

WMATA MANUAL OF DESIGN CRITERIA

WASHINGTON METROPOLITAN AREA TRANSIT AUTHORITY



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Chief, Infrastructure Services

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PREFACE**

The Chief Engineer is pleased to endorse this updated version of the **Washington Metropolitan Area Transit Authority (WMATA)**, WMATA Manual of Design Criteria. This manual establishes the **engineering design criteria for WMATA's Facilities and Systems**.

Authorized:

Chief Engineer Infrastructure Services

R. Louis Viner, Jr.

A handwritten signature in black ink, appearing to read "R. Louis Viner, Jr.", written over a horizontal line.

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- 1.3.8.6.1.3 Dark polished bronze: handrails, outlets & fittings, exterior station pylon, escalator cladding
- 1.3.8.6.1.4 Porcelain enamel metal panel: kiosk, signage pylons, etc.
- 1.3.8.6.1.5 Unglazed quarry tile: hexagonal, typical size 8" nominal across flats, reddish brick color, "flashed"
- 1.3.8.6.1.6 Brown color: Federal Specification 595C, color number 20040
- 1.3.8.6.1.7 Metal ceiling panels: 30"x30" grid, or rectangular independent panels; warm white color
- 1.3.8.6.2 Modern Palette for new WMATA Rail Stations (in addition to the "historic" palette)
 - 1.3.8.6.2.1 Stainless steel railings, escalator cladding, platform and mezzanine equipment cabinets, platform shelters, mesh and wire fabric enclosure
 - 1.3.8.6.2.2 Low-E clear vision glazing at vertical applications
 - 1.3.8.6.2.3 Fritted or tinted laminated heat-strengthened glass at roof or horizontal applications without screening
 - 1.3.8.6.2.4 Warm light gray for exposed and clad metal structures
 - 1.3.8.6.2.5 Precast concrete pavers for exterior station platforms
 - 1.3.8.6.2.6 Porcelain tile for exterior station mezzanines and passageways
- 1.3.9 Design Requirements for All WMATA Facilities
 - 1.3.9.1 Where public elevators are provided, a minimum of two elevators in close proximity or adjacent are required, for operational redundancy.
 - 1.3.9.2 All walking surfaces intended for public use shall be slip-resistant and heel-proof.
 - 1.3.9.3 WMATA requires all low-slope roofs to be white EPDM, provided in the manufacturer's highest available thickness.
 - 1.3.9.4 Due to maintenance considerations, limit use of tamper proof screws and keyed equipment to locations where this manual deems they are necessary.
 - 1.3.9.5 Exterior facilities and structures must be carefully examined for bird and pest proofing measures required to protect the public and reduce maintenance.

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- 1.3.9.6** All occupied WMATA facilities shall be fully sprinklered. Storage and equipment rooms and/or facilities may have alternate fire suppression systems as specified by WMATA.
- 1.3.9.7** Glazing size shall be limited to four feet by eight feet, maximum.
- 1.3.9.8** Roof Design Criteria:
 - 1.3.9.8.1** The Authority requires white EPDM membrane roofing on new facilities; exceptions for alternates can be granted by WMATA Manager of Architecture.
 - 1.3.9.8.2** Membrane systems for new facilities shall either be protected by a paver and pedestal system, approved green roof system, or shall be fully adhered.
 - 1.3.9.8.3** For reroofing, membrane roofing is preferred for replacing most flat roofing types, including BUR; standing seam metal may be replaced in kind or with a membrane with applied batten strips provided by the manufacturer to simulate standing seams.
 - 1.3.9.8.4** Membrane roofing must be able to withstand all applicable wind loads and resist UV exposure, thermal forces, and chemical and biological contaminant exposure.
 - 1.3.9.8.5** The selected membrane system shall be of the maximum thickness provided by the manufacturer.
 - 1.3.9.8.6** Membranes must be recyclable, and may contain recyclable content if appropriate.
 - 1.3.9.8.7** Prefabricated flashings, boots, walking surfaces and other accessories must be obtained from or certified as compatible by the membrane manufacturer.
 - 1.3.9.8.8** Albedo and SRI ratings must meet or exceed "cool roof" Energy Star / DOE criteria.
 - 1.3.9.8.9** Life cycle cost analysis shall be provided by manufacturer to WMATA to support selection of membrane system.

1.4 PROCEDURES

- 1.4.1** The Designer shall meet or exceed the Authority's Design Criteria and Standards relevant for each element of the work, as these represent the minimum standards to be used for design and construction.
- 1.4.2** WMATA's Safety and Security Certification Program Plan (SSCP) will be followed when new Metrorail extensions are added, and/or new Metrorail and Metrobus facilities are incorporated into the inventory.

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- 3.4.4.1** Reference Design Criteria [Section 15 \(Structural\)](#) of this Manual: Metro Underground Structures Design for Air Pressure Caused by Running Trains.

3.4.5 Station Exit Stair Doors:

- 3.4.5.1** All doors in a tunnel leading to exit stairs serving as a path of egress shall be a swing-type door, 4 ft. wide by 7 ft. 2 in. high. Door assembly, including the hardware, must be corrosion resistant, meet the air pressure criteria and shall meet NFPA Codes 80, 101 and 130.

3.4.6 Station Roof Design Criteria:

- 3.4.6.1** Roof Design shall meet or exceed the strictest requirements of international, national, regional, and local building codes for wind, weather, and fire resistance with appropriate regard for safety of persons and property. Roof designs shall follow a "system approach" utilizing approved products of a single source recognized leading manufacturer to the greatest extent possible. Approved roofing designs shall incorporate quality detailing and materials for appropriateness, appearance, weatherability, ease of maintenance, protection of persons and facilities, and economy of construction.
- 3.4.6.2** Roof designs shall incorporate details for ease of maintenance accessibility for roofing and roof-mounted equipment while providing maximum security protection from vandalism or unauthorized entry. Particular attention shall be paid to equipment supports, equipment fluid overflow pans, roof access doors, and pedestrian traffic areas. Roofs bounded by parapet walls or curbs are preferred to control blow off of rain and snow during periods of inclement weather. Locate roof drains away from walls, curbs, parapets, penetrations, or other obstructions. Provide watershed and overflow designs, drains, scuppers, or gutters and downspouts to eliminate ponding and standing water on roof surfaces.
- 3.4.6.3** Avoid the use of volatile organic compounds or products, and all material subject to attack by rodents, vermin, birds, and all other pests. Provide a standing seam metal roofing system with a curved or gabled profile for sloped. For low-sloped and flat roof applications either a multi-ply or a single ply membrane system may be used. These shall be fully adhered systems. If single-ply membrane system is used it shall have a minimum thickness of 1.5 millimeters and shall incorporate pedestrian access paths to all rooftop equipment. Use either pressure-treated or fire-retardant treated lumber for blocking and nailers as dictated by code.
- 3.4.6.4** All roofing systems shall have a minimum 30-year manufacturer's warranty.