and Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS are not included in the project specification, insert applicable requirements therefrom and delete the following paragraph.

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Section 26 05 00.00 40 COMMON WORK RESULTS FOR ELECTRICAL and Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS apply to work specified in this section.

All work in this section that is covered by procedure 79K06110 is to be in accordance with Specification 79K06110.

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 section to the extent referenced. The publications are referred to within the text by the basic designation only.

INSTITUTE OF ELECTRICAL AND ELECTRONICS ENGINEERS (IEEE)

IEEE C2 (2023) National Electrical Safety Code

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 70 (2023) National Electrical Code

1.2 RELATED REQUIREMENTS

This section references Kennedy Space Center document 79K06110, Procedure for MI Cable Termination. Coordinate with Contracting Officer (CO) to obtain a copy of this procedure document.

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, and corresponding submittal items in the text, to reflect only the submittals required for the project.

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.

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 REPORTING.

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Government approval is required for submittals with a "G" or "S" classification. Submittals not having a "G" or "S" classification are [for Contractor Quality Control approval.][for information only. When used, a code following the "G" classification 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

Mineral-Insulated (MI) Cable[; G]

Sealing Compound[; G]

SD-06 Test Reports

Test Report[; G]

SD-07 Certificates

Mineral-Insulated (MI) Cable[; G]

Sealing Compound[; G]

1.4 Regulatory Requirements

In each of the publications referred to herein, consider the advisory provisions to be mandatory, as though the word, "shall" had been substituted for "should" wherever it appears. Interpret references in these publications to the "authority having jurisdiction," or words of similar meaning, to mean the Contracting Officer. Ensure equipment, materials, installation, and workmanship are in accordance with the mandatory and advisory provisions of NFPA 70, IEEE C2 unless more stringent requirements are specified or indicated.

1.5 Standard Products

Provide materials and equipment that are products of manufacturers regularly engaged in the production of such products which are of equal material, design and workmanship. Provide products which have been in satisfactory commercial or industrial use for 2 years prior to bid opening. Ensure the 2-year period includes applications of equipment and materials under similar circumstances and of similar size. Ensure the product has been on sale on the commercial market through advertisements, manufacturers' catalogs, or brochures during the 2-year period. Where two

or more items of the same class of equipment are required, these items must be products of a single manufacturer.

PART 2 PRODUCTS

2.1 MINERAL-INSULATED (MI) CABLE

Provide MI cable consisting of soft annealed, uncoated, copper conductors insulated with a highly compressed refractory mineral insulation and complying with NFPA 70.

2.2 SEALING COMPOUND

Ensure sealing compound is in accordance with Kennedy Space Center procedure 79K06110.

PART 3 EXECUTION

3.1 GENERAL

Measure the length of cable needed for a particular run. Make allowance for the length of conductor needed at each end to properly make the desired terminations and add minimum of 48 inches 1220 millimeter of cable to be wrapped into a service loop at each end to the required length.. Cut cable to the necessary length with a hacksaw. Do not use cable cutters and other cutting tools that exert excessive pressure on the metallic sheath. Immediately following cutting, seal both ends of the cable in accordance with Kennedy Space Center procedure 79K06110 to prevent moisture penetration of the insulation. Cut cable immediately preceding installation.

Train cable into place by hand wherever possible. On straight runs, place into its final position by tapping cable with a wooden mallet, block, or plank.

Avoid sharp bends and kinks during preliminary handling and training.

Support cable at least every 1800 millimeter 6 feet during handling and training.

Make bends by approved template or hand hickey. Minimum bending radius of the inside edge of any bend is five times the diameter of the cable.

Make cable termination in accordance with Kennedy Space Center procedure 79K06110.

Support MI cables as shown in the contract drawings. Intervals between supports are not to be more than 1800 millimeter 6-feet on both horizontal and vertical runs. MI cable installed in ducts, raceways, conduits, and cable trays is deemed adequately supported along horizontal runs. Wrap cable with an adhesive heat-resistant glass tape at each support point to minimize electrolysis between the cable sheath and the supports. Minimum thickness of wrap is 0.36 millimeter 14-mils (two complete wraps of 0.18 millimeter 7-mil tape). Extend wrap past the support device a minimum of 6.4 millimeter 1/4-inch on each side. As an alternative to the tape wrapping, MI cable with a plastic jacket may be used.

Ensure no splices are made in runs of MI cable unless specifically shown in the contract drawings. If splices are shown, make splices only in

junction boxes.

3.2 TESTS

Test MI cables in accordance with Kennedy Space Center procedure 79K06110. Furnish a copy of the completed test report to the Contracting Officer

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