Transportation Management Plan

Guidelines

The Port Authority of New York & New Jersey
Traffic Engineering
February 2018

Contents

A. PA TMP Policy

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PORT AUTHORITY NEWS BULLETIN

Offices of the Chief Operating Officer and Chief Engineer

Bulletin #17-01

DEVELOPMENT AND IMPLEMENTATION OF TRANSPORTATION MANAGEMENT PLANS

This bulletin sets forth an agency-wide, structured approach to developing and implementing Transportation Management Plans (TMPs). A formal policy document is expected to be released shortly. TMPs ensure the safe and efficient movement of people and goods during construction, and minimize impacts to the regional transportation network. Although the Port Authority previously developed and implemented TMPs on a case-by-case basis, the purpose of this bulletin is to ensure there is a documented programmatic and regional approach, which promotes the efficient delivery of infrastructure improvement and enhancement on an ongoing basis. TMPs are now integrated into the project delivery process. TMPs are included in the Project Initiation Request Form (PIRF) and are listed under the "Project Criteria" section in the Engineering Department's project proposal.

TMPs are an industry-standard practice and are developed and implemented by agencies in New York and New Jersey. Additionally, the Federal Highway Administration (FHWA) encourages all agencies to develop and implement TMPs and recognizes TMPs as a "best practice" that will lead to improved community relations and reduced liability.

The Chief Traffic Engineer is responsible for determining if a TMP is required. Project teams will develop and implement TMPs in consultation with all project stakeholders (e.g., internal project stakeholders, other transportation agencies in NY & NJ, police departments, fire departments, emergency services, and communities). TMPs must be developed and implemented prior to the commencement of construction.

TMPs shall consist of one or more of the following components determined by the project characteristics and anticipated transportation impacts:

a) A Traffic Control Plan, which facilitates the safe passage of travelers through a project work zone while maintaining a reasonable level of service, and ensures work zone safety.

b) A Transportation Operations component, which will identify multi-modal strategies to mitigate impacts of construction on the operation and management of transportation systems.

January 26, 2017

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Examples of Transportation Operations strategies include demand management, corridor/network management, enforcement, and active traffic management.

c) A comprehensive Public Information component, which will include communication strategies to inform affected travelers, community members, and appropriate public entities about the project, the anticipated transportation impacts and mitigation strategies.

TMPs must be monitored and reported on in real-time and adjusted as necessary through project completion.

Line Department Program Management is responsible for coordination efforts associated with the overall development and implementation of a TMP in consultation with all project stakeholders (e.g., internal project stakeholders, other transportation agencies in NY & NJ, police departments, fire departments, emergency services, and communities). In addition, they are responsible to ensure that a TMP considers on-going and planned construction in the region; this will ensure that transportation management efforts across all modes of transportation within the region are synchronized.

The Port Authority Agency Operations Center (PA-AOC) is responsible for monitoring and reporting on TMPs and making real-time adjustments to TMP strategies in cooperation with facility Operations Control Centers, peer transportation management centers in NY and NJ, and the Transportation Operations Coordination Committee coalition (TRANSCOM) to adjust to changes in project schedules and activities and incidents on the regional transportation network.

Stephanie Dawson
Chief Operating Officer

James Starace
Chief Engineer

January 26, 2017

B. Introduction

When a construction project will impact traffic within the PANYNJ jurisdiction or beyond PANYNJ facilities, the PANYNJ assesses the impacts, develops strategies to mitigate impacts, and coordinates with internal and external parties affected. This will be accomplished through the development of a Transportation Management Plan (TMP). While many PANYNJ projects have localized impacts on the motoring public within the Port Authority's jurisdiction during the project construction phase, others may involve sister agencies or local facilities, necessitating coordination between agencies and adequate planning of construction projects to mitigate significant impacts on travel times.

The purpose of this guideline document is to provide a standard format and template to aid in the preparation of all PANYNJ TMPs. The TMP guidelines focus on communications protocols, stakeholder coordination, description and assessment of construction impacts, and development, implementation and monitoring of mitigation strategies. The audience includes internal PA stakeholders and external transportation agencies.

The TMP is an on-going process and shall be updated as needed throughout the lifecycle of the project. Additionally, TMPs consist of multiple components including:

- *The written document (TMP Memo/Report)*
- *Communications plans and protocols*
- *Public outreach prior and throughout construction*
- *Coordination and meetings with stakeholders from other agencies prior to and throughout construction*
- *Traffic control plan(s) (Maintenance of Traffic Drawings)*
- *Implementation of mitigation strategies during construction*
- *Traffic monitoring and reporting during construction*

While considering a TMP for a project, determine whether a TMP Report or a TMP Memo format is required, using the decision tree in Figure B-1 to guide the selection of the appropriate template. Information required includes:

- *A review of the project description and other relevant information.*
- *A review of the Maintenance of Traffic (MOT) drawings and expected traffic impacts associated with the Hours of Work and MOT.*
- *A determination of the extent of traffic impacts.*

The TMP Memo format will be used in most cases, especially for smaller projects whose influence area is contained wholly within the PANYNJ jurisdiction. A few, large projects which impacts traffic beyond PANYNJ jurisdiction will follow the TMP report guideline, unless those impacts can be mitigated solely through MOT and construction staging. A scoping checklist is included in Section C of this document to assist in collecting additional data to complete the TMP report format.

The Project Initiation Request Form (PIRF) is developed by the Project Manager (PM) outlining the scope of work including type of work, schedule, costs, etc. Traffic impacts must be considered throughout the development of the PIRF to determine the need for a TMP. The Engineer of Projects (EOP) prepares the Engineering Department's proposal for the project based on the scope of work outlined in the PIRF and selects whether a TMP is required or not in Project Delivery Proposal System (PDPS). The Lead Engineer/Architect (LE/A) may choose to consult with the Traffic Task Leader regarding this step. At the end of Stage III, the TMP will be submitted by the Traffic Task Leader to the PM with the final design submission of the project. For Design-Build (DB) projects, the Engineer of Record (EOR) shall submit the completed TMP at the end of the Design Phase to the Port Authority Project Manager. The TMP will then be distributed by the Project Manager to the appropriate stakeholders to be made aware of the mitigation strategies developed for the project, as well as who and how to notify multiple audiences of traffic impacts. The Agency Operations Center (AOC) will monitor the traffic impacts of construction and provide reports as appropriate. This process can be seen in Figure B-2, which shows the TMP Work Flow Diagram.

Any non-italicized text shall be included in your TMP report or Memo. Italicized text is instructional.

This guideline document provides examples of data, performance measures, and mitigation strategies. The engineer preparing the TMP will include applicable sections to document readily available information/analysis on existing conditions, expected impacts, and planned mitigations. Not all items are applicable to every project. However, if the engineer determines that additional analysis is necessary, he or she should request that analysis from the relevant line department as discussed in Section C - Project Description of this document.

The TMP preparer sends the TMP Memo/Report to the Project Manager for distribution to appropriate contacts inside and outside the agency.

Figure B-1: Decision Tree

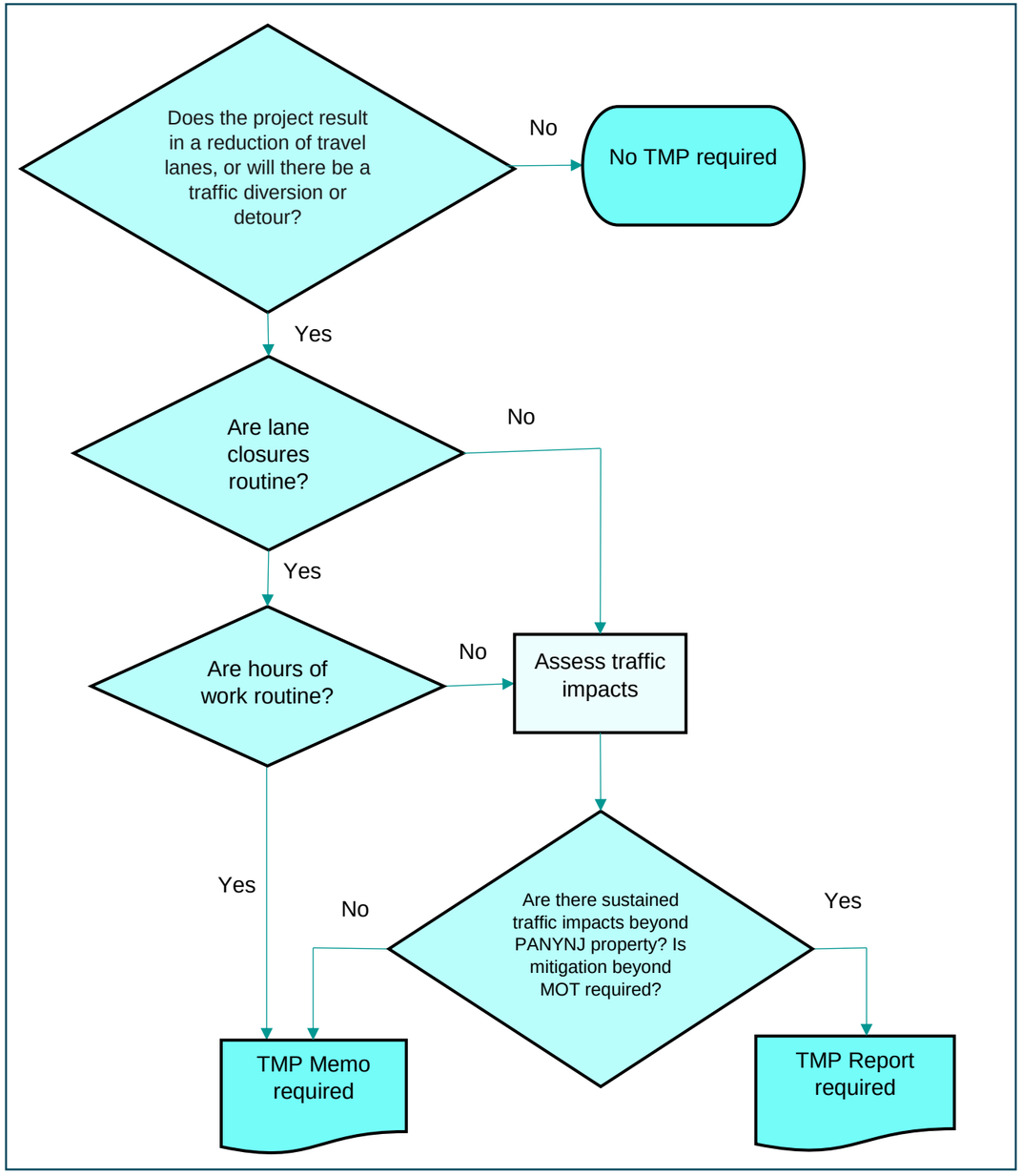
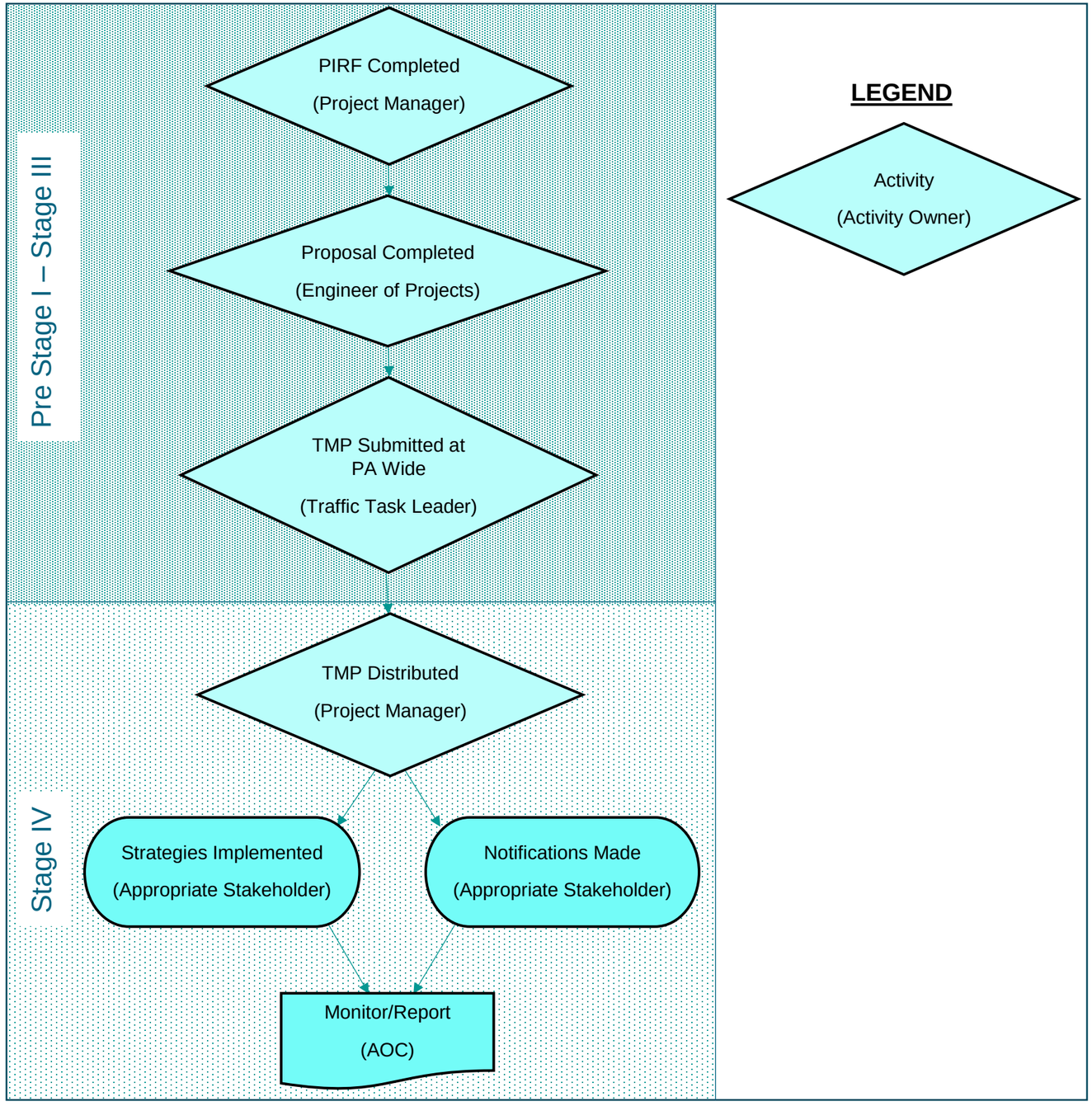


Figure B-2: TMP Work Flow Diagram



C. TMP Memorandum Template & Instructions

The following is the layout for a TMP Memo and will be used for most projects, especially for projects whose project influence area is contained entirely within the PANYNJ jurisdiction, as determined in the decision tree (Figure B-1).

The TMP Memo will be completed as a Memorandum from the Traffic EOR to the Project Manager. Each section shall consist of no more than a paragraph or two, with the goal of limiting the memo to 2 pages (see Figure C-1).

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M E M O R A N D U M

Traffic Engineering *Transportation Management Plan*

To: Project Manager

From: Engineer of Record

Date: Month XX, 201X

Subject: **TMP Memorandum - PROJECT # and NAME**

Copy To: Chief Traffic Engineer, Assistant Chief Traffic Engineer, Traffic Design Principal, Traffic Operations Principal, Manager of Agency Operations Center (AOC), Lead Engineer/Architect, Traffic Engineering Task Lead, GOCOR, Media Relations, Marketing

I. Project Description and Schedule
This section will include a short description (3-4 sentences) about:

- *PID and Contract number*
- *Project scope (roads/facilities involved and improvements to be constructed)*
- *Project limits*
- *Purpose/need of the project*
- *Dates for construction*

II. Hours of Work
Include contract Hours of Work, separated by stage and/or area as appropriate.

III. Maintenance of Traffic/Construction Staging
This section will include a short description and/or graphic about:

- *Lane closure information and dates by stage derived from MOT and construction staging drawings (refer to contract drawings)*
- *Pertinent detour information*
- *Pedestrian MOT*

IV. Impacts and Mitigation
This section will include a summary of traffic impacts expected as a result of the project. Attach any traffic analysis performed for this project. If the example below cannot be applied to a project, consider TMP Report.

- *Summary of traffic impacts and mitigation strategies – for example, "*The traffic impacts are minimized by staging construction to be performed in routine single lane closures during nights and weekends*," or "*Traffic impacts are expected to be minimal because work will take place during weekend hours when the traffic volumes are very low.*"*

V. Monitoring
The Agency Operations Center (AOC) will monitor the impacts of construction for any potential disruptions and will issue monitoring reports as required.

Traffic Engineering shall be notified of any changes in the stipulations within this Transportation Management Plan (TMP).

Choose from one of the options below:

Prepared by Consultant for Traffic Engineering; Consultant is Engineer of Record for Traffic Engineering on subject project.; *or*

Prepared by Port Authority Traffic Engineering.

Firm name should be updated where applicable.

Figure C-1: Sample TMP Memo

THE PORT AUTHORITY OF NY & NJ

MEMORANDUM

Traffic Engineering *Transportation Management Plan*

To: Aviva Oppenheim (Project Manager)
From: William Bothe (AECOM Engineer of Record)
Date: September 07, 2017
Subject: **TMP Memorandum - PABT BT-200.300 W.O.#30 - Remove VTU**
Copy To: J. Rivera, M. Baig, M. Diculescu, T. Bobowsky, A. Lepore, A. Rawashdeh, A. Levi, J. Bernbach, T. Lado, R. Marsico, A. Mancher

I. Project Description and Schedule
The primary objective of this contract (PID# 17682000, BT-200.300 WO#30) is to demolish the existing Video Teleconferencing Unit (VTU) area walls, doors, column finishes, and the lower level floor slab and existing foundation in the vicinity to provide space for a future proposed escalator. Work is primarily in the pedestrian access corridor and escalator area adjacent to the lower level bus gate access road. The construction duration is anticipated to be **six (6)** months and is scheduled to begin **November 2017**.

II. Hours of Work
- Hours of the South Wing south side bus gate closure, south side bus gate access lane closure, and restricted lane width on north side bus gate access lane are 1AM to 5AM.
- Restricted lane width of the bus gate access lane and closure of four (4) bus gates will occur during the daytime.

III. Maintenance of Traffic/Construction Staging
The work associated with this project will be performed with closures of the lower level South Wing south side bus gates and adjacent bus gate access lane, as well as restricted lane widths on the lower level South Wing north side bus gate access road. Detours will not be required for the lane closures.

Construction staging is as follows:

- Nighttime Closure – Lower level South Wing south side bus gate closure and bus gate access lane closure. Also, restricted lane width on South Wing north side bus gate access lane and single bus gate closure (contract drawing MT2102).
- Daytime Closure – Lower level South Wing bus gate access lane width restriction and partial bus gate closure (contract drawing MT2103).

IV. Impacts and Mitigation
Traffic impacts are expected to be minimal because bus gate and access lane closure will take place during the night time hours between 1AM and 5AM when traffic volume is

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MEMORANDUM

very low and South Wing bus gates are not in use. In addition, the impacted roadways are restricted bus access roads with no access to public traffic. Only bus traffic entering the terminal to serve the lower level gates will be impacted. Buses will continue to use the outside bus gate bypass lane road to access the operating gates on north side of the work area or in the North Wing.

V. Monitoring
Since all impacted traffic is within the PABT, the Agency Operations Center (AOC) monitoring is not required for this project.

Traffic Engineering shall be notified of any changes in the stipulations within this Transportation Management Plan (TMP).

Prepared by AECOM for Traffic Engineering; AECOM is the Engineer of Record for Traffic Engineering on subject project.

Page 2

D. TMP Report Scoping Checklist

The scoping checklist provided below outlines the basic steps and documents needed to complete a TMP Report. Every item is not required, the TMP preparer and the LE/A should coordinate to determine necessary steps. The following is a guide, some projects may require additional information/tasks and some fewer.

A. Project Description		Data Collected (Y/N/NA)	Comments
A1.	Gather the project description and other relevant information		
A2.	Review MOT drawings		
A3.	Determine project limits with LE/A		
A4.	Create study area map		
A5.	Collect relevant traffic and transportation conditions from previous studies (i.e. Stage I or Stage II reports)		
A6.	Review Environmental Assessment (EA) or Finding of No Significant Impact (FONSI) if applicable		
A7.	Document project alternatives that were considered and why the Preliminary Preferred Alternative (PPA) was chosen (LE/A)		
A8.	Determine areas for local and regional influence/impact		
A9.	If relevant information is missing, request additional information/data on local and regional impact areas from departments listed		
A10.	Collect information on regional construction projects that could have impact on the TMP project area (Project name, owner, schedule) and qualitatively assess potential impacts		
A11.	Define Task Force Members		
A12.	Meet with Task Force to: – Review A1.-A10. – Brainstorm mitigation strategies		
A13.	Gather additional information to complete Chapter 1 of the TMP report (see Section D of this document)		

B. Impacts and Mitigation		Data Collected (Y/N/NA)	Comments
B1.	Review available MOT drawings, Hours of Work and construction schedule		
B2.	Assess impacts of MOT on local and regional facilities specific to high crash locations, volumes, LOS, queues, delays, transit impacts, aviation or maritime impacts		
B3.	Develop mitigation strategies and determine which construction stages require Traffic Mitigation & Communication Plans (TMCP) in conjunction with the AOC. Develop TMCPs		
B4.	Meet with Task Force – Review B1. And B2. – Determine roles and responsibilities for strategy implementation – Brainstorm monitoring and performance metrics		
B5.	Gather additional information to complete Chapter 2 of the TMP report (see section D of TMP Guidelines)		
C. Coordination and Monitoring		**Data Collected (Y/N/NA)**	**Comments**
C1.	Determine roles, responsibilities, and schedule for regional project coordination		
C2	Develop outreach plan and define responsibilities		
C3.	Develop project specific Incident Management flow chart		
C4.	Develop monitoring plan		

E. TMP Report Template & Instructions

The following sections depict the layout and describe the content for a TMP Report.

The document will be arranged to minimize white space while maintaining continuity of information. Some sections may follow a two column format to allow maximum text per page and ease of reading, while others will be formatted in a three column format allowing for larger graphics to use two thirds of the page.

The report cover should match the cover of this document. Cover photos will be replaced with project specific photos, but fonts and layout will remain the same. On the cover, the word "Guidelines" shall be replaced with FAC-XXX.XXX Project Title. The cover will also state "Prepared for Traffic Engineering by FIRM", with the word 'FIRM' to be replaced with the Consulting Firm's name. The Table of Contents will also match the table of contents of this document as shown on the next page. A list of acronyms and abbreviations should match those shown on following pages. These lists are not all inclusive and should be updated to include additional relevant acronyms or abbreviations. Appendix A includes the style guide that the TMP preparer will use to match the layout, fonts and colors for the document. Colors, chapter titles, fonts and sections are not to be modified without input from PANYNJ Traffic Engineering.

TMP Report Table of Contents

List of Figures

List of Tables

Acronyms and Abbreviations

Below is list of acronyms and abbreviations that may be used in this TMP report.

ADT – Annual Daily Traffic

AADT - Average Annual Daily Traffic

AOC - Agency Operations Center

ATR - Automated Traffic Recorder

CMD - Construction Management Division

EA - Environmental Assessment

FAA - Federal Aviation Administration

FHWA - Federal Highway Administration

FONSI - Finding of No Significant Impact

GOCOR - Government and Community Relations

GWB - George Washington Bridge

ITS - Intelligent Transportation Systems

JTMC - Joint Traffic Management Center

LE/A – Lead Engineer/Architect

LOS - Level of Service

MOT - Maintenance of Traffic

MPO - Metropolitan Planning Organization

MTA - Metropolitan Transportation Authority

NB-HCE - Newark Bay Hudson County Extension

NJDOT - New Jersey Department of Transportation

NJTA - New Jersey Turnpike Authority

NJTPA - North Jersey Transportation Planning Authority

NYCDOT - New York City Department of Transportation

NYMTC - New York Metropolitan Transportation Council

NYSDOT - New York State Department of Transportation

OCC - Operations Control Center

O-D - Origin-Destination

OEM - Office of Emergency Management

PANYNJ - Port Authority of New York and New Jersey

PATCO - Port Authority Transit Corporation

PATH - Port Authority Trans-Hudson

PID - Project Identification Number

PIP - Palisades Interstate Parkway

PIRF - Project Initiation Request Form

PM - Project Manager

PPA - Preliminary Preferred Alternative

ROD - Record of Decision

RPO - Regional Planning Organization

SSP - Safety Service Patrols

TDM - Travel Demand Management

TEA - Traffic Enforcement Agents

TEU - Twenty Foot Equivalent Unit

TIP - Transportation Improvement Program

TMC - Turning Movement Counts

TMP – Transportation Management Plan

TRANSCOM - Transportation Operations Coordinating Committee

VMS - Variable Message Sign

XBL - Express Bus Lane

Executive Summary

The executive summary will include a brief description of the project and the expected impact areas due to project construction. A succinct explanation of the preferred alternative shall include bullet points outlining the scope, schedule, and duration. The following excerpt is from the GWB-244.150 TMP Report.

The Replacement of Palisades Interstate Parkway (PIP) Helix and Rehabilitation of Upper Level Spans over New Jersey Anchorage and Hudson Terrace project will extend the life of this connector by completing roadway repairs and replacement of the three bridges along the PIP Helix. The finished project will meet applicable codes for seismic capacity.

The preferred alternative calls for full rehabilitation including replacement of the existing PIP helix ramp on the current alignment with traffic detoured onto a new temporary detour roadway, requiring complex staging. This Transportation Management Plan (TMP) lays out the construction conditions, effects on traffic delays and mitigation strategies to successfully manage traffic and congestion during construction.

- Project scope includes:
  - Demolishing the existing bridges
  - Erecting a temporary helix roadway and bridges
  - Constructing the new permanent helix roadway
  - Demolishing the temporary helix roadway and bridges
- Anticipated construction cost is $69.87 million (2015).
- Scheduled to start in July 2016 and finish in October 2019 with an overall duration of 27 months (including winter months where construction is suspended).
- Impact areas include:
  - Local streets in Fort Lee, NJ
  - Regional roadways in northern New Jersey
  - Downstate New York
  - New York City

1 Project Description and Scope

1.1 Project Description

This section will include a short description of roads/facilities involved and improvements to be constructed. The description must include a clear and concise declaration of the project, explain context, goals and objectives and state the project need and problem to be addressed.

1.2 Project Area

The Project Area shall be defined by the project limits and must also include areas where impacts are anticipated. This section will include one or more graphics that show local and regional areas of influence. This section should list roadways and facilities in the immediate vicinity of the project as well as regional roadways and facilities with anticipated traffic impacts due to the project construction. Roadways are to be described in terms of number of lanes, access, and type of control (i.e. Road A is a two lane local route with stop controlled and signalized intersections).

1.3 Existing Conditions

Describe the existing traffic conditions (including all modes that may be impacted) in the project area that may be impacted by the project.

This section will provide a context of the prevailing traffic conditions of the study area. Depending on the scale of the project and projected impacts, the Project Manager and Traffic Engineering Task Lead will determine which traffic analyses will be required. Descriptions of the potential traffic analyses are briefly described below. Data, analyses and results will be presented by subject area (i.e. Traffic, Transit, Aviation, Cargo, Safety, etc.).

Descriptions can be accompanied by graphics displaying the results on maps or charts.

All relevant traffic and transportation conditions from previous studies (i.e. Stage I or Stage II reports, etc.) will be summarized and discussed in this section. Full reports and analyses shall be referenced and may be included as appendices. If previous studies are not available, data required to describe the existing traffic conditions may be collected to establish a baseline condition.

1.3.1 Traffic

Existing traffic conditions are to be briefly described. This should include observed parameters (i.e. queues, LOS, volumes, etc.) for roadways, intersections and/or facilities in the project area. Include full details under appendices for more detailed information. Traffic data could include but not be limited to volumes, speeds, travel times, Level of Service (LOS), Origin-Destination survey, crash history, and/or bicycle and pedestrian data.

1.3.2 Transit

Transit conditions (for bus, rail, terminals, depots, ferries or other facilities) will be described if there are anticipated impacts on transit routes, ridership, headways, etc. or if they are to be utilized as part of the mitigation strategies. Include full details under appendices for more detailed information. Transit data could include, but not be limited to ridership, headways, frequency, passenger loads, or origin-destination data.

1.3.3 Aviation

Existing aviation conditions will be described if the project impacts landside operations. Include full details under appendices for more detailed information as appropriate. Aviation data could include, but not be limited to passenger traffic, load factor, frontage stops and dwell times, parking, air-train usage, bus and/or taxi ridership.

1.3.4 Marine Ports

If a marine terminal project is expected to impact traffic on the surrounding roadways, this section shall briefly describe existing Marine Port conditions analysis. Include full details under appendices for more detailed information. Port data could include, but not be limited to, marine traffic (arrivals/departures), container port traffic, internal container port traffic, or vehicular access traffic.

1.4 Project Alternatives

In this section, the project alternatives previously studied will be summarized and the preferred alternative will be discussed in more detail. The purpose of this section is to describe the multiple possibilities/outcomes that were considered and why the Preliminary Preferred Alternative (PPA) was selected.

1.4.1 Explored Non-Selected Alternatives

A table (similar to Table 1-1) will include a brief description of each alternative that was considered and why each was rejected prior to the selection of the PPA. If needed, graphics of the alternatives can be included.

1.4.2 Preliminary Preferred Alternative

The PPA will be described in greater detail including a graphic and why it was chosen. A brief discussion of how the alternative will be implemented shall be included.

Table 1-1: Explored Alternatives

	Description	Reason Eliminated
1	*Briefly describe the alternative including cost, duration, and impacts as necessary.*	*Briefly explain reason not chosen due to cost, duration, not meeting purpose and need, etc.*
2	*Continue table as necessary to include all investigated alternatives and the corresponding reasons for elimination.*	

1.5 Task Force

This section identifies the responsible parties for coordination and communication internal to the PANYNJ as well as externally with other agency partners. The Task Force shall be engaged early in the TMP development to help guide strategy selection, and later be involved in the day-to-day implementation of the plan. It is not intended that each member will take part in all activities; rather the PANYNJ Project Manager will determine which members are needed for specific tasks or meetings. For example, the entire Task Force (internal and external) might be convened during Stage 2 to gather information from all impacted agencies/organizations, but during strategy selection, a smaller group may be convened, i.e., such as the internal group plus NJ Transit for any strategies involving public transit.

Each member group shall have a representative for regular communications with contact information in a table. This section will denote contacts for specific activities which occur on a recurrent basis, such as materials delivery, late lane reopening, etc. Example tables are shown for internal members (Table 1-2) and external members (Table 1-3). These tables are not meant to be exhaustive and can be modified as needed for the project. Delete inapplicable rows.

Table 1-2: Internal Task Force Members

Group	Contact	Phone Number	Email
PANYNJ Project Manager			
PANYNJ Traffic Engineering			
PANYNJ AOC			
Facility			
Facility OCC			
Construction Management Division (CMD)			
PANYNJ Police			
PANYNJ Marketing			
PANYNJ Media Relations			
GOCOR			

Table 1-3: Partner Agency Task Force Members

Organization	Contact	Phone Number	Email
NYCDOT			
NYSDOT			
NJDOT			
NJTA			
Transit Agencies			
State/Municipal OEM			
TRANSCOM			
Contractor			
County/Municipal Representative			
MPO/RPO			

1.6 Environmental Assessment and Finding of No Significant Impact (FONSI)/Record of Decision (ROD)

If applicable, this section will include a paragraph summary of environmental document findings, with a reference to where the full documents can be found, or attached as appendices. If not applicable, then delete this section from the TMP report.

1.7 Regional Projects

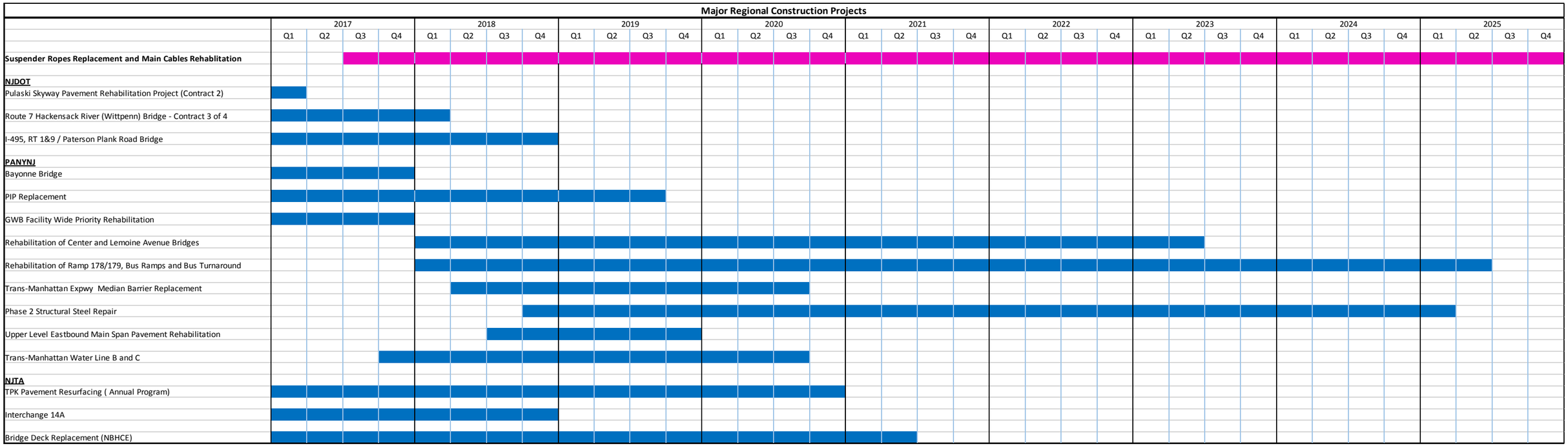
In coordination with the AOC and Traffic Task Lead, the TMP preparer will develop a list of regional projects in close proximity that will be in construction concurrently with the subject project. This list must be incorporated into a bar chart (see table 1-4) depicting the start and end date of each project with the subject project being depicted as a different color so as to clearly illustrate where overlaps exist. The TMP preparer will include a narrative explaining the interdependency between the projects regarding the potential conflicts that can arise from having these projects run concurrently.

The PANYNJ Project Manager will coordinate with other projects identified in this section (within PANYNJ or other agencies) regarding lane closures or other impacts to minimize impacts to the regional transportation network. Impacts include detours and diversions that might pass through or close to the impact area of the project. Project managers should coordinate with the Facility, Traffic Engineering, Construction Management (CMD), and the AOC to understand potential impacts and to develop mitigation strategies as needed.

Each coordination effort only captures a specific moment in time – schedules change for a number of reasons (i.e., funding, other project, other agency, or local priorities). If there are "volatile" (schedule in flux) projects on the list, the PANYNJ project manager should coordinate with those agency project managers more frequently.

Impacts of major regional special events (i.e., sporting events, parades, festivals, etc.) must also be considered in regional construction and lane closure coordination. Some of these events will contain road closures that could affect access and egress to Port Authority facilities.

Table 1-4: Regional Projects



2 Impacts and Mitigation

2.1 Construction Stages & Hours of Work

This section will be presented as tables or text to provide an explanation of stages and impacts in a clear, concise manner. The table or text will include the stage number, description of anticipated closures, an indication of which hours of work are impacted, the duration of closures, and expected delays. A sample table is shown in Table 2-1. Additional columns can be added to show expected delays in other seasons, if applicable.

Table 2-1: Hours of Work and Traffic Impacts

Construction Stage	Lane Closures	Hours of Work	Hours	Unmitigated Delays (minutes)	Mitigated Delays (minutes)
B	Lower Level Westbound, PIP Southbound, Right shoulder of Upper departure (Lane 5-7)	Sat/Sun 9:00 PM - 11:00 AM	14	20-35	10-12
C-D	Ramp TR1, Ramp TR2	Sat/Sun 11:00 PM - 9:00 AM	10	20-35	5-10
E	Lower Level Eastbound, PIP Southbound, Ramp TR2, Ramp TR4	Sat/Sun 9:00 PM - 11:00 AM	14	30-45	10-15
	Three (3) east toll lanes (Lanes 34, 36 and 38) of PIP Toll Plaza	Sat/Sun 6:00 PM - 11:59 AM	18	10-15	5-10

2.1.1 Potential Traffic Impacts

For any construction stage that has more complex traffic impacts, a text description beyond Table 2-1 may be required. This shall include a short description (and/or table and/or graphic) depicting anticipated impacts without mitigation beyond MOT or Hours of Work put in place. This includes disruptions to traffic, transit, and other facilities such as roadways, toll plazas, bridges, tunnels, aero and marine terminals, parking, and ITS infrastructure. Impacts might be local and/or regional. Consideration should be given to impacts to other regional projects that will be under construction concurrently.

If applicable, impacted conditions traffic analysis will be briefly described, following the content provided in Section 1.3 above. Projected parameters for roadways, intersections and/or facilities in the project area are to be provided below. Include full details under appendices for more detailed information.

The TMP preparer must obtain baseline travel times where available and record in areas without monitoring devices prior to the beginning of construction. Manual travel time collection during construction may also be considered. Coordinate with the AOC to determine data needs and the ITS and planning groups for data availability.

2.2 Mitigation Strategies

Mitigation strategies that will be implemented to alleviate impacts will be defined. Factors to be considered when selecting viable strategies include cost, expected benefit, and ability to implement within the time frame needed, operational aspects, impacts, and other considerations.

This section will include a table of all strategies that were considered and justifications for any eliminations, as well as expanded descriptions of the strategies that are recommended for implementation.

Strategies shall be grouped into categories that will include topics such as traffic control/operations, transit and travel demand management, construction/contracting, incident management, and outreach. There may be some strategies that are only in place for one or two stages of construction or for only one or two program projects. This will be indicated in the text, specifically referring to the stage and schedule for that strategy.

This section will include a table for each strategy category showing roles and responsibilities for each of the proposed mitigation strategies, as well as the method of implementation to be utilized. A sample table is shown in Table 2-2.

Some example strategies to be considered in these tables (include but are not limited to):

1. ***Traffic Control Plan***
   a) *Protocols for lane closures/staging – includes reduced lane widths, lane/shoulder closures, reversible lanes, Hours of Work, traffic screens, etc.*
   b) *Capacity increases – this includes spot intersection improvements, signal timing/phasing changes, additional lane capacity, managed lanes, adaptive signal control, etc.*
   c) *Traffic detours/restrictions – includes signing well in advance of detour location, turn restrictions, etc.*
   d) *Incentive/disincentive clauses – includes clauses written into contractor's contract to incentivize early completion and penalize schedule overruns.*
2. ***Transportation Operations Strategies***
   a) *Ridesharing – includes forming and/or subsidizing carpools, vanpools, etc.*
   b) *Employer programs – includes telecommuting and flextime programs*
   c) *New/enhanced rail service – can include additional seating, additional train trips, etc.*
   d) *New/enhanced bus service – can include new bus routes, increased capacity or frequency on exiting routes, etc.*
   e) *PATH – includes decreased headways*
   f) *Ferry – includes increased frequency on existing routes or new service*

g) *Park and Ride – includes new lots, increased transit service to existing lots, etc.*

h) *Taxi/For-Hire Vehicles (FHV)*

i) *Incident detection – includes traffic cameras, Intelligent Transportation Systems (ITS) devices, increased patrols, etc.*

j) *Incident response – includes continued access for emergency responders, towing service, improved incident location/markers, etc.*

k) *Motorist information – includes Variable Message Signs (VMS) with incident information at key commuter decision points, traffic radio reports, Waze, 511.*

3. Public Information Strategies

a) *Electronic information - includes project website, use of existing email lists, etc.*

b) *Social media –includes Facebook pages and Twitter accounts to disseminate information*

c) *Meetings – includes internal, stakeholder/business owner, kiosks, and public information center*

d) *Print materials, broadcast media – includes flyers, press releases, radio and TV spots, radio traffic reports, etc.*

e) *Hotlines including Waze, 511, etc.*

f) *Motorist information – includes VMS with travel time, detour, and incident information, etc.*

For a full list of potential strategies, see Appendix C, which has been adapted from Section 4 (Work Zone Impact Management Strategies) of the FHWA TMP Template at http://www.ops.fhwa.dot.gov/wz/resources/final_rule/tmp_examples/sample_tmps/sec_c.htm#4.

Table 2-2: Implementation Strategy Category

#	Operational Scenario	Impacted Roadways and/or Intersections	Mitigation Strategy	Applicable Construction Stage	Responsible Entity
1	*Single and multiple lane closures on I-95 during standard hours for pier repairs, footing strengthening, rock anchors, and temporary shielding*	*Upper and lower level departure and approach*	• *Increased monitoring in AOC* • *Use electronic and social media to convey construction information*	*N/A; must be completed during substructure work*	*PANYNJ*
2	*Extended 54-hour weekend left lane closures for I-95 for pier reconstruction and guiderail removal/installation*	*Upper and lower level departure and approach*	• *Increased monitoring in AOC* • *Use electronic and social media to convey construction information*	*N/A; must be completed during substructure work*	*PANYNJ*
3	*Permit left turn from Bruce Reynolds Boulevard to Park Avenue (currently restricted)*	*Bruce Reynolds Boulevard*	• *Cover existing signs* • *Traffic enforcement agents (TEA) at intersection*	*Center Avenue Stage 1B (AM peak hours only)*	*PANYNJ*
4	*Center Avenue Topside Closures and Associated Detours*	*Center Avenue*	• *TEA at critical intersections to assist detoured traffic* • *Modify pavement markings on approach*	*All Center Avenue Stages*	*PANYNJ, Fort Lee*
		Bruce Reynolds Boulevard	• *Modify pavement markings between Center Avenue and Hoyt Avenue to reassign lane usage* • *Modify traffic signal timing and/or alter cycle length* • *TEA at critical intersections to assist detoured traffic*	*All Center Avenue Stages; pavement markings are modified prior to Center Avenue Stages 1A, 1B, and 2A; impacted traffic signal timing modifications vary depending on stage*	*PANYNJ, Fort Lee, Bergen County, NJDOT*
		Center Ramp 4	• *Widen Center Ramp 4 to accommodate two lanes*	*Prior to Center Avenue Stage 1A and remains a permanent feature*	*PANYNJ*
		Local 1 Ramp at Bridge Plaza North	• *Modify pavement markings* • *Relocate Stop sign to Bridge Plaza North approach*	*Prior to Center Avenue Stage 1A and remains throughout construction*	*PANYNJ*

3 Coordination and Monitoring

3.1 Outreach

This section provides a description of how the Public Outreach strategies identified in section 2.2 will be used to inform travelers through such avenues as public meetings, print and TV/radio media, website, social media and hotlines. This will include a matrix of responsible parties for communication and outreach.

In Table 3-1, the 'Audience' describes the user groups being targeted, the 'Distribution Channel' describes the outreach method for reaching that group, the 'Owner' shows whose role it is to reach out to each group, and 'Messaging Information' shows what these groups should be told. When possible, a timeline for this outreach will be included.

Representatives from each affected municipality are to be included in the Outreach Plan. A full list of representatives within five miles of each Port Authority Facility can be found in Appendix B as part of proposed legislation. Agency stakeholder owners have the responsibility to update the list. When completing the TMP report, this list should be updated with current representatives for the facility for the subject project.

Include the following text in every report:

The AOC shall act as a liaison between the outreach and the Task Force for day to day operations. The Project Manager shall act as a liaison to the Task Force to provide project specific information.

Table 3-1: Outreach Plan

Audience	Distribution Channel	Owner	Construction Stage	Messaging Information
Travelers (customers)	511, Navigation Apps, Variable Message Signs, PA Alerts	AOC	B	UL congested, use LL or alt route
	Printed Material, Website, Radio Spots, Twitter	Public Affairs	B, E	LL closed, use UL or alt route
Partner Transportation Agencies	Meetings, Closure Notification Emails, Real-Time Coordination between Transportation Management Centers	AOC	All Stages	Effects on other agencies roadways due to ongoing construction
Civic and Community Groups (business community, special interest groups, etc.)	Meetings, Advisories	Public Affairs	Entire project	Construction from 2017-2020
Elected Officials (county & municipal)	Meetings, Advisories	Public Affairs	Entire project	Construction from 2017-2020
General Public	Print Media, Press Releases	Public Affairs	C-D	Delays in NJ Local Approach to GWB

3.2 Incident Management

The preparer should coordinate with the AOC to confirm the flow chart and text of this section.

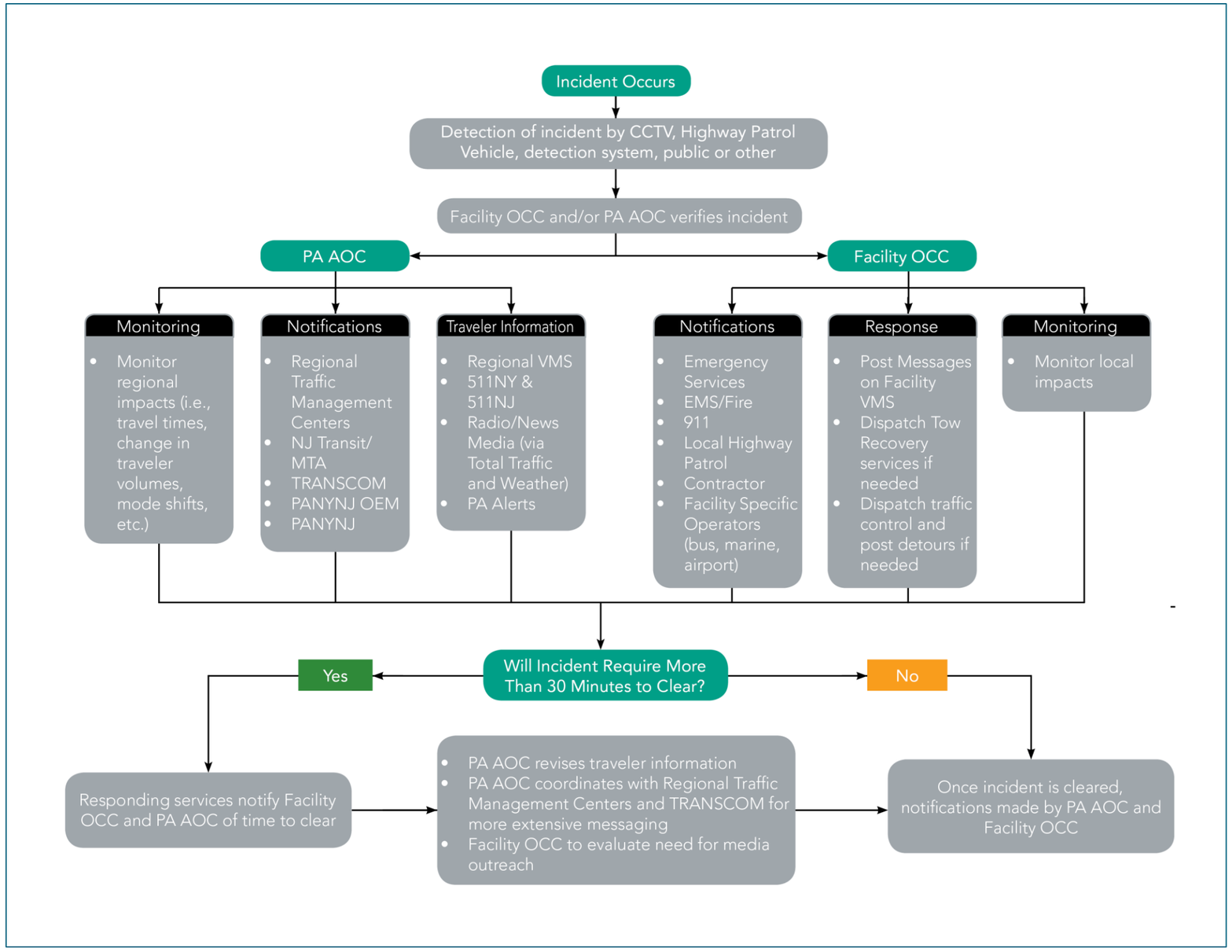
Figure 3-1 depicts the flowchart of the protocol that will be used for incident detection, communication and management. This flow chart will be reviewed and updated by the AOC representative on the Task Force for the TMP.

This section outlines how incidents are identified and responded to. The flowchart summarizes the protocol that is to be followed when an incident occurs. It includes information about how emergency responders are to be notified and how the incident's impacts will be disseminated to regional travelers.

Individual agencies are responsible for reporting incidents in the regional OpenReach (maintained by TRANSCOM) database. This resource is used to feed the live alerts page on the 511 website. In most cases it will be the responsibility of the facility Operations Control Center (OCC) to monitor for incidents on any PANYNJ facility and, together with the Port Authority Agency Operations Center (AOC), oversee response and disseminate information.

Information sharing to the driving public is also critical in the event of an incident. The PANYNJ AOC will be responsible for coordinating internally and externally as appropriate to provide real time travel information via multiple channels.

Figure 3-1: Incident Management Protocols



3.3 Monitoring and Reporting

This section provides a short description of metrics to be collected and methods to display/convey the information to evaluate the effectiveness of the strategies chosen.

The TMP is a "living" process that is to be updated throughout construction to track the effectiveness of the mitigation strategies and allow for in-stream adjustments to those measures should it become necessary. Monitoring reports and changes to hours of work or other mitigation strategies will be documented and compiled in project TMP's website. Coordinate with the AOC for website.

This section will outline the reporting intervals (daily, weekly, monthly, etc.) and explain what performance metrics will be collected/evaluated and give a standard method/format for reporting. Performance metrics aim to measure the success of the selected mitigation strategies. As such, performance metrics should be selected based on the mitigation measures recommended in Section 2.2. These measures will vary depending upon the type of project, impacts and facilities impacted.

Generally, the primary metric will be travel times from various points in the study area. The TMP preparer shall work with the AOC to identify locations for travel time monitoring. Other potential performance metrics include Traffic Volumes (by vehicle class where applicable), Intersection and Roadway Delays, Speeds, Incident Rates and Trends, Level of Service (LOS) (i.e. intersection, roadway, frontage, bus service, etc.), Parking Utilization, Dwell Times, Transit Ridership, Gate Hours, Cargo Volumes, etc.

Monitoring should include tracking the selected metrics (typically travel times) during hours of work and in the "shoulder" hours just before and after construction begins and ends. The monitoring will help to determine whether changes to hours of work or other implemented strategies are necessary (including adding new strategies or eliminating ineffective ones).

The TMP preparer will coordinate among the various Traffic Engineering groups to develop monitoring reports. See Figure BB-1 in Appendix B for the Traffic Engineering organizational structure. The workflow structure to determine the trips to be monitored report is as follows and is shown in Figure 3-2:

(1) The AOC and Design group, with input from the designer/TMP developer, would agree on which MT set-ups/phases would be appropriate to provide reports on. This conversation should be led by the designer and supported with previously conducted impact analysis.
(2) The designer/TMP developer would produce the attached with suggested trips and start and end points
(3) The AOC and Design group would have conceptual input into these trips and start/end points
(4) The ITS group would refine the proposed trips to best align with existing trips, deployed sensors, and known data quality issues.
    a. Some trips would be confirmed
    b. Some trips would be modified, such as their starting and ending points, but generally align with what was suggested
    c. Some trips would be identified as lacking data and requiring additional hardware to monitor.
(5) Add a map showing the identified monitoring locations that lack visibility and/or travel time data (see Figure 3-3).
(6) AOC, Design and ITS would finalize the content of the monitoring report.

Figures 3-4 & 3-5 depict sample daily monitoring reports for a typical TMP. The creation of the daily report will drive the collection of data along key routes to/from and across the construction area. This report will be used to track the impact of construction on the surrounding roadways.

Monitoring reports are not always project specific, but can combine multiple projects' lane closures and travel times into one report. Currently, for GWB, there is an overnight report that details all lane closures and associated travel times, as well as a comprehensive daytime report, which is also being developed. This reporting strategy may also be applied to other facilities, which may render the need to identify trips to monitor unnecessary.

The AOC and the Task Force will review the daily monitoring reports to assess whether any adjustments are required to the mitigation strategies. The TMP preparer must also produce a write-up for this section to describe the information being provided in each of the figures.

Figure 3-2: Workflow Structure for Trips to be Monitored

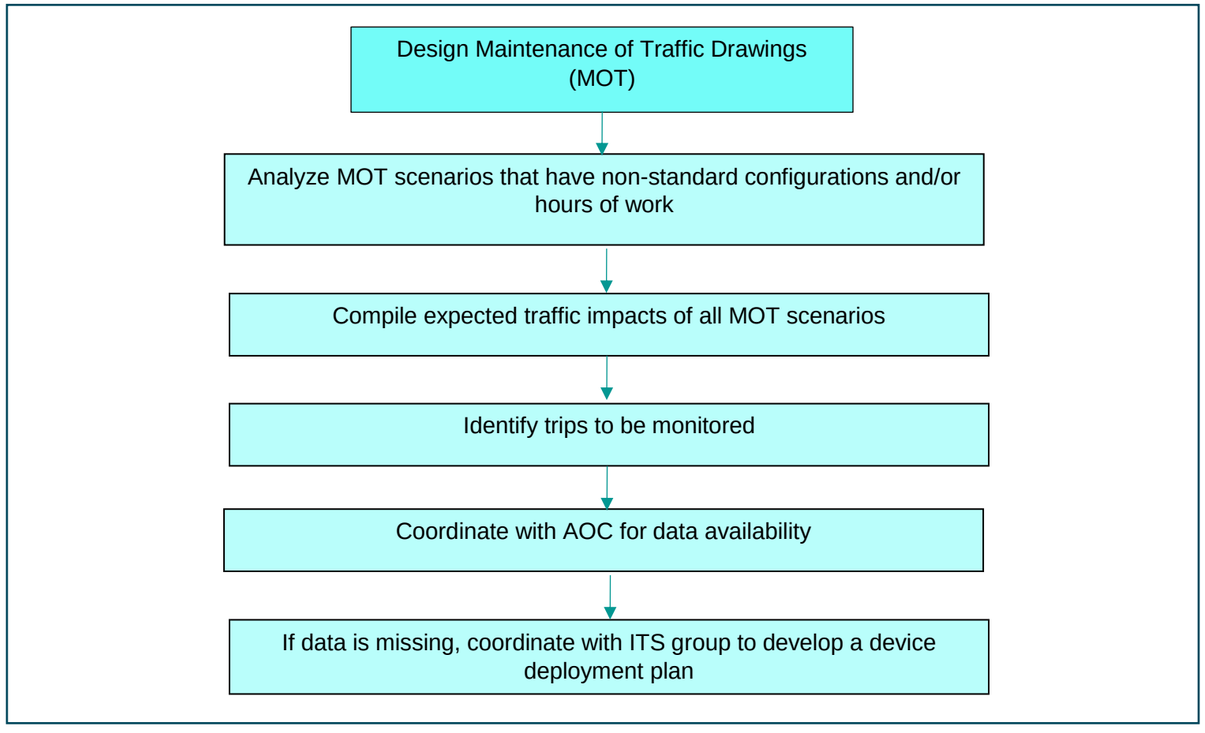


Figure 3-3: Areas Lacking Visibility and/or Travel Time

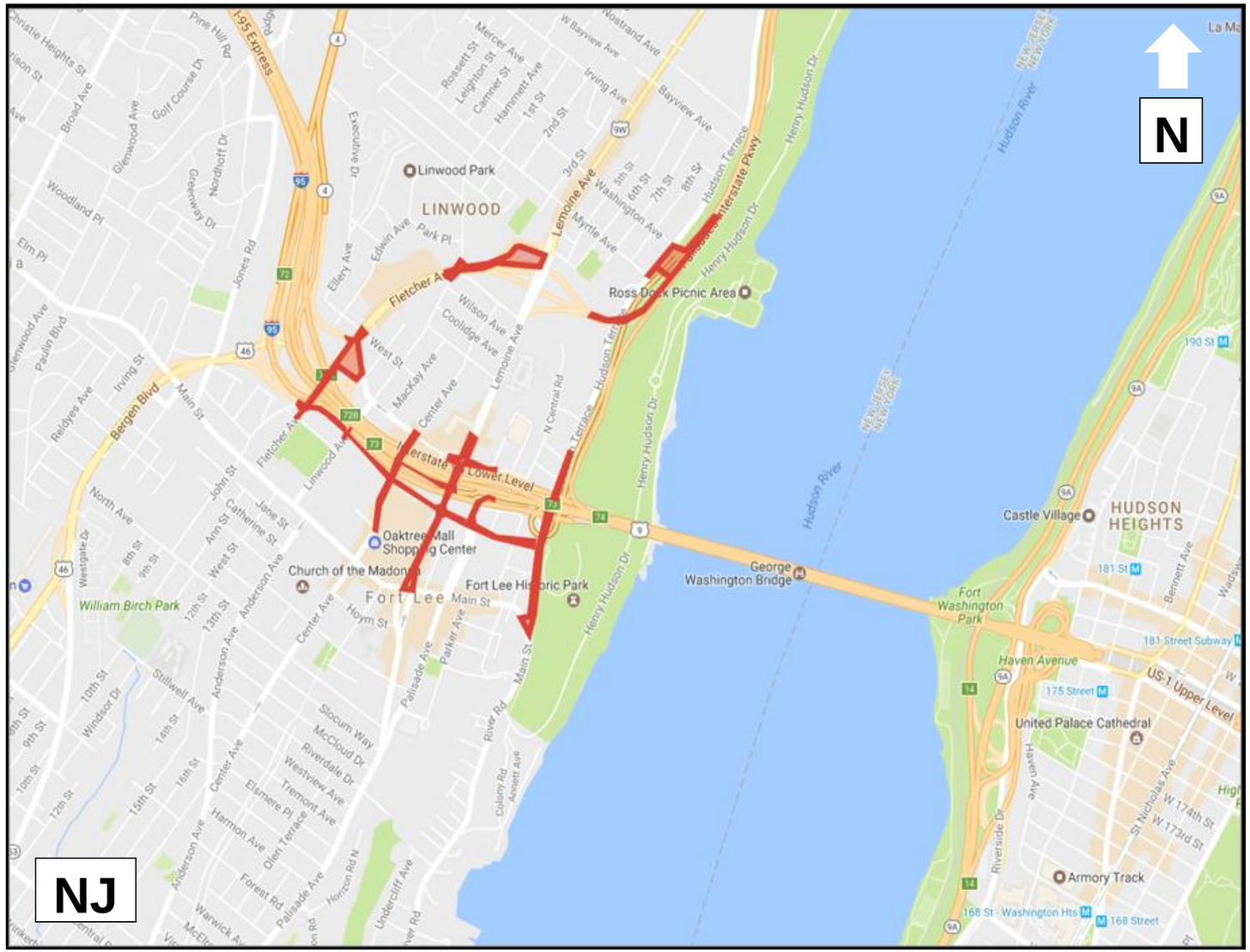


Figure 3-4: Sample Airport Monitoring Report

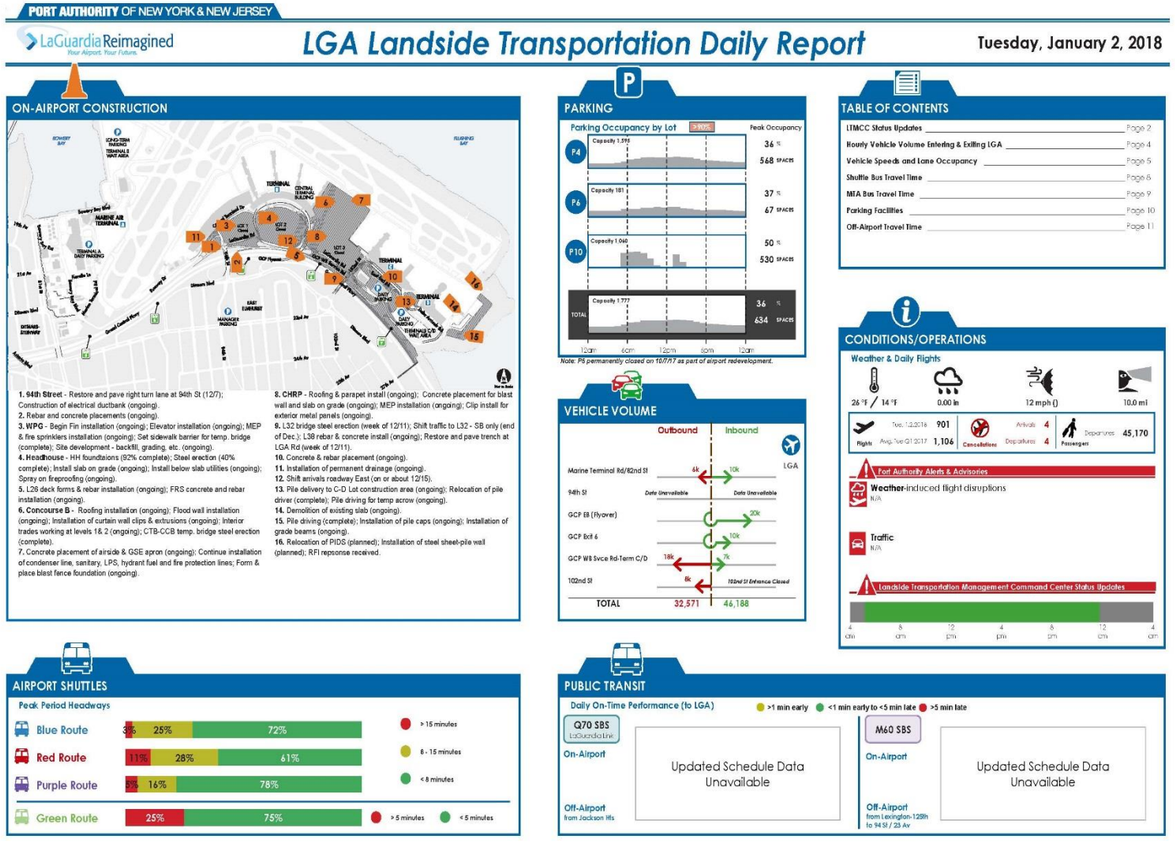
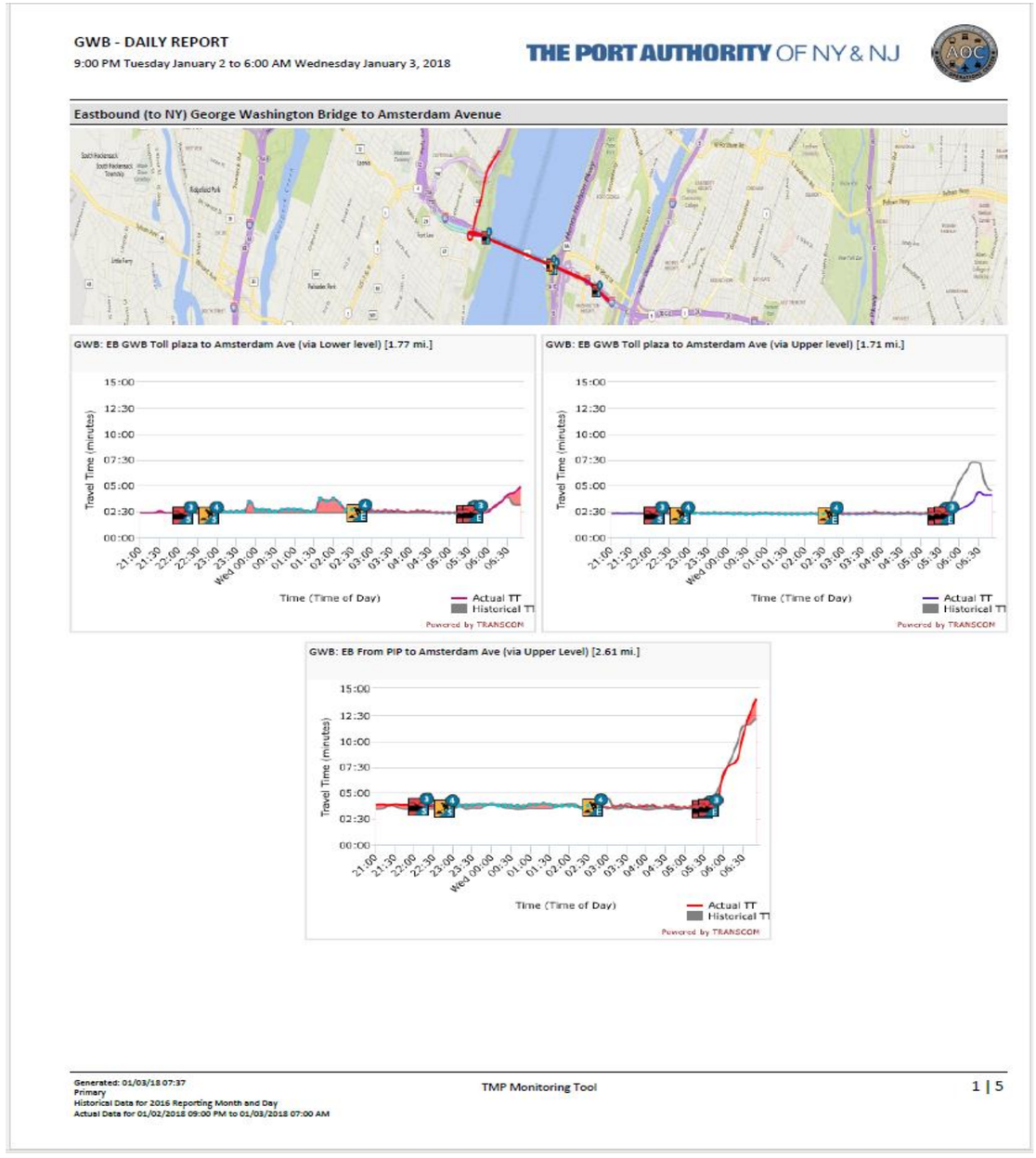


Figure 3-5: Sample GWB Monitoring Report



F. TMP Report QA/QC Checklist

As a final check that all relevant information is included in the TMP report, the EOR shall complete the checklist during the design of this project and included with TMP submission. This checklist is not to be included in the report.

Transportation Management Plan QA/QC Checklist

Engineering Department

	Date:
Facility:	Project Manager:
Contract Number:	Lead Engineer/Architect:
PID Number:	Traffic Engineering Task Lead:

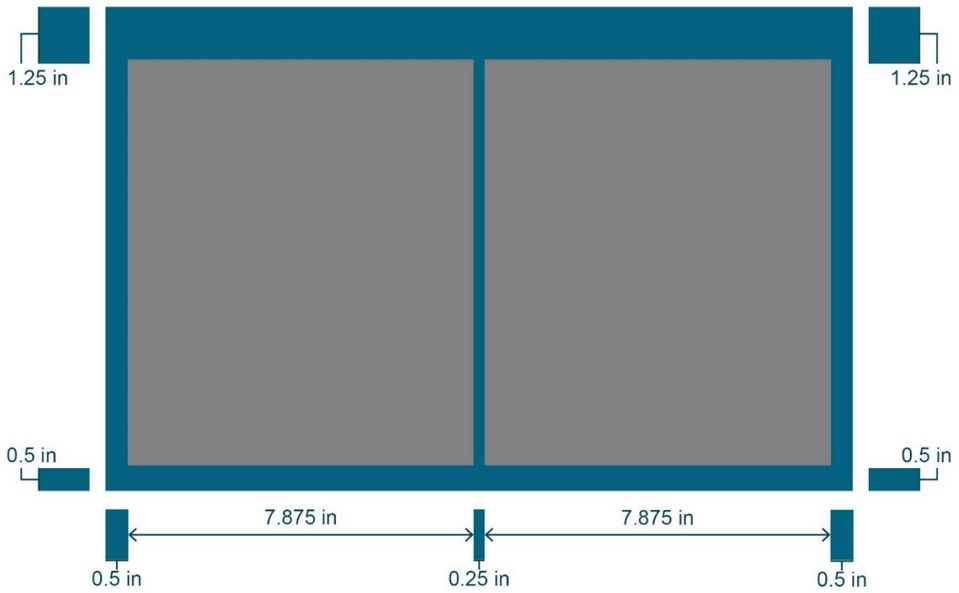
The following is a guide, some projects may require additional information/tasks and some less

A - TMP Document		**Y | N | n/a**	**Comments**
A1.	Project description and scope		
A2.	Regional Projects		
A3.	Hours of Work Established for all Stages		
A4.	Construction Staging/Sequencing/Scheduling and Associated Traffic Impacts		
A5.	Mitigation Strategies		
A6.	Regional Construction Project Identification		
A7.	Outreach Plan		
A8.	Incident Management Protocol		

B - Stakeholder Identification		**Y | N | n/a**	**Comments - List person(s) or group(s)**
B1.	Affected neighboring agencies		
B2.	PA Public Affairs Point of Contacts (GOCOR and Marketing & Media Relations)		
B3.	Affected Port Authority Facility Point of Contact(s)		
B4.	Representatives for Elected officials		
B5.	Civic and community groups		
B6.	Affected local businesses		
B7.	Other stakeholders not identified above		
C - Notifications		**Y | N | n/a**	**Comments - List strategies**
C1.	Public awareness and traveler information strategies		
C2.	Other types of media that may be explored to inform travelers of construction activity		
D - Coordination		**Y | N | n/a**	**Comments**
D1.	Internal Task Force members identified		
D2.	Partner Agency Task Force members identified		
E - Monitoring and Reporting		**Y | N | n/a**	**Comments**
E1.	TMP monitoring metrics and reporting frequency established		
E2.	Traffic monitoring report template established		
Comments			

Appendix A

Page Layout



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Body - Myriad Pro 11

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Caption – Myriad Pro 9

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Graphic Placeholder: 0.125 inch text wrap

Figure A-0-1 - Sample Impact Area Map

Graphic Placeholder: 0.125 inch text wrap

Figure AA-1 - Sample Impact Area MapFigure A-0-2 - Sample Impact Area Map

Graphic Placeholder: 0.125 inch text wrap

Figure AA-1 - Sample Impact Area Map

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For each map (including local and regional maps), the following guidelines will be adhered to for content and style including all of the required elements outlined below. Additional elements might be necessary depending on the purpose of the map (discussed below). The TMP study area map will follow the guidelines for style shown in the sample map.

Layout Features

- *Project Title*
- *Scale bars*
- *North arrow*
- *Legend along bottom*

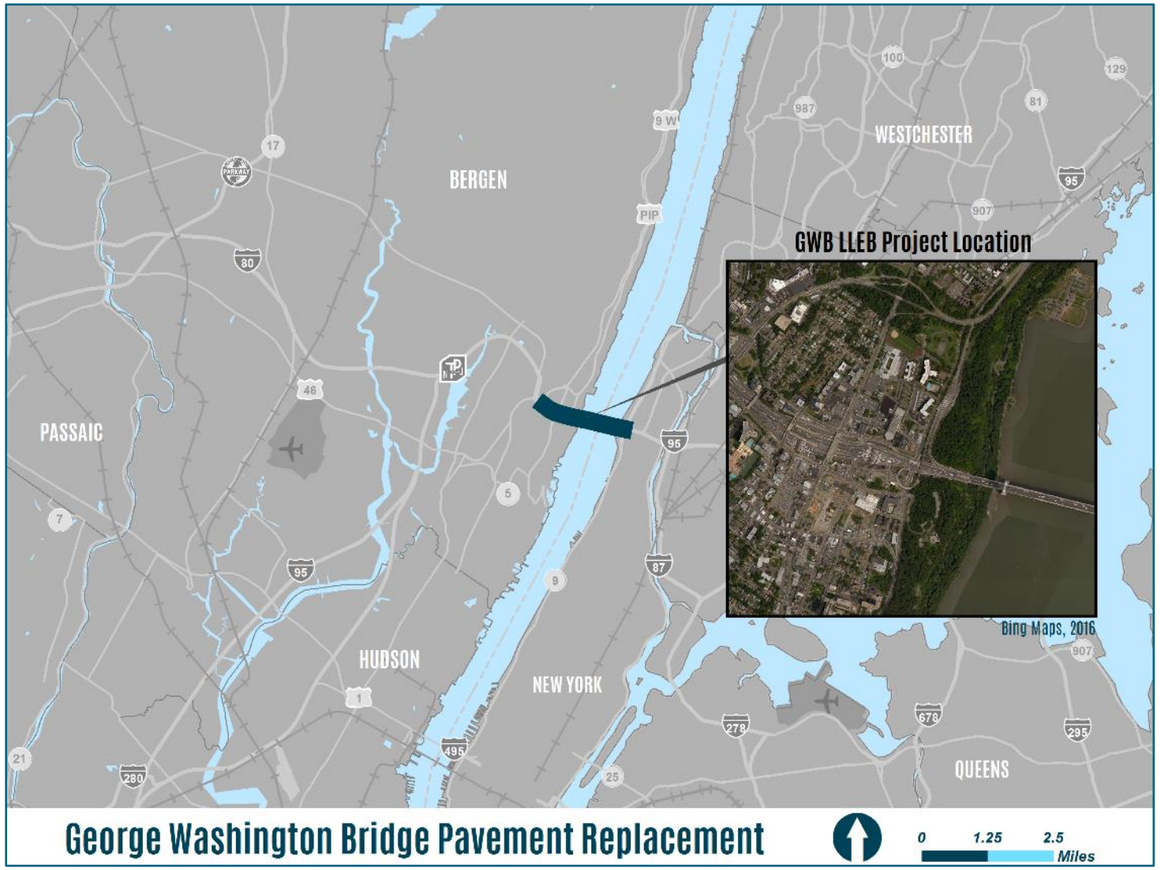
Required Map Elements

- *Water features*
- *Jurisdictional boundaries*
  - *State (where applicable)*
  - *County*
  - *Municipal*
- *Major roads*
  - *Interstate*
  - *Toll*
  - *U.S.*
  - *State*
  - *County roads, if impacted*
- *Passenger rail lines and stations*
  - *NJ Transit*
  - *PATH*
  - *Light Rail / PATCO*
  - *MTA*
- *Major airports*
- *Ports*

Additional Map Elements if Applicable:

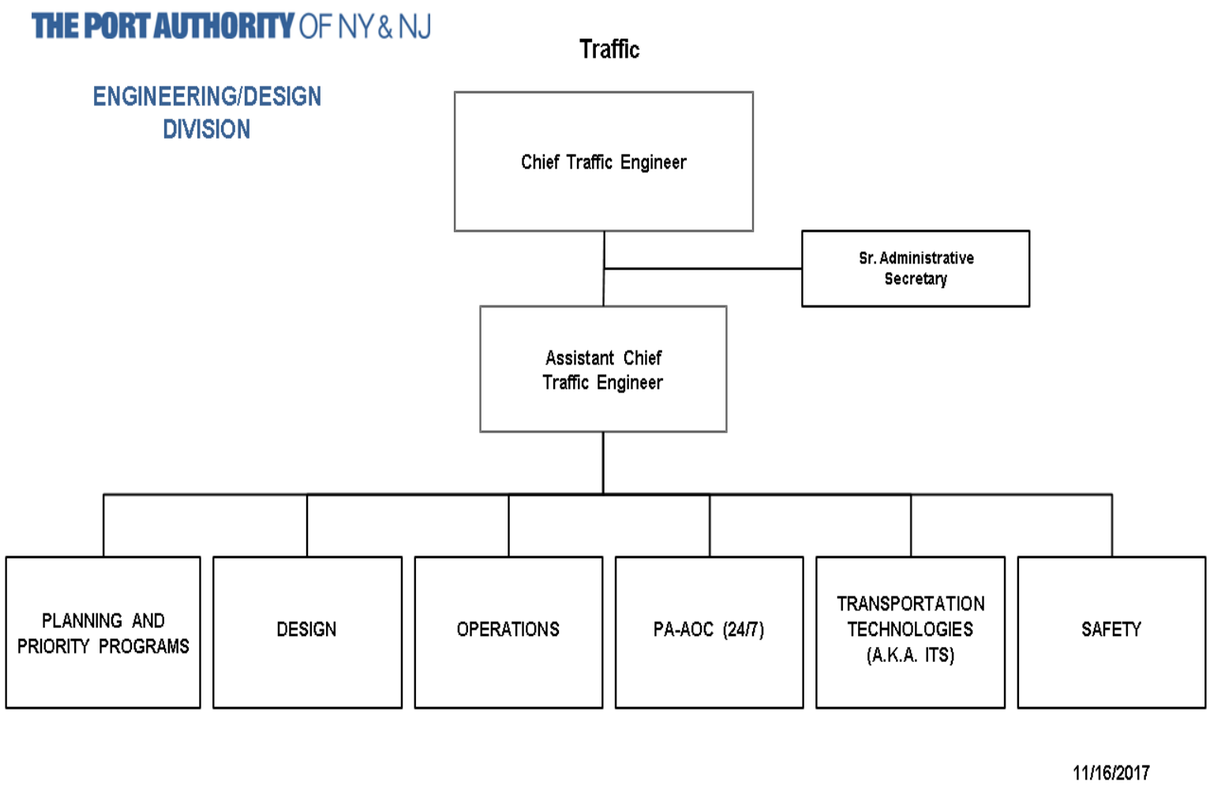
- *Freight rail lines – applicable where freight movement along rail is relevant, including movements from ports*
- *Local roads – applicable for smaller study areas where additional detail might be desirable*

Figure AA-1: Sample Impact Area Map



Appendix B

Figure BB-1: Traffic Engineering Organizational Chart



Appendix C

This appendix provides a full list of potential strategies adapted from Section 4 (Work Zone Impact Management Strategies) of the FHWA TMP Template, found at:
http://www.ops.fhwa.dot.gov/wz/resources/final_rule/tmp_examples/sample_tmps/sec_c.htm#4.

Temporary Traffic Control

1. Construction phasing/staging
2. Full roadway closures
3. Lane shifts or closures
4. One-lane, two-way controlled operation
5. Two-way, one-lane traffic/reversible lanes
6. Ramp closures/relocation
7. Freeway-to-freeway interchange closures
8. Night work
9. Weekend work
10. Work hour restrictions for peak travel
11. Pedestrian/bicycle access improvements
12. Business access improvements
13. Off-site detours/use of alternate routes
14. Temporary signs
15. Arrow boards
16. Channelizing devices
17. Temporary pavement markings
18. Flaggers and uniformed traffic control officers
19. Temporary traffic signals
20. Lighting devices
21. Other area projects
22. Utilities
23. Right-of-Way
24. Other transportation infrastructure
25. Design-Build
26. A+B Bidding
27. Incentive/Disincentive clauses
28. Lane rental
29. Performance specifications
30. Prefabricated/precast elements
31. Rapid cure materials

Transportation Operations

1. Transit service improvements
2. Transit incentives
3. Shuttle services
4. Parking supply management
5. Variable work hours
6. Telecommuting
7. Ridesharing/carpooling incentives
8. Park-and-Ride promotion
9. Signal timing/coordination improvements
10. Temporary traffic signals
11. Street/intersection improvements
12. Bus turnouts
13. Turn restrictions
14. Parking restrictions
15. Truck/heavy vehicle restrictions
16. Reversible lanes
17. Dynamic lane closure system
18. Ramp closures
19. Railroad crossing controls
20. Coordination with adjacent construction site(s)
21. Late lane merge
22. PCMS with speed display
23. Travel time estimation system
24. Advanced speed information system
25. Advanced congestion warning system
26. Conflict warning system (i.e., construction vehicles entering roadway)
27. Travel time monitor system
28. Freeway queue monitor system
29. CCTV monitoring
30. Real-time detour
31. Speed limit reduction/variable speed limits
32. Temporary traffic signals
33. Temporary traffic barrier
34. Movable traffic barrier systems
35. Crash cushions
36. Temporary rumble strips
37. Intrusion alarms
38. Warning lights
39. Automated flagger assistance devices (AFADs)
40. Project task force/committee
41. Construction safety supervisors/inspectors
42. Road safety audits
43. TMP monitor/inspection team
44. ITS for traffic monitoring/management

45. TMC
46. Surveillance (i.e., CCTV)
47. Helicopter for aerial surveillance
48. Traffic Screens
49. Call boxes
50. Mile-post markers
51. Tow/freeway service patrol
52. Total station units
53. Photogrammetry
54. Media coordination
55. Local detour routes
56. Contract support for Incident Management
57. Incident/Emergency management coordination
58. Incident/Emergency response plan
59. Dedicated (paid) police enforcement
60. Cooperative police enforcement
61. Automated enforcement
62. Increased penalties for work zone violations
63. Emergency pull-offs

Public Information and Outreach

Public Awareness Strategies

1. Branding
2. Press kits
3. Brochures and mailers
4. Press releases/media alerts
5. Mass media (earned and/or paid)
6. Paid advertisements
7. Project Information Center
8. Telephone hotline
9. Planned lane closure website
10. Project website
11. Public meetings/hearings, workshops
12. Community task forces
13. Coordination with media/schools/business/emergency services
14. Work zone education and safety campaigns
15. Work zone safety highway signs
16. Rideshare promotions
17. Visual information

Motorist Information Strategies

18. Radio traffic news
19. Changeable message signs
20. Temporary motorist information signs
21. Dynamic speed message sign
22. Highway Advisory Radio (HAR)
23. Extinguishable Signs
24. Highway information network (web-based)
25. Traveler information systems (wireless, handheld)
26. Transportation Management Center (TMC)
27. Live traffic camera(s) on a website
28. Project information hotline
29. Email alerts