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## UNIFIED FACILITIES GUIDE SPECIFICATIONS

References are in agreement with UMRL dated October 2010

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#### DIVISION 26 - ELECTRICAL

#### SECTION 26 53 00.00 40

#### EXIT SIGNS

11/08

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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.

NATIONAL FIRE PROTECTION ASSOCIATION (NFPA)

NFPA 101 (2009; TIA 09-1; TIA 09-2) Life Safety Code

U.S. DEPARTMENT OF ENERGY (DOE)

DOE LT-4 (2000) How to Buy Energy-Efficient Exit Signs

U.S. NATIONAL ARCHIVES AND RECORDS ADMINISTRATION (NARA)

29 CFR 1910 Occupational Safety and Health Standards

UNDERWRITERS LABORATORIES (UL)

UL 924 (2006; R thru 2009) Standard for Emergency Lighting and Power Equipment

## 1.2 GENERAL REQUIREMENTS

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NOTE: If Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS is not included in the project specification, applicable requirements therefrom should be inserted and the following paragraph deleted.

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Section 26 00 00.00 20 BASIC ELECTRICAL MATERIALS AND METHODS applies to work specified in this section.

Material, Equipment, and Fixture Lists shall be submitted for the following showing manufacturer's style or catalog numbers, specification and drawing reference numbers, warranty information, and fabrication site.

## 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-01 Preconstruction Submittals

Material, Equipment, and Fixture Lists shall be submitted for the following in accordance with paragraph entitled, "General Requirements," of this section.

Exit Lighting Units  
Contemporary Fixtures  
Accessories

#### SD-02 Shop Drawings

Installation drawings shall be submitted for Exit Lighting Units in accordance with the paragraph entitled, "Installation," of this section.

Outline drawings shall be submitted for Exit Lighting Units indicating overall physical features, dimensions, ratings, service requirements, and weights of equipment.

#### SD-03 Product Data

Manufacturer's catalog data shall be submitted for the following items:

Exit Lighting Units  
Contemporary Fixtures  
Accessories

## SD-06 Test Reports

Test reports shall be submitted showing results of **Operational Tests** of exit lighting systems.

## SD-07 Certificates

Certificates shall be submitted showing compliance with the following requirements.

### Efficiencies

## PART 2 PRODUCTS

### 2.1 PRODUCT STANDARDS

Emergency exit lighting fixtures shall conform to **UL 924**, **NFPA 101**, and as specified.

Exit lighting fixtures shall be furnished completely assembled with wiring and mounting devices and ready for installation at the locations indicated. Ceiling-mounted fixtures shall be designed to be supported independent of the ceiling. Fixtures shall be equipped with lamps.

#### 2.1.1 Efficiencies

Exit lighting fixtures shall have efficiencies in accordance with the recommended levels specified in **DOE LT-4**.

### 2.2 CONTEMPORARY FIXTURES

Contemporary exit lighting fixture shall have a fixture body with edge-lighted plastic exit-sign panels, face trims, lamps, lampholders, and mounting brackets for top, back, and end mounting to walls and ceilings in accordance with **NFPA 101**, as indicated.

Fixtures shall be [single] [double] face with thin wedge-shaped vertical cross sections. Top edge of double-face fixtures shall be not more than [70] [ ] millimeter [2-3/4] [ ]-inches thick. Top edge of single-face fixtures shall be not more than [50] [ ] millimeter [2] [ ]-inches thick. Bottom edge of double-face fixtures shall be not more than [45] [ ] millimeter [1-3/4] [ ]-inches thick. Bottom edge of single-face fixtures shall be not more than [32] [ ] millimeter [1-1/4] [ ]-inches thick.

Plastic sign panels shall be acrylic with [green] [ ] translucent letters and directional arrows, as required. Letters shall be [150] [ ] millimeter [6] [ ]-inches high with stroke not less than [30] [ ] millimeter [3/4] [ ] inch wide.

Wireway cover and plastic sign backup plate shall be [anodized sheet aluminum with a matte finish] [ ]. Face trims shall be formed from [sheet aluminum and shall have a brushed-satin finish] [ ]. [Fixture bodies formed from sheet steel shall be not less than [1] [ ] millimeter [20] [ ] gage and painted.]

Plastic sign panels shall be edge-lighted from the top with at least two low-voltage miniature incandescent lamps that will illuminate the plastic sign panels and floor. Exit signs shall be wired for two-circuit service

at [120] [277] volts and shall include a diode circuit that will provide a minimum of [50,000] [\_\_\_\_\_] hours of lamp life.

Mounting plates and brackets formed from sheet aluminum or plate shall have a brushed-satin finish. Mounting plates shall be not less than [115] [\_\_\_\_\_] millimeter [4-1/2] [\_\_\_\_\_] inches square and designed to secure the fixture to a [100] [\_\_\_\_\_] millimeter [4] [\_\_\_\_\_] inch square outlet box.

## 2.3 EMERGENCY POWER LOSS EXIT LIGHTING UNITS

Each self-contained unit shall have an automatic power failure device, test switch, pilot light, and fully automatic high/low solid-state trickle charger in a self-contained power pack. Battery shall be the [sealed-wet] [gelled-electrolyte] type and shall be maintenance-free for a period of not less than [10] [\_\_\_\_\_] -years under normal operating conditions. Normal operation shall be with [120] [277] -volts. [Emergency lighting panel shall be used.]

## 2.4 LIGHT EMITTING DIODES (LEDs) EXIT LIGHTING FIXTURES

Exit lighting fixtures shall include sheetmetal enclosures with frames, battery charger, batteries, [green] [red] light emitting diodes (LEDs) and mounting brackets. Fixtures shall be [single] [double] faced. Mounting plates shall be suitable for securing the fixture to a 4 inch 100 millimeter outlet box. Fixture features shall include continuous charging, automatic switching to standby batteries upon loss of power, overload protection, short circuit protection, test switch, low voltage disconnect, switch controlled left and right LED directional arrows, and shall be field connectable to operate from [115] [277] volts. Minimum operating time of the battery system shall be three (3) hours for double faced fixtures and seven (7) hours for single faced fixtures. Brightness shall not be less than ten (10) candela candlepower. All components shall have a five year warranty.

## 2.5 SELF LUMINOUS EXIT SIGNS

All units shall be internally illuminated non-electric (light source is independent of electrical power and is generated by the action of tritium gas on a phosphorescent material).

All self luminous signs shall be in accordance with UL 924, 29 CFR 1910, Section 37, Part (G), Subparts (6) and (7), and NFPA 101, Section 5-10.3.3. All signs shall be licensed by the United States Nuclear Regulatory Commission. Integrity and performance shall be guaranteed for 20 years of normal use.

### 2.5.1 Enclosure

The assembled tamperproof enclosure shall be of [3 millimeter 1/8 inch high impact ABS plastic] [0.5 millimeter 0.20 inch thickness metal], framed with 1.3 millimeter 0.50 inch thick extruded aluminum.

Each sign shall bear a permanently attached [metal] [plastic] nameplate bearing the Manufacturer's Name and Address and Date of Manufacture (in addition to information required by listed authorities).

### 2.5.2 Face

Each face of the sign shall be a non-colored translucent panel covered by

an opaque 3 millimeter 1/8 inch red ABS plastic stencil bearing the word "EXIT" in 150 by 20 millimeter 6 by 3/4 inch letters and including a universal directional arrow which indicates the direction of the exit (left, right or both ways).

#### 2.5.3 Illumination

Illumination of the sign shall be by means of sealed glass tubes, internally phosphor coated and filled with tritium gas. Tubes shall be securely bonded to the enclosure and cushioned against mechanical shock. Luminous areas shall have a minimum initial brightness of 0.51 candela per square meter 0.15 foot lamberts and a guaranteed minimum brightness after ten years of 0.27 candela per square meter 0.080 foot lamberts.

#### 2.5.4 Mounting Accessories

Each sign shall be supplied with tamperproof hardware for wall mounting. Edge on for double face, flat for single face or double face for ceiling mount.

### PART 3 EXECUTION

#### 3.1 INSTALLATION

Fixtures shall be connected to the main panel bus through overcurrent protection. Emergency lighting panel shall be used where available.

#### 3.2 FIELD TESTING

Exit lighting shall be demonstrated to operate satisfactorily in the presence of the Contracting Officer.

Operational Tests shall be performed in accordance with referenced standards in this section.

-- End of Section --