

TRANSPORTATION ACHIEVEMENT AWARD – TRAFFIC ENGINEERING

District Department of Transportation and Mead & Hunt for the DC Citywide Signal Timing Optimization Initiative



The District Department of Transportation (DDOT) and Mead & Hunt have received a 2023 Transportation Achievement Award in the Traffic Engineering Category for their **DC Citywide Signal Timing Optimization** initiative. The Transportation Achievement Awards recognize excellence in the advancement of

transportation to meet human needs, by entities concerned with transportation, such as governmental agencies, Tribes, legislative bodies, consulting firms, industry partners, and other organizations. Awards are presented in five categories: Complete Streets, TSMO, Safety, Planning, and Traffic Engineering.

The Citywide Traffic Signal Optimization Program is a multi-year program entailing the ongoing traffic signal retiming effort taking place across the District of Columbia, implemented by the District Department of Transportation (DDOT) and the Mead & Hunt consultant team. The primary objective is to optimize all 1,600+ traffic signals through a rotational, continuous effort to improve safety, sustainability, reliability, and mobility for multimodal users, including pedestrians, bicyclists, transit vehicles, passenger cars, and other road users.

Compared with traditional traffic signal retiming efforts aimed solely at reducing vehicular congestion and environmental impacts, this innovative program also enables the large-scale implementation of Leading Pedestrian Intervals (LPIs), pedestrian recall, and other safety and mobility enhancements. The Citywide Traffic Signal Optimization Program has already been executed through two successful rounds of implementation. Round 1 of the program (conducted from 2011-2017) focused on rehabilitating DDOT's signal system and reducing vehicular congestion that had accumulated due to infrequent updates. The project team deployed new controller software and converted firmware to phase-based operation at DC's 1,600+ traffic signals, updated clearance intervals across the system, and retimed signal progression to account for changing demand patterns. These efforts resulted in a smoother and more efficient traffic flow in the city.

With the adoption of Vision Zero in DC in 2015 with the goal of eliminating roadway fatalities and serious injuries, Round 2 of the program (2018-2021) evolved to meet the enormous challenge of this policy. As such, the program has been adapted and expanded to include and prioritize the implementation of multimodal mobility and safety improvements in all eight wards of the city. Under this program, the city was divided into four networks, one of which is optimized each year, keeping the program efficient and cost-effective.

Each signalized intersection in the city, over 1600 in total, is evaluated for the implementation of treatments like LPIs and pedestrian recall on a rolling basis. Since Fall 2018 when Round 2 was initiated, 969 LPIs have been



2023 Excellence in Transportation Awards

installed across the city, while 153 locations have automatic Walk signals via pedestrian recall during peak demand hours. While keeping the system in a state of good repair from a timing standpoint, DDOT is leveraging these network implementations to advance safety and mobility treatments as well. Instead of assessing and implementing safety and mobility treatments on an individual basis as residents request them, these improvements can be implemented proactively and efficiently in conjunction with retiming efforts to address changing demand patterns in the city. This approach also enhances equity as it does not rely solely on citizen complaints or resident requests to advance safety and mobility treatments. Treatments are evaluated and deployed across the city, including in areas where residents may not have the time or resources to advocate for improvements. Lastly, this program also serves to support the District's sustainability goals of reducing vehicle emissions by installing treatments that incentivize walking and bicycling.

The Citywide Traffic Signal Optimization Program has had a major impact on travelers across Washington, DC, touching every single one of DC's 1600+ traffic signals multiple times since 2014. Through the fine-tuning of hundreds of thousands of unique signal timing parameters and settings across DC, this annual deployment of new signal timing plans is shaping the city for multimodal transportation. Incorporating many facets of signal timing, including improvements to multimodal mobility and safety, congestion mitigation, special event timing plans, and more, this program seeks to keep DC's signal system in a good state of repair and enhance multimodal options for travelers.

The Citywide Traffic Signal Optimization Program has allowed DDOT to assess and optimize every signal in the city multiple times over the last ten years to implement various multimodal treatments that make DC's intersections friendlier for persons walking and biking. Looking ahead to the future, the structure of the program allows for continuous innovation and the implementation of new strategies, including the expansion of Age-Friendly improvements to school zones and the prioritization of timing adjustments along key transit routes. As DC continues to advance towards a reduction in Single-Occupancy-Vehicle (SOV) trips and towards Vision Zero, the Citywide Traffic Signal Optimization Program will continue to be the backbone of DDOT's multimodal transportation network.

Congratulations to the team members on this achievement! From DDOT: **Wasim Raja**, Program Manager; **Rahul Jain**, Project Manager; **Anthony Dinkins**, Project Engineer; **Luis Roa**, Project Engineer. From Mead & Hunt: Led by Mead & Hunt's National Capital Region Traffic Engineering & ITS team: **Robin Fish**; **Tom Knofczynski**; **Joshua Wolfram**; **Yu-Ling Wang**; **Mike Poblete**; and **Brandon Song**; With support from **Keith Riniker** and the Mid-Atlantic staff; and the following subconsultants: HNTB, Inc.; Daniel Consultants, Inc.; Endesco, Inc.; Kittelson and Associates, Inc.; MC Dean, Inc.; Kimley-Horn and Associates, Inc.; Quality Counts; and McCain.

Read more about the DC Citywide Signal Timing Optimization initiative [here](#).