



Civil / Structural /
Transportation Engineers

Construction
Inspectors/Managers

Bridge Condition
Inspectors

New Jersey
New York
Pennsylvania

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Miscellaneous Design Services on an As-Needed Basis GFM-468C

Tunnel Entrance Flood Mitigations, Contract No. PSC-06-2807C

Various Locations Citywide, New York

PROJECT TYPE

Design

CONTRACT AMOUNT

\$230,000 fee

Size 8 miles

ROLE

Subconsultant to HNTB

Structural Engineering

PROJECT OWNER/CLIENT

Metropolitan Transportation Authority, Bridges
and Tunnels

START & END DATES

6/2014– Ongoing

REFERENCES

Christopher Saladino, MTA
(212) 360-3023

PROJECT DESCRIPTION

The storm surge from Hurricane Sandy caused tremendous damage to MTA Bridges and Tunnels, including the flooding of the Queens – Midtown Tunnel (QMT) and the Hugh L. Carey Tunnel (Brooklyn Battery Tunnel, BBT). This project involves the design of flood mitigation measures to protect both the BBT and the QMT from future 100 year hurricane storm surges. As part of the Flood Mitigation Program, **SJH is involved in the analysis and design of mitigation measures**. Accelerated design procedures and contracting methods are being utilized.

SJH is functioning as a subconsultant to HNTB for Structural Engineering design services for this project. SJH is reviewing the Basis of Design Report, available as built plans and other details. SJH is performing an **analysis of the existing retaining walls** at the portals to confirm their capability to withstand the hydrostatic and hydro dynamic loads during a flood event. We are also performing structural analysis of the mitigation measures around the Ventilation Buildings. We are also **developing structural details** of the concrete strip footing. SJH is also responsible for coordinating with the wall manufacturer to obtain product related information and confirm their installation details. At the portals, proprietary flood gates are to be installed for flood mitigation. We are investigating the capacity of the existing structure to support these gates, and develop conceptual details for the installation of these flood gates. SJH is developing structural details for the hardening/ reinforcing of the vent buildings and parking garage at the BBT. **A report will be submitted to the Authority for review** and comments that contain results of the investigation of the existing structures, proposed alternatives analyzed and details of the recommended alternative. The report also will contain order of magnitude cost estimate for the recommended alternative.

SJH will develop detail plans of the recommended and approved alternative during this phase. The drawings will consist of plan, elevation, sections and details. Selected as-built plans will be converted to **CADD drawings**, to be used in the development of design plans. The design plans will include details of strengthening of the retaining walls at the perimeter of the tunnels, details of anchorage of the flood walls to the retaining walls at the perimeter, and other structural details. Outline specifications related to the structural work also will be prepared during this phase. We will provide the estimate of quantities to develop the construction cost estimate. The drawings and specifications will be submitted to the Authority for their review and comments.



SJH Engineering, P.C.