

1                   **Enhancing Roadway Access Management Programs to be More Proactive**

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**ABSTRACT**

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3 This paper, based on the Port Authority of New York and New Jersey's (the Port Authority)  
4 experience in developing and implementing its *Roadway Access Management Guidelines*  
5 document, describes the benefits of applying access management programs proactively rather  
6 than reactively. Building upon the knowledge gained from implementing access management for  
7 the Port Authority's complex network of airports, ports, and roadways, and also reflecting  
8 lessons learned by other agencies in administering their access management programs, the paper  
9 identifies a range of strategies that an agency may apply to be more proactive as it applies its  
10 access management program. After providing a brief background on the Port Authority and its  
11 access management initiative, the paper describes both administrative and technical actions that  
12 can create a proactive approach, benefitting the agencies and tenants/owners/developers.  
13 Administrative actions include identifying upfront the responsibilities and expectations of the  
14 agency and of external stakeholders and establishing communication channels to encourage  
15 dialog early in the planning and/or review process. Technical actions include developing access  
16 management guidelines, such as traffic signal and driveway spacing, to be used as the basis for  
17 access-related decisions. Other identified strategies include preparing a transportation master  
18 plan, establishing an access classification system as a basis for selecting appropriate technical  
19 guidelines, and developing corridor access management plans. The paper also identifies key  
20 considerations concerning each of the administrative and technical actions.

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24  
25 *Keywords:* Access Management, Roadway Access Management, Roadway Access Management  
26 Guidelines, the Port Authority of New York and New Jersey, PANYNJ, proactive, conceptual  
27 planning, transportation master plan, access classification system, future locations for new traffic  
28 signals

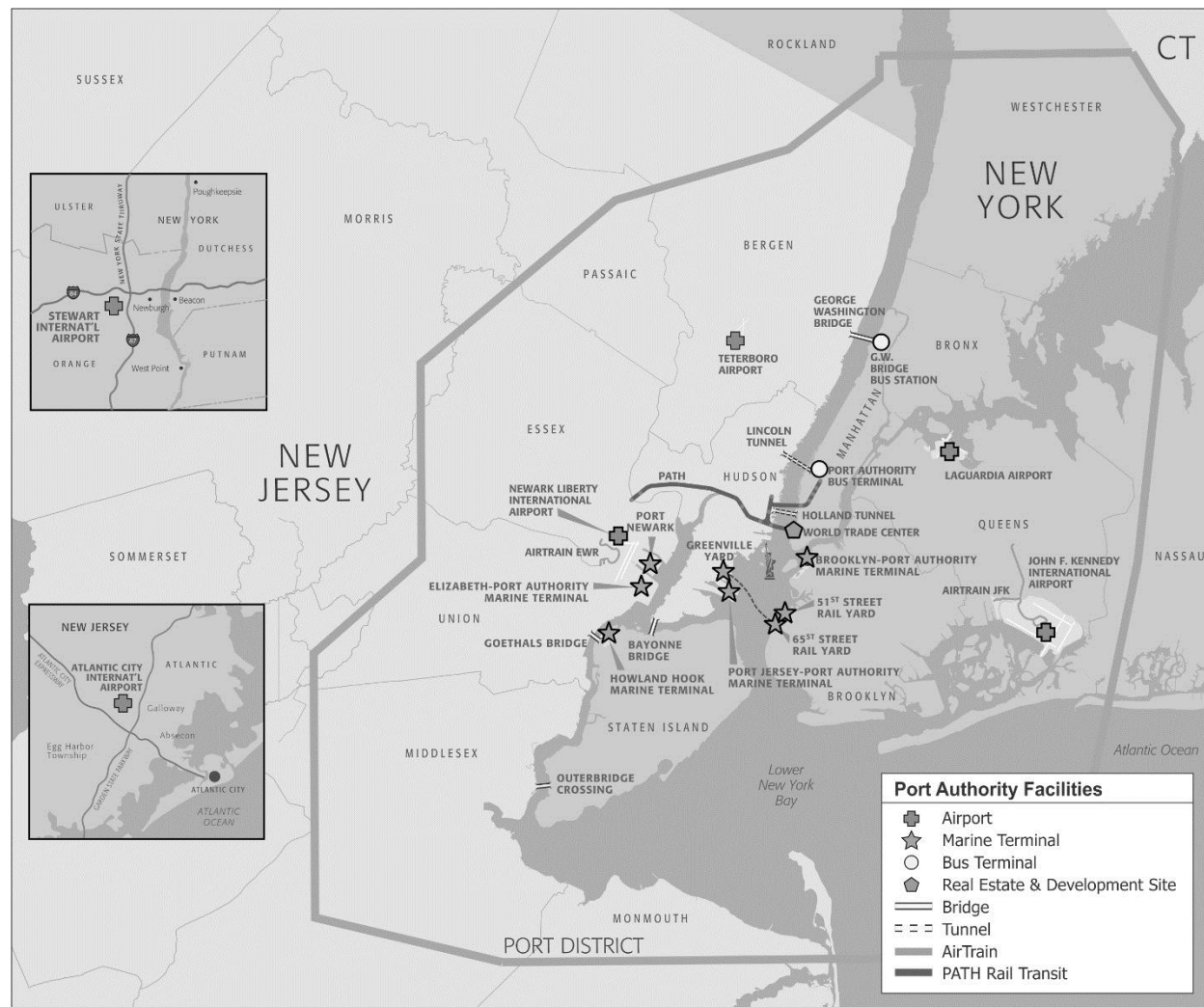
## 1 INTRODUCTION

2  
3 The Port Authority of New York and New Jersey (the Port Authority) has implemented a  
4 *Roadway Access Management Guidelines* (1) document for its airports and ports. The intent of  
5 the Port Authority's access management program is to streamline decision-making within the  
6 Agency, build consensus among various stakeholders, and resolve potential access management  
7 issues proactively, before they become problematic. Proper implementation of the program is  
8 expected to result in savings in time, money, and liability to the Agency, and provide benefits  
9 with respect to safety, traffic operations, business operations, capital investments, and the  
10 environment. This is particularly important given the complexity of the Port Authority's  
11 facilities.

12 The Port Authority plans, builds, operates, and maintains infrastructure critical to the  
13 New York / New Jersey region's trade and transportation network. Figure 1 is a regional map  
14 that shows the location of each Port Authority facility. These facilities include the nation's  
15 busiest airport system, marine terminals and ports, the Port Authority Trans-Hudson (PATH) rail  
16 transit system, six tunnels and bridges between New York and New Jersey, the Port Authority  
17 Bus Terminal, the George Washington Bridge Bus Station, and the World Trade Center.  
18 Providing ingress to, egress from, and circulation within each facility is an extensive and  
19 complex roadway network, for which the Port Authority is also responsible. Overseeing these  
20 facilities for over 80 years, the Port Authority has worked to improve the quality of life for the  
21 more than 17 million people who live and work in New York and New Jersey.

22 This paper is based on the Port Authority experience gained during implementation, as  
23 well as lessons learned by other agencies from administering their access management programs.  
24 The focus of the paper is to identify strategies that agencies may employ to be more proactive in  
25 applying access management.

26 While access management is often applied in a reactive manner, this experience shows  
27 that the process of decision-making functions more smoothly and consistently when the program  
28 is applied proactively. All state DOTs have a driveway permit process to help manage access on  
29 their highway systems, as indicated in *NCHRP Synthesis 404, State of the Practice in Highway*  
30 *Access Management* (2); however, the permit process and access management, in general, are  
31 often administered reactively, in response to frequently uninformed and/or unrealistic access-  
32 related requests. The application of proactive strategies that include providing technical guidance  
33 for access-related decisions and establishing a procedural framework that identifies access  
34 management as an early consideration can help the process function more productively and  
35 consistently for all stakeholders involved, enhancing relationships with those stakeholders.



1  
2  
3 **FIGURE 1 Regional map showing the location of each Port Authority of NY & NJ facility.**  
4 **(3)**

5  
6 Additionally, proactive access management can avoid traffic safety and operations  
7 problems that materialize slowly over time. Often, when traffic volumes and development  
8 densities are low, these problems are not readily apparent. But as traffic volumes and  
9 development densities increase, these problems manifest themselves in the form of traffic  
10 congestion and high-crash locations. Yet it often becomes very difficult and expensive to make  
11 improvements to solve those problems without significant and costly disruptions. The necessary  
12 improvements may require working around or demolishing existing buildings, displacing  
13 facilities, and diverting and protecting high volumes of traffic. All of these actions add to the  
14 cost and complexity of any improvement proposal brought forward to solve the traffic safety and  
15 operational issues that have materialized due to the poor planning and design decisions made in  
16 the early stages of project development.

17 Access management should be considered throughout project planning, design, and  
18 construction. Furthermore, it is important to involve the agency and address access management  
19 considerations in the early stages of project planning. Solutions to potential access management

1 related problems are best achieved in the preliminary stages of project planning, before building  
2 locations and roadway layouts have been established. In this regard, coordination between the  
3 agency, driveway permit applicants, and other involved stakeholders is essential. This  
4 coordination should be initiated at project inception when design alternatives are being evaluated  
5 at the preliminary/conceptual design stage (i.e., the “tissue paper” stage). Postponing or ignoring  
6 access management considerations until a traffic impact study for a large development is  
7 submitted or design documents are produced, when considerable time and money have already  
8 been spent and decisions have been made, often makes the best solutions difficult or impossible  
9 to achieve.

10 The Port Authority experience, as well as lessons learned by other agencies from  
11 administering their access management programs, strongly suggests that benefits are derived for  
12 the agencies, their outside stakeholders, and the public when access management programs are  
13 applied proactively. This paper identifies a range of strategies that can help agencies be more  
14 proactive in applying access management, thus enhancing their programs. Strategies include both  
15 administrative and technical actions.

## 16 **PROACTIVE STRATEGIES**

17  
18 Below is a range of administrative strategies and technical actions that can be applied  
19 individually or together to enhance access management programs by creating a more proactive  
20 environment for managing access on the roadway system. Administrative actions include  
21 identifying upfront the responsibilities and expectations of the agency and external stakeholders  
22 and establishing communication channels to encourage dialog early in the planning and/or  
23 review process. Technical actions include developing access management guidelines, such as  
24 traffic signal and driveway spacing, as the basis for access-related decisions. Other identified  
25 strategies include a transportation master plan, an access classification system for use as a basis  
26 for selecting appropriate technical guidelines, and corridor access management plans. The  
27 discussion of each strategy identifies key considerations involved in its application as well as  
28 technical guidelines for establishing the criteria, where applicable.  
29  
30

### 31 **Prepare and Publish Access Management Guidelines**

32 Development activities and transportation improvement projects often involve an agency’s  
33 balancing traffic operations and safety with the needs of permit applicants and property owners  
34 abutting the roadway involved. Access management provides the quantitative tools to  
35 successfully achieve this balance. In addition to providing detailed technical guidance, access  
36 management guidelines are intended to help create synergy and promote successful project  
37 outcomes by providing an informed and structured approach to decision-making for use by and  
38 among the various organizational entities within an agency. This approach enables stakeholders,  
39 including those requesting an access permit as well as those reviewing the application, to be  
40 more proactive and helps reduce the prospect for “surprises” that could delay the process and  
41 increase the associated time and cost. Guidelines may help streamline the development process  
42 for permit applicants and their consultants by communicating an agency’s access management  
43 guidance, thereby improving the consistency and predictability of the development process and  
44 reducing the likelihood of revisions needed to documents submitted by an applicant.

45 Access management guidelines provide both general guidance for agency staff and  
46 detailed technical guidance for planning and engineering professionals. This includes agency

1 staff involved with permit application reviews, design of improvement projects, and day-to-day  
 2 operations, as well as consultant engineering staff hired by property owners and developers to  
 3 prepare permit applications and traffic impact studies. Reflecting this diversity in stakeholder  
 4 background and knowledge, the Port Authority's guidelines contain an overview with  
 5 background information and an introduction of basic concepts, forming an educational  
 6 framework for the guidelines that follow. In contrast to documents that simply state 'the rules,'  
 7 clearly communicating reasons for the rules can assist in informing and gaining acceptance. A  
 8 guidelines document may provide:

- 9
- 10 1) An introduction to access management, including objectives, principles, and
- 11 benefits;
- 12 2) A discussion of the role of access management in an agency's business practices;
- 13 3) A description, and associated maps, of the roadway access classification system
- 14 (ACS) that has been established (more information on ACS is presented later in this paper);
- 15 4) Detailed engineering design guidance (related to the ACS) for the following areas:
- 16 • Roadway cross-sectional elements
- 17 • Unsignalized driveway spacing
- 18 • Intersection corner clearance (spacing of driveways from intersections)
- 19 • Traffic signal spacing
- 20 • Access in the vicinity of interchanges
- 21 • Driveway design
- 22 • Roadside buffers
- 23 • Intersection sight distance
- 24 • Auxiliary lanes, including exclusive left-turn and right-turn lanes
- 25 5) A discussion of property access strategies; and
- 26 6) General approval criteria and procedures for design exceptions.
- 27

### 28 **Encourage Team Conceptual Planning and Pre-Application Meetings**

29 Clear channels of communication and use of those channels early on in the planning of a project  
 30 can help both the agency and external stakeholders to be more proactive, enhancing the process.  
 31 These communication channels improve the consistency and predictability of the development  
 32 process and reduce the likelihood of revisions needed to documents submitted by an applicant.  
 33 When applicants and their engineering teams, for example, can dialog with the agency staff (that  
 34 will review the permit applications) during conceptual planning, issues can be resolved before  
 35 they become problematic. Among several effective channels of communication are team  
 36 conceptual planning meetings and pre-application meetings.

37 These meetings provide an early opportunity for agency staff, access permit applicants  
 38 and their planning/engineering team, and other affected stakeholders to meet and discuss the  
 39 process framework. Based on clearly explained access management guidelines and their  
 40 application to the specific project, required deliverables and future coordination efforts can be  
 41 determined and agreed upon. The opportunity for all affected parties to collaborate and discuss  
 42 design concepts and ideas early in the project planning process can minimize delays and  
 43 streamline the project delivery process, in addition to saving money. For these reasons, a  
 44 meeting should take place at project inception, prior to the preparation or submittal of any formal  
 45 studies, reports, design drawings, or other such documents. Items that may be discussed at this  
 46 meeting may include, but are not limited to, the following:

- 1
- 2 1) Key operational and design issues, opportunities, and constraints for the project
- 3 and how they will be addressed, particularly with respect to the access management guidelines;
- 4 2) The type of studies, and scopes-of-work for such studies, to be conducted by the
- 5 agency, applicants, or applicant representatives;
- 6 3) Need for, and frequency of, on-going coordination meetings among affected
- 7 stakeholders;
- 8 4) Follow-up communication and data exchange protocols among affected
- 9 stakeholders; and
- 10 5) Deliverables to be submitted to the agency, and associated schedule for their
- 11 delivery.

### 12

### 13 **Prepare Transportation Master Plan**

14 A transportation master plan – a plan for an entire facility’s transportation system – provides a  
15 framework for the consistent application of access management throughout the facility. This  
16 establishes a common vision that could be applied by stakeholders, including those requesting an  
17 access permit as well those reviewing the application, to avoid uninformed requests and  
18 decisions that are at odds with future plans. A transportation master plan improves the  
19 consistency and predictability of the development process and helps avoid misunderstandings,  
20 such as those related to a long-term vision that may be otherwise unstated.

21 For the Port Authority, the preparation of a transportation master plan could involve an  
22 airport or port facility. The plan is prepared to accommodate projected changes in land  
23 development patterns and to provide a supporting transportation system. Its purpose is to  
24 establish a strategy for providing reasonable access to all properties, while restoring or  
25 preserving the integrity of the transportation system, through careful consideration of access  
26 management principles. The primary benefit of having such a plan is that it lays the foundation  
27 for correcting existing access management problems and preventing others from occurring in the  
28 future. Table 1 illustrates a conceptual sequence for the preparation of a transportation master  
29 plan for Port Authority facilities.

30 Even if a transportation master plan does not exist and circumstances do not allow for its  
31 creation, a table such as this provides a framework or flow chart for applying an agency’s access  
32 management guidelines.

1 **TABLE 1 Port Authority Framework for Preparing a Transportation Master Plan (4)**

Step No.	Task
1	Identify the Port Authority facility under consideration.
2	Identify the modes of transportation that will be accommodated at the facility in the master plan.
3	Identify existing and/or proposed freeways and interchanges that will be used to access this facility.
4	Identify existing and/or proposed arterial roadways that connect these interchanges with the facility.
5	Identify desirable locations for signalized intersections on these arterial roadways.
6	Locate (or relocate) signalized intersections as close to the desirable locations as possible. [Note: The proper location and spacing of traffic signals is one of the most important decisions in access management due to the impact that signal location has on traffic progression along the corridor.]
7	Lay out existing and proposed walkways, bicycle trails, and vehicular roadways as a supporting grid. A. Identify roadway classifications for each roadway. B. Plan access to land in the vicinity of interchanges.
8	Determine existing and future roadway cross-sections to accommodate the applicable modes of travel. A. Even if traffic volumes are low and development densities are low, strongly consider non-traversable medians on principal arterial, arterial and collector roadways. B. Plan the site-access and circulation patterns based on roadway cross-sections. [Note: Providing a cross-section with a non-traversable median is one of the most important decisions in access management. The installation of a non-traversable median precludes direct left-turns into and out of driveways. Left-turns are associated with 74 percent of driveway-related crashes.]
9	Provide the appropriate roadside buffer on all roadways based on future needs and volumes.
10	Identify desired driveway locations using guidelines.
11	Identify locations for left-turn and right-turn lanes.

2

3 **Identify Access Classification for Each Roadway at a Facility**

4 A roadway access classification system (ACS), with the level of allowable access for roadways  
5 varying based on their relative importance in the transportation system, is an effective tool for  
6 the clear and consistent application of access management to all roadways. An ACS may help  
7 streamline the development process for permit applicants and their consultants by providing  
8 guidance upfront that indicates a roadway's importance to the transportation network and that  
9 establishes access-related criteria for access locations and spacing requirements.

10 Essentially a hierarchy of access categories, an ACS delineates each access category with  
11 its related criteria, thereby governing the access-related standards and characteristics for  
12 corresponding roadways. These access categories ultimately define where access can be allowed  
13 on the roadway system and to abutting properties, where it should be denied or discouraged, and  
14 what spacing and design guidelines should be used.



1 Table 2 provides an overview of the access classification system developed for Port  
2 Authority facilities. As shown in the table, the ACS establishes a tiered system of access  
3 categories based on the known functionality of individual roadways at Port Authority facilities.

4 The access categories and associated access-related criteria are used by the Agency,  
5 tenants, and other stakeholders to help provide a common basis throughout the decision-making  
6 process. This guidance should be used in advance of a specific request or application to help  
7 ensure what is requested is consistent with the established ACS.

8  
9 **TABLE 2 Port Authority Roadway Access Classification System (5)**

Access Classification	Functional Description	Traffic Flow Characteristics	Vehicle Types
<b>Freeway</b> (including mainline freeways and ramps)	Exclusively used for the movement of through traffic. Does not serve any property access function (i.e., there are no driveways).	Exclusively uninterrupted traffic flow.	Typical
<b>Principal Arterial Road</b>	Primarily used for the movement of through traffic; access to abutting land uses is subordinate to through traffic movement.	Interrupted traffic flow.	Serves a higher percentage of trucks compared to an arterial road.
<b>Arterial Road</b>			Serves a lower percentage of trucks compared to a principal arterial.
<b>Collector Road</b>	Provides both land access and traffic circulation functions, collects traffic to/from local streets and channels it to/from arterials.	Interrupted traffic flow.	Typical
<b>Local Road</b>	Primarily provides direct access to abutting land uses, very low level of through traffic movement.	Interrupted traffic flow; low operating speed.	Typical

10  
11 **Prepare Sub-Area or Access Management Plan for Specific Corridor(s)**

12 Although having a transportation master plan is desirable, circumstances may exist where one is  
13 not available and access management will need to be applied in the absence of such a plan. In  
14 these situations, the development and application of a sub-area plan, including an access  
15 management plan, is particularly important. A sub-area plan is a transportation plan that  
16 addresses mobility and access needs for a specific area or specific priority corridor(s). The sub-  
17 area may include one or more properties or roadways. A sub-area plan improves the consistency  
18 and predictability of the development process and helps establish a common vision that could be  
19 applied by stakeholders, including those requesting an access permit as well as those reviewing  
20 the application, to avoid uninformed requests and decisions.

21 Like a transportation master plan, a sub-area plan provides a framework for the consistent  
22 application of access management to accommodate potential changes in land development  
23 patterns. A sub-area plan is useful for dealing with specific areas of a facility that are  
24 undeveloped or areas where redevelopment is possible. It may address multiple properties with  
25 different owners, adjacent roadways, and access to those roadways. It may also address areas  
26 within a facility having roadways that are programmed for improvement or driveways that need

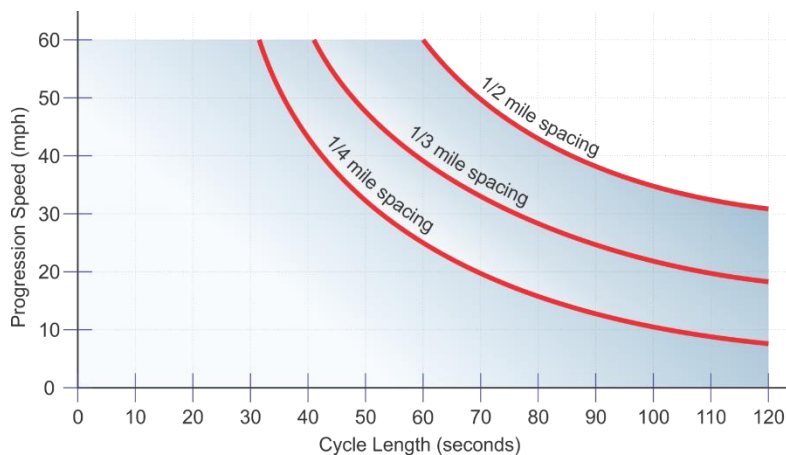
1 to be consolidated or realigned. A sub-area plan may be prepared as an integral component of a  
 2 transportation master plan or as an independent effort; in either case, it should incorporate  
 3 provisions for coordination of future growth with improvement of the roadway network.

#### 5 **Specify Future Locations for New Traffic Signals**

6 In addition to establishing traffic signal spacing guidelines to be used in reviewing access permit  
 7 applications or other requests, an agency could enhance its access management program further  
 8 by proactively identifying potential future signal locations. This would be done in advance of a  
 9 specific request or application, giving those within the agency as well as possible future  
 10 applicants invaluable knowledge on which to base project plans. The considerations applied in  
 11 evaluating traffic signal requests, involving progression and bandwidth, would be similar, but the  
 12 potential added development, density, and traffic would also be considered. Identifying a  
 13 possible future signal location would not, in itself, provide a basis for the actual signal  
 14 installation. A traffic signal would be installed only when Manual on Uniform Traffic Control  
 15 Devices warrant(s) are met.

16 Future signal locations could be identified based on providing for the efficient  
 17 progression of vehicular traffic along a corridor with an understanding of the area's potential  
 18 growth and development. This could help reduce requests for the installation of traffic signals at  
 19 locations that would be undesirable due to an adverse impact on signal progression. This strategy  
 20 is more applicable in undeveloped and developing (or redeveloping) areas, where there is  
 21 typically greater flexibility for spacing traffic signals (relative to developed areas) because the  
 22 spacing of intersections and driveways along a particular corridor has not yet been fully  
 23 established.

24 The progression speed for a corridor is primarily a function of both the traffic signal  
 25 spacing along the corridor and the cycle length of the traffic signals along that corridor. The  
 26 fundamental relationships among traffic signal spacing, progression speed, and cycle length –  
 27 which dictate the operation and performance of corridors with multiple signalized intersections –  
 28 are illustrated in Figure 2. As the curves show, for a given cycle length, higher vehicle  
 29 progression speeds can be achieved by increasing the distance between signals. Similarly, for a  
 30 given cycle length, reducing the spacing between signals results in a reduction in the progression  
 31 speed.



33  
 34 **FIGURE 2 Basic relationships among traffic signal spacing, progression speed, and cycle**  
 35 **length. (6)**

The proactive application of Table 3, below, which presents in tabular form these same relationships – among cycle length, traffic signal spacing, and progression speed – will enable an agency to identify desirable future locations for signalized intersections. For a particular cycle length, the table shows the traffic signal spacing distances necessary to achieve various progression speeds. For example, at a cycle length of 80 seconds, spacing signals at 2,350 feet would result in a progression speed of 40 mph; however, reducing the spacing to 1,760 feet reduces the progression speed to 30 mph.

This information will help all stakeholders. Developers will benefit by being able to better plan their site development and access to take advantage of these potential future signalized locations. Roadway users will also benefit as the final network, in compliance with the criteria and able to achieve traffic signal progression commensurate with the plan, would function more effectively.

Proactively identifying future signal locations allows for consideration of potential signal locations to be considered at project inception when design alternatives are being evaluated at the preliminary/conceptual design stage (i.e., the “tissue paper” stage). Not having this information or postponing or ignoring its consideration until a traffic impact study for a large development is submitted or design documents are produced, when considerable time and money have already been spent and decisions have been made, often makes the best solutions difficult or impossible to achieve and is frustrating for the applicant. Applying this strategy will help guide applicants to propose signal locations that would help maintain system operations and safety.

**TABLE 3 Speed and Cycle Length Table (7)**

Cycle Length (seconds)	Progression Speed (mph)		
	30	40	50
	Signal Spacing (feet)		
60	1,320	1,760	2,200
70	1,540	2,050	2,570
80	1,760	2,350	2,640
90	1,980	2,640	2,640
120	2,640	2,640	2,640

## CONCLUSION

The Port Authority has found, through implementing its Roadway Access Management Guidelines, that applying those guidelines proactively helps to achieve the goals of streamlining decision-making within the Agency, building consensus and collaboration among various stakeholders, and resolving potential access management issues before they become problematic. This is particularly important as the Port Authority plans, builds, operates, and maintains infrastructure critical to the New York / New Jersey region’s trade and transportation network, affecting the quality of life for more than 17 million people. Proactive implementation of the program is expected to result in savings in time, money, and liability to the Agency, while also

1 improving safety, traffic operations, business operations, and the environment as well as  
2 encouraging capital investments.

3 The administrative and technical activities described in this paper can be applied  
4 individually or collectively to enhance access management programs by creating clear and  
5 uniformly applied standards that can be discussed and used by agencies, developers, permit  
6 applicants, property owners, other stakeholders, and their planners and engineers. Access  
7 management guidelines provide the basis for these strategies. When plainly explained – in  
8 contrast to simply being a list of rules – these guidelines foster collaboration and effective  
9 planning.

10 Creating clear channels of communication early on and encouraging team conceptual  
11 planning and pre-application meetings, as well as developing a system-wide or sub-area  
12 transportation master plan, can help both the agency and external stakeholders to be more  
13 proactive, enhancing the planning and decision-making process. Improving the consistency and  
14 predictability of these processes reduces the likelihood of revisions needed to documents  
15 submitted by an applicant, minimizing delays, streamlining the project delivery process, and  
16 saving money.

17 The use of an Access Classification System, indicating a roadway's importance to the  
18 transportation network and establishing access-related criteria for access locations and spacing  
19 requirements, also helps streamline the development process for permit applicants and their  
20 consultants. Having such guidance upfront eliminates frustration and gets all parties on board,  
21 before uninformed requests or costly decisions are made by applicants.

22 In this regard, proactively identifying potential future signal locations allows these  
23 locations to be considered at project inception, when design alternatives are being evaluated.  
24 Applying this strategy will help guide applicants to propose signal locations that would help  
25 maintain system operations and safety, again benefitting the agency, stakeholders, and the  
26 traveling public.

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- 3       of progression speeds.

4

5

6