

Metrorail Service Standards



Washington Metropolitan Area Transit Authority

Introduction

System Overview

The Metrorail system connects and moves the Washington Metropolitan area. The system opened in 1976 and has grown to 91 stations along 117 miles of track, serving the District of Columbia and adjoining areas of Maryland and Virginia. With the completion of the Silver Line Phase 2 and the addition of the Potomac Yard station, the system's size will increase to 98 stations and 128 miles of track. Most Metrorail stations provide multimodal transfer facilities, including Park-and-Ride and connections to the following transit services: Metrobus services operated by Metro, bus services operated by local jurisdictions, Amtrak, and the MARC and VRE regional rail services. All station platforms are 600 feet long, and each platform can accommodate trains up to eight-cars in length. The system operates along six double-tracked rail lines (Red, Yellow, Green, Blue, Orange, and Silver). All lines except the Red Line have interlined segments where service overlaps.

Service Standards

The Metrorail Service Standards¹ guide deployment of service, inform capital investment and operating resource needs, and offer information to the public about how Metro plans and schedules rail service. In developing and applying rail service standards, Metro establishes a definition of the quality and frequency of service riders should expect from the system. Metro considers adjustments to rail service as needed to address evolving ridership patterns.²

¹ Metro's service standards were adopted by the Metro Board of Directors on December 9, 2021 in [Resolution 2021-44](#).

² Metrorail service levels are subject to deliberation and approval by the Board of Directors. In using the service standards to plan and schedule rail service, factors considered include ridership patterns, public outreach and equity analyses, available funding as part of the budget process, and operational constraints.





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 Map is not to scale

Metrorail System Map



Minimum Train Frequencies

Minimum train frequencies establish the baseline level of service throughout the day. The standards³ define a minimum level of service quality and maximum typical wait times riders can expect during regular service. Trains may run more frequently during high ridership periods, such as during the peak periods on weekdays.

Daytime and Evening

*System opening until 9:30pm,
seven days a week*

Trains will arrive at least every 12 minutes on the Blue, Orange, Silver, Green, and Yellow Lines and at least every 6 minutes on the Red Line.

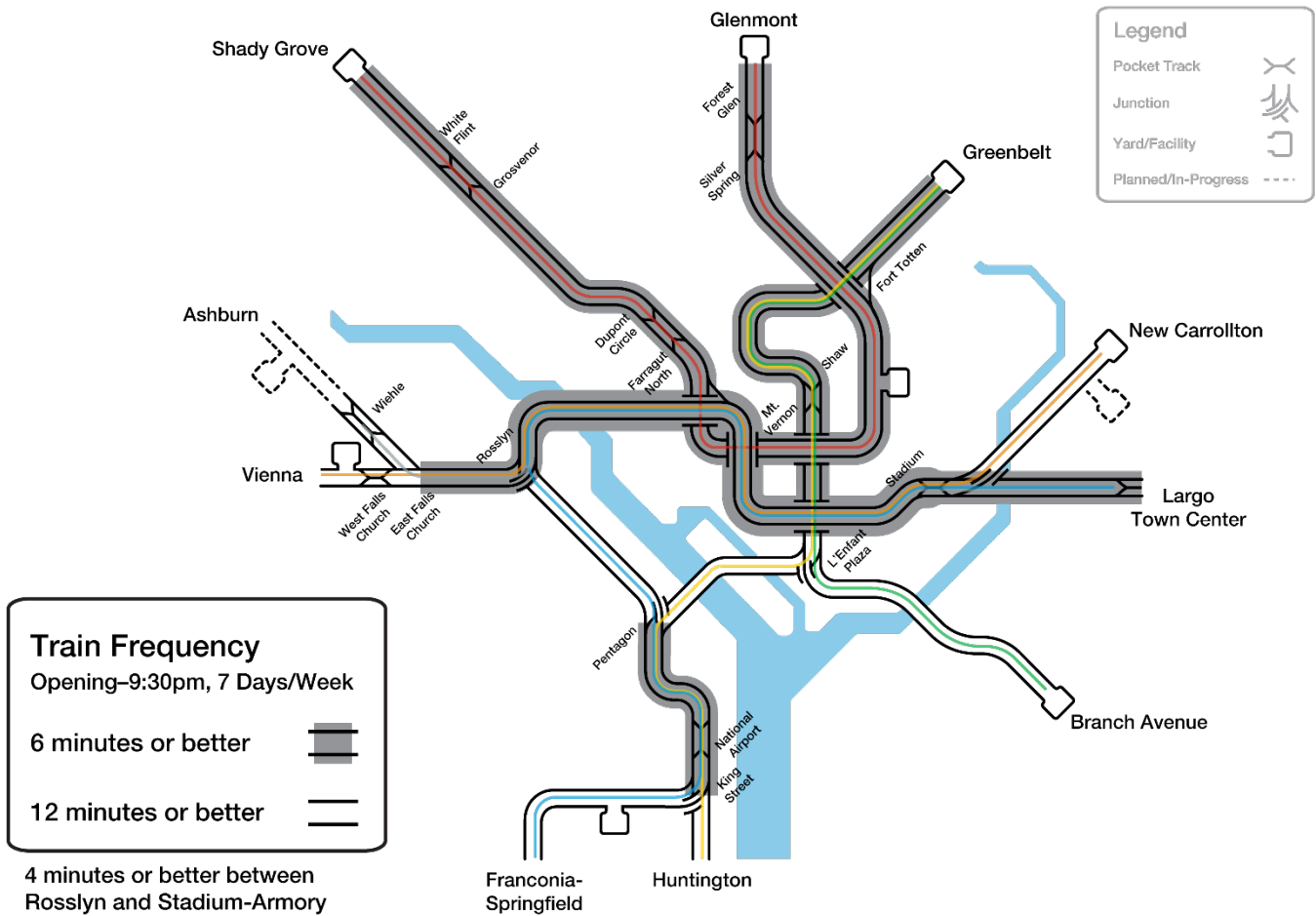
Late Night

*9:30pm until system close,
seven days a week*

Trains will arrive at least every 15 minutes on the Blue, Orange, Silver, Green, and Yellow Lines and at least every 10 minutes on the Red Line.

³ Metro's minimum train frequency standards were adopted by the Metro Board of Directors on December 9, 2021 in [Resolution 2021-44](#).





Effective Train Frequency by Station

Under the train frequency standards, many riders will experience waiting times shorter than the established minimum train frequency. Peak service may run more frequently and interlined segments, where two or more lines overlap, have higher effective frequencies as well.



Passenger Loads

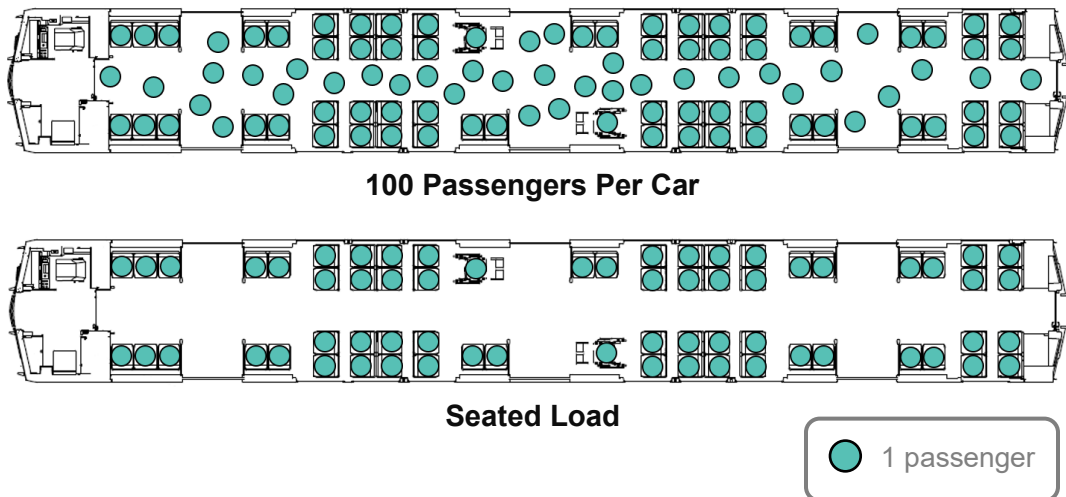
Passenger load standards define target passenger loads and crowding levels for service planning and capacity investments. These standards⁴ are used to plan line-specific service levels during busy periods and help limit passengers' experience of crowding. Passengers per car is measured as the average passenger load over the busiest hour on the busiest segment of each rail line.

Weekday Rush Periods

Average passenger loads at the maximum load points in the peak hour and peak direction will be at or below 100 passengers per car, with 80 to 100 passengers defined as “optimal,” 101 to 120 passengers defined as “crowded,” and 121 or more passengers defined as “very crowded.”⁵

Non-Rush Periods

Average passenger loads at the maximum load points will be at or below a seated load – an average of 65 passengers per car.⁶

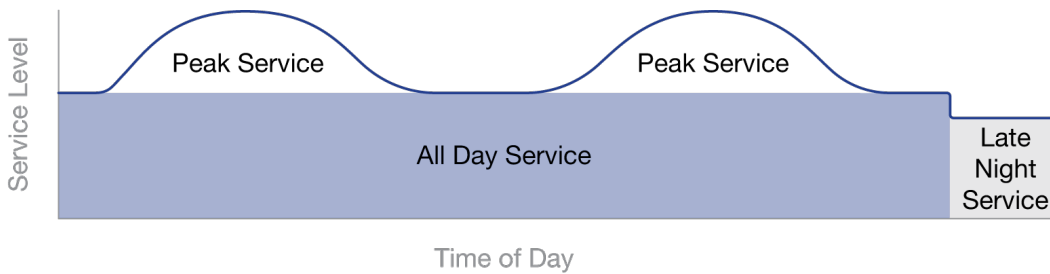


⁴ Metro's passenger load standards were adopted by the Metro Board of Directors on December 9, 2021 in [Resolution 2021-44](#).

⁵ Metrorail weekday rush periods are from system open to 9:30am and 3:00pm to 7:00pm.

⁶ Metro railcars have 62 to 68 seats, depending on railcar series and type.

While the minimum train frequencies in Metro’s rail service standards establish a base all day service level, passenger load standards help determine when and where additional service may be needed to meet passenger demand and limit crowding. Metro schedules peak service above minimum frequency levels to keep up with ridership and limit crowding, adding capacity to keep average loads between 80 and 100 passengers per car.⁷ Together, these standards provide a conditions-based approach for adapting service to ridership levels and patterns over time.⁸ The diagram below illustrates how Metro may provide additional service during peak ridership periods above base all day service levels.



Metrorail Service Levels

⁷ Metro has a practical limit of 26 trains per hour over any one segment. Capacity constraints are most relevant at the maximum load points on the core trunk segments, typically at Gallery Place on the Red Line, L'Enfant Plaza on the Green and Yellow Lines, and Rosslyn on the Blue, Orange, and Silver Lines.

⁸ Metro staff review average passenger per car data and crowding reports to determine if the loading standards are being exceeded and a service adjustment should be considered. Passenger load information is analyzed using a model which utilizes actual rail vehicle location information and SmarTrip tap-in and tap-out data to estimate which train(s) each individual rider likely boarded. Staff assess options to adjust rail service to reduce crowding based on budgetary resources, fleet and workforce availability, and major construction activities.



Train Length

Metrorail passenger service is planned with a goal⁹ of operating 100% eight-car trains.¹⁰ The operation of eight-car trains efficiently provides higher service capacity and improves the customer experience.¹¹ Full-length trains reduce on-board crowding, provide more seats for riders, and allow use of the entire station platform, which helps reduce platform crowding and creates a more predictable boarding experience.

⁹ Metro's train length standards were adopted by the Metro Board of Directors on December 9, 2021 in [Resolution 2021-44](#).

¹⁰ Metro's ability to operate eight-car trains is constrained by railcar availability, electrical system traction power, yard and maintenance shop capacity, and yard and maintenance shop configurations. When capacity is not sufficient to operate 100% eight-car trains on all lines, staff use crowding data to prioritize eight-car train operation on lines with the highest average passengers per car to reduce crowding and provide service consistency.

¹¹ Operating full-length trains is a cost-effective way to increase capacity and increase operator productivity while delivering a higher amount of overall passenger service. The Metrorail system was designed to ultimately operate with eight-car trains – each station platform is 600 feet long, allowing a maximum of eight, 75-foot cars to berth at each station platform. Eight-car trains also simplify operations; the newest 7000-Series and forthcoming 8000-Series railcars are designed to be operated in quad configurations, increasing the complexity of six-car train operations.

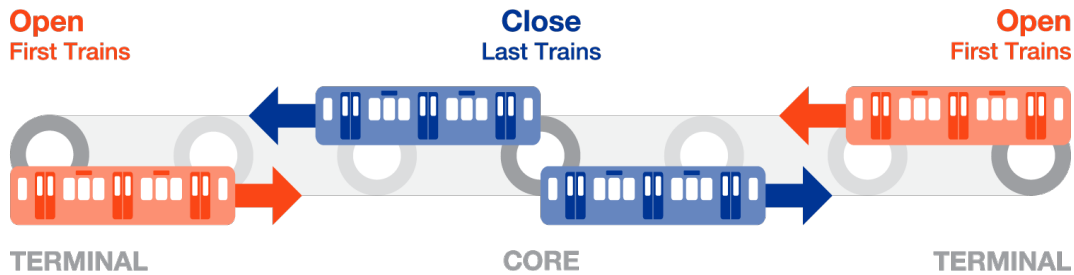


Hours of Operation

The Metrorail system operates seven days a week, including holidays. System hours of operation¹² are:

Monday through Thursday	5:00 a.m. until 12:00 a.m.
Friday	5:00 a.m. until 1:00 a.m.
Saturday	7:00 a.m. until 1:00 a.m.
Sunday	7:00 a.m. until 12:00 a.m.

Rail service for passengers begins at both ends of each line – also known as the terminals – at the system’s opening time. At the system’s closing time, the last trains serving passengers on each line pass through the core of the system and travel toward the terminals.¹³ As a result, individual rail stations have first and last train times which may be different from the system’s opening and closing times.



First and Last Trains

¹² Rail operating hours are set by the Board of Directors. Metro’s current hours of operation were adopted by the Board on June 10, 2021 in [Resolution 2021-22](#)

¹³ Last trains are scheduled to meet and enable transfers in the core at Metro Center, Gallery Place, and L’Enfant Plaza.



On-Time Performance

In addition to standards for planning and scheduling service, Metro tracks the on-time performance of its rail service. Metro measures on-time performance in two ways.

Train on-time performance

Train on-time performance measures the adherence to schedules at station stops system-wide.¹⁴

Customer on-time performance

Customer on-time performance measures the percentage of customers who complete their journey within the maximum amount of time it should take according to Metro's scheduled service.¹⁵

On-time performance helps evaluate the reliability of Metrorail service, a key driver of customer satisfaction. Train on-time performance is useful in determining how well Metrorail operations adhere to the service schedule, while customer on-time performance emphasizes the experiences of Metrorail riders in the system.

On-time performance may be impacted by infrastructure conditions, missed train dispatches, railcar delays (e.g., issues with railcar doors), delays caused by sick passengers, railcar availability, speed restrictions, and single-tracking around scheduled track work. Customer on-time performance may additionally be impacted by the availability of fare gates, elevators, and escalators.

¹⁴ Train on-time performance is measured as the number of station stops delivered within two minutes (early or late) of the schedule.

¹⁵ The maximum time is equal to the train run-time plus a headway (scheduled train frequency) for each leg of the trip plus several minutes to walk between the fare gates and platform. These standards vary by line, time of day, and day of the week. Actual journey time is calculated from the time a customer taps a SmarTrip card to enter the system, to the time when the SmarTrip card is tapped to exit.



Temporary Service Adjustments

In some circumstances, Metrorail service may require temporary adjustments which do not align with these service standards. This may be due to the need to accommodate track work, system maintenance, construction activities, or emergencies. Service planning for temporary adjustments requires consideration of rail infrastructure constraints, passenger demand and travel patterns, and operational resources (both rail and bus) required to operate alternative service. The goal of any temporary service adjustment is to minimize the impact on riders.

Equity and Non-Discrimination

These standards support delivery of equitable Metrorail service by establishing a minimum level of quality transit service every rider can expect. The communities served by Metro are stronger when everyone has access to reliable and affordable transportation. Public transportation connects people to jobs, health care, schools, grocery stores, housing, and more, and Metro strives to eliminate barriers to transit.

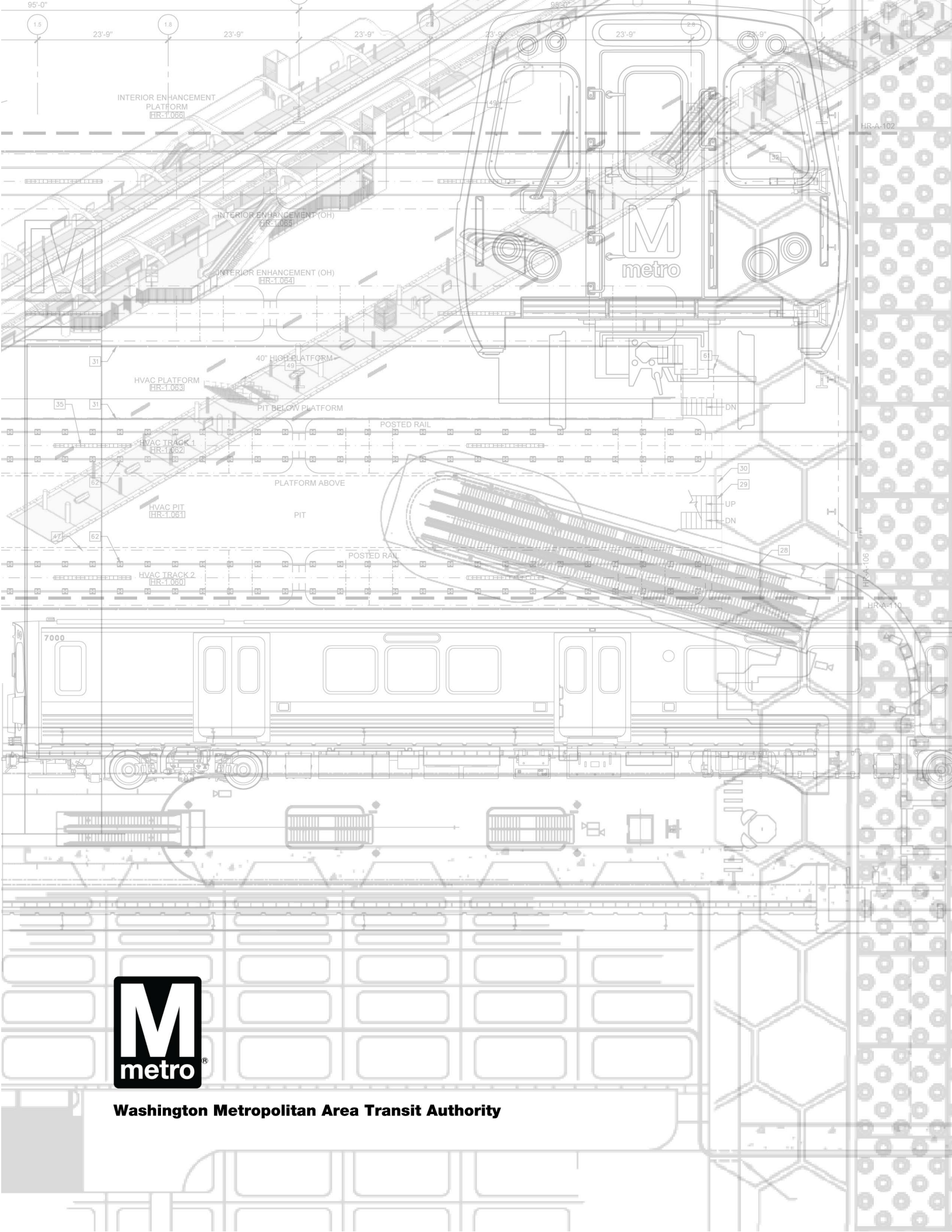
Metro is committed to ensuring that no person is excluded from participation in or denied the benefits of its services on the basis of race, color or national origin.¹⁶ Metro monitors on-time performance, vehicle headways, vehicle loads, service availability,¹⁷ passenger amenities, and vehicle assignments to ensure minority riders are not disparately impacted and low-income riders are not disproportionately burdened by Metro service and operational practices.¹⁸

¹⁶ Title VI of the Civil Rights Act of 1964 provides that no person in the United states shall, on the ground of race, color, or national origin, be excluded from participation in, be denied the benefits of, or be subjected to discrimination under any program or activity receiving Federal financial assistance.

¹⁷ Service availability is a measure of the proximity of Metrorail stations to a given population. This measure is helpful in assessing the level of access and service coverage Metro provides in the region, especially for minority and low-income residents compared to non-minority and non-low-income residents.

¹⁸ To evaluate service equity, Metro staff apply established thresholds for significant disparity depending on the total number of daily riders impacted. Additional detail regarding Metro's equity analysis and monitoring practices is available in [Metro's Title VI Program 2020 Update](#).





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