# SAFE ROUTES TO SCHOOL (SRTS) DESIGN ASSISTANCE PROGRAM

NEW JERSEY Safe Routes to School

ARORA and ASSOCIATES, P.C.
Consulting Engineers

## COMPANY OVERVIEW

ARORA and ASSOCIATES, P.C. (Arora) is a regional, full-service, civil engineering and transportation design firm with a proven track record of delivering practical solutions on accelerated schedules and within budgets. Headquartered in Lawrenceville, NJ, we have been providing engineering services for the Federal government, public agencies and municipalities in New York, New Jersey, Pennsylvania since 1981.

Arora has earned a reputation for successfully delivering large and small infrastructure and transportation improvement projects for various agencies across the region. Our experienced professionals are highly qualified in all facets of civil engineering, project management and environmental compliance. Through our hands-on, collaborative approach, our project team works as your partner to deliver innovative, high-quality, cost-effective solutions to your infrastructure needs, thereby *engineering your success*.

## SRTS EXPERIENCE

For SRTS assignments, it is important to understand student needs to encourage and provide for walking and biking to school. Arora has significant experience designing transportation projects that provide safe access for all users: pedestrians, bicyclists, motorists and transit vehicles. We also make safe access a paramount requirement when designing our maintenance and protection of traffic and construction staging plans.

Our experience includes extensive design services that would benefit any SRTS project, including:

- **Complete Streets Policy Implementation**
- **ADA Compliance**
- **Traffic and Pedestrian Signal Design**
- **Intersection Improvement**
- **ITS Engineering**
- **Electrical Engineering & Lighting Design**
- **Transportation Planning**
- **Traffic Engineering & Design**
- **Public Information & Community Involvement**
- **GIS Mapping & Analysis**

Arora recognizes that every project is unique, so we will work closely with all stakeholders to meet individual SRTS needs. We also understand that local officials and citizens are the best resource for identifying concerns about safe routes to schools. Arora encourages and values input through the public involvement process. Coordination with school officials, parents, local law enforcement and parent-teacher organizations is critical to the public understanding the purpose and need for SRTS projects.

*Arora approaches every project as an opportunity for engineering problem solving and client partnership. Successful project execution has built our reputation in our core areas.*

Arora is committed to delivering quality work on time and to the satisfaction of all concerned parties. For each assigned project, we will incorporate comprehensive planning documents that address bicyclist, pedestrian or transit user conditions within or near the study area, such as:

- **SRTS Travel Plans**
- **Municipal or County Master or Redevelopment Plans**
- **Local, County and Statewide Bicycle and Pedestrian Plans**
- **Sidewalk Inventories**
- **MPO Transportation Plans**
- **NJDOT Designated Transit Villages**

# RELEVANT PROJECT EXPERIENCE

Arora has extensive experience providing engineering services for public agencies and municipalities. Our experience with local programs includes planning and designing local projects and coordination with local governmental agencies.

## Safe Routes to School, New York City.

Arora is designing school safety improvements around schools in the Borough of Queens for the New York City Department of Transportation. Proposed improvements include traffic signals, crosswalks, sidewalks, intersection realignment, curb/sidewalk extensions, bump-outs, pedestrian ADA ramps, bus pads, streetlights and traffic signal timing modifications. All sidewalk ramps will comply with ADA standards. AutoTurn analyses with school bus, city bus, truck and FDNY emergency vehicles are conducted.

## Route 35, North of Lincoln Avenue to the Navesink River Bridge, Monmouth County.


Arora redesigned 27 signalized intersections and one mid-block pedestrian signal for the nine-mile corridor of Route 35 in Monmouth County. Field investigations were conducted at each site, and operational analyses optimized traffic flow and levels of service. The redesigns included new ADA-compliant modifications, new traffic signal equipment, improved signal timing and phasing to confirm vehicle and pedestrian change and clearance intervals, vehicle and pedestrian detection systems, bicycle compatibility, signing, pavement markings and new guide rail. The project was designed on an accelerated 6-month schedule and finished on schedule and within budget.

## Route 9 Sidewalk Improvements, City of Northfield.


Arora designed pedestrian facilities along both sides of a 1.2-mile section of Route 9 within the City of Northfield to address a lack of a continuous route for pedestrian users. The Northfield Community School, located adjacent to the northbound side of Route 9 between Cedar Bridge Road and Mill Road, generates significant pedestrian traffic, including many children. The existing sidewalks were failing to provide safe traveling conditions. In addition to a continuous, ADA-compliant network of sidewalks, the project also provided enhanced pedestrian crossing markings at three intersections and improved geometrics to shorten pedestrian crossings. The sidewalks were constructed using porous materials at select locations to address NJDEP Stormwater Management rules without requiring extensive drainage systems and infiltration basins.

## Pedestrian Crosswalk Improvements, Lawrence Township.

As an on-call traffic consultant for Lawrence Township, Arora designed improved pedestrian crossings at the intersection of Route 206 and Lawrence Avenue – Pilla Avenue. ADA-compatible, pedestrian ramps were installed on all corners and ladder-type crosswalk markings were installed at all crossings. Arora also designed new rectangular rapid flashing beacons for future installation at the Route 206 approaches.

# RELEVANT PROJECT EXPERIENCE

## Route 9, Toms River & Lakewood Townships.

Arora is redesigning twelve signalized intersections and designing two new traffic signals including all signing and pavement markings on Route 9 in Tom's River and Lakewood Townships. A safety analysis was conducted to evaluate the need for two-way, left-turn-only lanes (TWLTL) based on the crash history along the corridor. Over 800 crash reports were reviewed and plotted within the corridor to assess the need for a TWLTL. The redesigns include new traffic signal equipment, new signal timing and phasing to confirm vehicle and pedestrian change and clearance intervals, vehicle and pedestrian detection systems, new countdown pedestrian signal heads, bicycle compatibility, signing, pavement markings, ADA accommodations at all signalized intersections and new guide rail. Traffic signal timing plans were designed to accommodate local religious customs and schedules. Traffic details, MPT plans, construction staging, detour plans and specifications are included in the project.

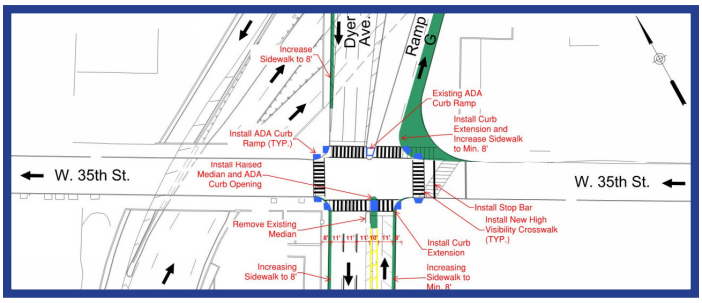

## Route 73 Improvements, Maple Shade.

NJDOT targeted Route 73 from the vicinity of the Route 41 interchange to Park Avenue to eliminate several deficiencies and to improve safety and capacity. The project alleviates traffic congestion during peak hours and improves roadway access to homes and businesses in the area. Route 73 was widened by eliminating a center grass median, providing new auxiliary lanes in northbound and southbound directions. New traffic signals were installed at the terminus of the interchange ramps at Main Street to improve traffic flow and safety. The ramps of the interchange were widened to accommodate extra lanes at the signal. The project also included replacement of the East Main Street Bridge overpass and flooding mitigation.

## Route 33 and Route 70 Intersection Redesign Projects.

As part of a pavement rehabilitation project, Arora redesigned signalized intersections including all signing and pavement markings for projects along Route 33 in Middlesex and Monmouth Counties, and Route 70 in Burlington, Monmouth and Ocean Counties. Field investigations were conducted at each site, and operational analyses completed to optimize traffic flow and levels of service. Pedestrian-related features such as curb ramps, sidewalks and crosswalks were brought into compliance with current ADA standards. The redesigns also included new countdown pedestrian signal heads, bicycle compatibility, signing, pavement markings and new guide rail. Traffic details, MPT plans and specifications, maintenance and work area protection plans, estimates, construction staging and detour plans were developed. The projects also include preparation of traffic signal design and timing plans.

## Lincoln Tunnel Pedestrian Safety Study, New York City.




As a call-in traffic safety engineering services consultant to the PANYNJ, Arora conducted field inspections of eight signalized intersections in the study area to assess pedestrian signal change and clearance intervals and signal timing and phasing. Pedestrian crossings at the signals were evaluated to include curb ramps with detectable warning surfaces, crosswalks, sidewalks, pedestrian signal heads, pedestrian signing and street lighting. MUTCD requirements for pedestrian signals were used to evaluate the signalized intersections, along with the FHWA design guidelines for ADA accommodation, NYCDOT-standard drawings for the installation of crosswalks and pavement markings at intersections, and the NYCDOT Street Design Manual to evaluate crosswalks and street lighting.

## NJ Transit New South Parking Lot, West Windsor Township.

This on-call traffic consulting service for West Windsor Township determined the parking demand, and resulting supply, which could be provided for a new parking lot at the existing Princeton Junction train station. Parking lot considerations included layout, circulation and access. Adequacy and compliance with accepted standards for parking lot design were evaluated. The project also addressed pedestrian access to, from, and through the new parking lot and pedestrian connectivity between the new lot and the train station.

## PROJECT MANAGEMENT AND STAFF

Our project manager and team leaders are advocates for the implementation of planning, design, construction and operation of safe transportation facilities that address the needs of pedestrians, bicyclists, various age groups and users with physical challenges. Our team is extremely familiar and experienced with the NJDOT's Local Aid plan development process as described in the NJDOT LPA Manual.

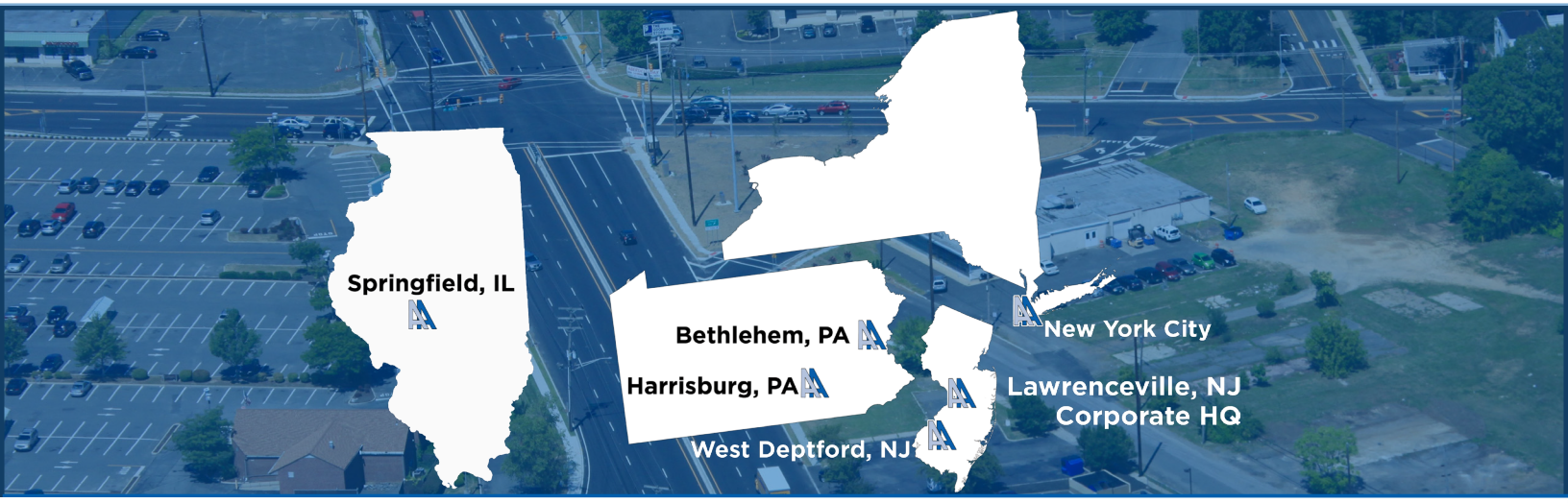

## CONTACT INFORMATION

Dave Hutchinson, P.E.
Vice President, Highway Engineering
(609) 482-2664
dhutchinson@arorapc.com

William Day, P.E.
Traffic & ITS Department Manager
(609) 482-2668
wday@arorapc.com

## ARORA'S MULTI-DISCIPLINE IN HOUSE SERVICES

- Highway & Geometric Design
- Structural & Seismic Design
- Traffic Engineering & Analysis
- Safety Studies & Analysis
- Geotechnical Engineering
- Bridge Inspection & Load Ratings
- Surveying & Right-of-Way
- Engineering Research & Development
- Environmental Compliance & Permitting
- Hydrologic & Hydraulic Engineering
- Wetland Delineation & Habitat Assessment
- Electrical Engineering & Lighting Design
- Utility Design & Coordination
- Transportation Planning
- Pedestrian Studies
- Traffic Data Collection
- Construction Management & Inspection
- Design Build & Construction Engineering
- Cost Estimating & Scheduling
- Geographic Information Systems & Mapping
- ITS Engineering
- Stakeholder & Agency Coordination
- QA/QC Reviews
- Program Management




ARORA and ASSOCIATES, P.C.
Consulting Engineers

Princeton Pike Corporate Center
1200 Lenox Drive, Suite 200
Lawrenceville, NJ 08648-2329

(609) 844-1111 P
(609) 844-9799 F
www.arorapc.com