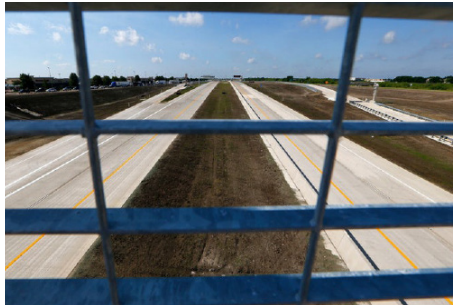
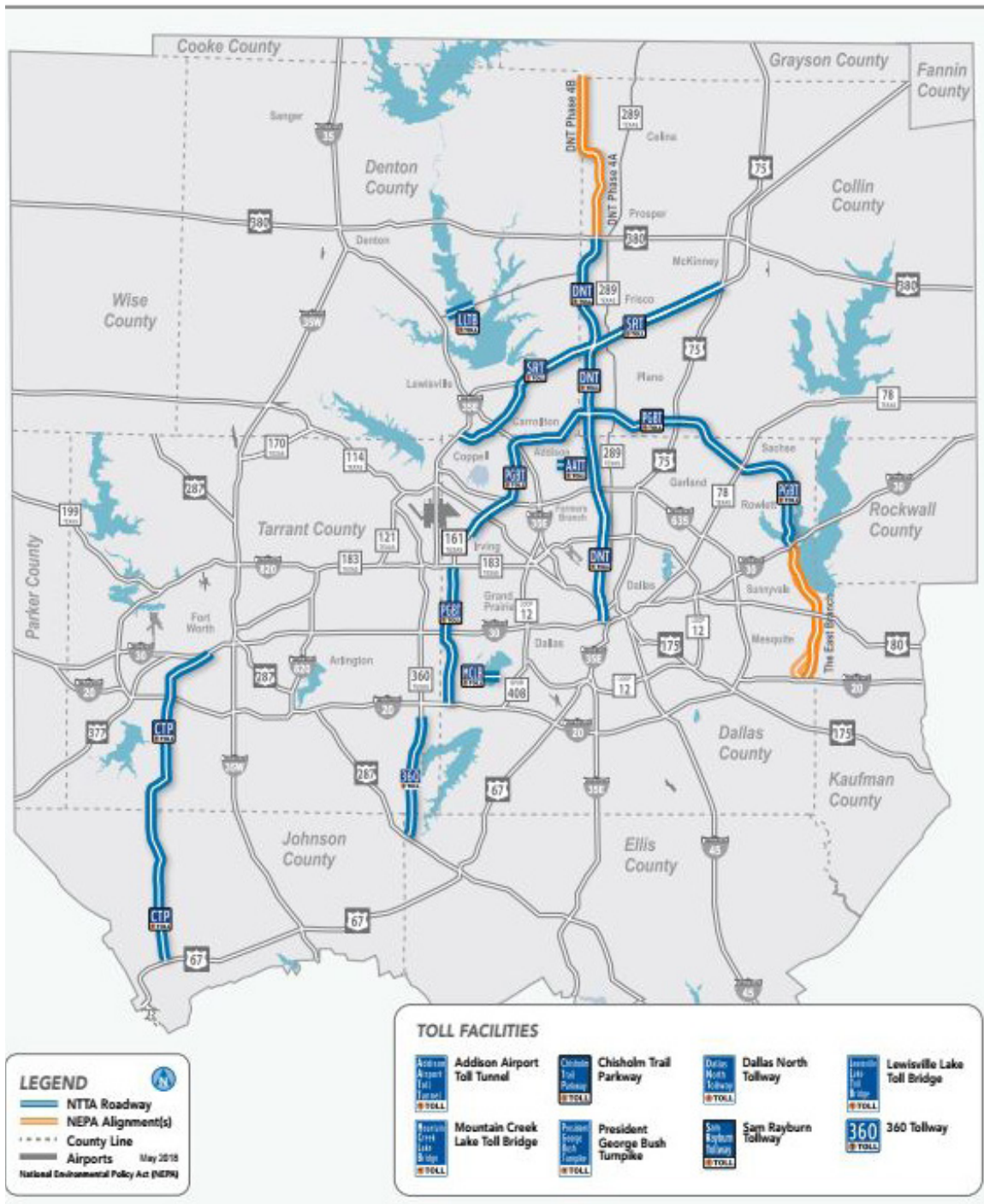


# ANNUAL INSPECTION REPORT

## 360 TOLLWAY

Fiscal Year 2019





## Board of Directors

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Horatio Porter	Chief Financial Officer
Elizabeth Mow, PE	Assistant Executive Director, Infrastructure
Sabu Stephen	Assistant Executive Director, Operations



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September 30, 2019

James Hofmann  
Executive Director  
North Texas Tollway Authority  
5900 W. Plano Parkway  
Plano, Texas 75093

Dear Mr. Hofmann:

As General Engineering Consultant to the North Texas Tollway Authority and in accordance with the requirements set forth in the NTTA System Amended and Restated Trust Agreement Section 504, Atkins North America, Inc. (Atkins) is pleased to submit the Fiscal Year 19 (FY19) Annual Inspection Report for the 360 Tollway.

Atkins completed the 360 Tollway inspection in February 2019 and reports that the Tollway has been maintained in good repair, working order and condition. This observation was based on a general visual inspection of the roadway, walls, bridges and facilities. Results of the inspection are presented in greater detail within this report. A complete list of findings has been transmitted to the Maintenance Department under a separate cover.

Atkins recommends that the Authority continue to implement the routine maintenance as budgeted and scoped, and to also implement any planned major maintenance projects planned for the ensuing fiscal year. Through coordination with NTTA staff and review of the anticipated Reserve Maintenance Projects scheduled for FY20, the following budgets, to be presented at the October 3, 2019, Finance and Audit Committee meeting and subject to Board approval at the December board meeting, are recommended:

Operation and Maintenance Fund (OMF): \$3.7 million

Reserve Maintenance Fund (RMF): None for FY2020

The overall condition of the Tollway along with the appropriate funding level for the operating budget, exemplifies the North Texas Tollway Authority's commitment to maintain and operate a safe and reliable toll road system in the North Texas region.

Respectfully submitted,

Tammy B. Sims, PE  
General Engineering Consultant  
Project Director

xc: Elizabeth Mow, PE, NTTA (w/1 copy)  
Mark Pavageau, PE, NTTA (w/1 copy)  
Dee Runnels, NTTA (w/1 copy and pdf electronically)  
Scott Brush, PE, VRX (w/1 copy)  
File

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# Acronyms and Abbreviations

AATT	Addison Airport Toll Tunnel
BRINSAP	Bridge Inventory Inspection and Appraisal Program
CMU	Concrete Masonry Unit
COSS	Cantilever Overhead Sign Support
CR	County Road
CTP	Chisholm Trail Parkway
DNT	Dallas North Tollway
FY	Fiscal Year
GASB	Governmental Accounting Standards Board
GEC	General Engineering Consultant
HMIP	High-Mast Illumination Pole
IH	Interstate Highway
LLTB	Lewisville Lake Toll Bridge
MCLB	Mountain Creek Lake Bridge
MLP	Main Lane Plaza
MMC	Maintenance Management Consultant
MRP	Maintenance Rating Program
NTTA	North Texas Tollway Authority
OMF	Operation and Maintenance Fund
OSB	Overhead Sign Bridge
OSS	Overhead Sign Structure
PGBT	President George Bush Turnpike
QMS	Quality Management System
RMF	Reserve Maintenance Fund
SH	State Highway
SPS	Special Projects System
SRT	Sam Rayburn Tollway
TRM	Total Routine Maintenance
TxDOT	Texas Department of Transportation
US	U.S. Highway
UTBHMWC	Ultra-Thin Bonded Hot Mix Wearing Course

# Executive Summary

As described in the requirements set forth in the North Texas Tollway Authority System Amended and Restated Trust Agreement Section 504, the Consulting Engineers make an inspection of the Tollway on or before the 90th day prior to the end of the fiscal year and submit a report setting forth (a) their findings whether the Tollway has been maintained in good repair, working order, and condition and (b) their advice and recommendation as to the proper maintenance, repair, and operation of the Tollway during the ensuing fiscal year and an estimate of the amount of money necessary for such purposes.

Atkins North America, Inc. (Atkins), as General Engineering Consultant, completed the inspection of the 360 Tollway (360T) in February 2019 and is pleased to report that the Tollway has been maintained in good repair, working order, and condition. This observation was based on a general visual inspection of the roadway, walls and bridges.

Atkins recommends that the Authority continue to implement the routine maintenance as budgeted and scoped, and to also implement the Reserve Maintenance Projects planned for the ensuing fiscal year. Through coordination with the NTTA Staff, and in review of the anticipated Reserve Maintenance Projects scheduled for fiscal year 2020 (FY20), the following budgets are recommended, to be presented at the Finance and Audit Committee meeting on October 3, 2019, and subject to Board approval in December 2019:

Budget Recommendations	
Funds	Budget
Operation and Maintenance Fund	\$3.7 million
Reserve Maintenance Fund	None for FY2020

The overall condition of the 360T, and funding levels for the operating budgets, exemplifies the North Texas Tollway Authority’s commitment to maintain and operate a safe and reliable toll road system for the North Texas region.

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# 1.0 Introduction

## 1.1 Background

In September 2019, Atkins completed the annual inspection of the 360 Tollway (360T). This inspection was done in accordance with Section 504 of the Amended and Restated Trust Agreement (Appendix A), which requires the General Engineering Consultant (GEC) to perform a condition assessment of the Tollway and submit a report with their findings. This inspection provides a basis to plan funding levels needed to maintain assets for the maintenance portion of the Operation and Maintenance Fund (OMF) and the Reserve Maintenance Fund (RMF) in the annual operating budget for the ensuing fiscal year (FY).

## 1.2 Inspection Process

The GEC Annual Inspection assessed four main elements: roadway, bridges, walls, and buildings/facilities. The roadway portion of the inspection focused on the pavement, drainage structures, erosion issues, signing, striping, illumination, barriers, main lane and ramp plaza gantries, and overall safety of the corridor. The bridge inspection addressed the deck, superstructure, and substructure. The wall inspection focused on panels, joints, coping, flumes, mow strips, inlets, rails, slope paving, visible underdrain pipes, sound walls, and adjacent elements. There were no NTTA buildings/facilities inspected in FY19 on the 360T.

Inspections were conducted in accordance with NTTA’s Project Delivery Department’s Quality Management System (QMS) Manual Procedure GEC-01 (Appendix B) and involve a general visual examination of element features. No detailed in-place or destructive testing was performed. The opinions, statements, and recommendations made in this report are based solely on conditions revealed by these inspections. No representations or warranty is made that all defects have been discovered or that a defect will not appear at a later time. Nothing contained herein shall be deemed to give any third party a claim or right of action against the NTTA, its employees, the GEC, or the Maintenance Management Consultant (MMC), nor create a duty on behalf of the NTTA, its employees, the GEC, or the MMC to such third party. Items observed were recorded and rated using a five-point scale (Table 1).

Grade	Rating	Description
5	Excellent	Feature in like-new condition. No maintenance required.
4	Good	Feature performing as expected. Routine maintenance necessary.
3	Average/ Fair	Feature functionality/operability is fair. Maintenance required to prevent future damage to system.
2	Poor	Feature functionality/ operability is substandard. Maintenance required to protect public or system.
1	Emergency	Feature functionality/operability is critical. Immediate maintenance required to protect public or system.

## 1.3 Description of System

The NTTA 360T and associated facilities/ buildings serve as a vital component of the transportation system in the North Texas region (Figure 1).

### 1.3.1 360T

NTTA owns and operates a portion of the 360T as a stand-alone toll project that is not part of the NTTA System. The 360T is a 9.7-mile toll road located in Ellis, Johnson and Tarrant Counties, Texas, extending generally from Green Oaks Boulevard in Tarrant County south to US 287 in Ellis County with approximately 78 lane miles of toll roads and service roads. The 360T is an All-ETC facility consisting of two to four limited access main lanes.

NTTA entered into the Project Agreement for State Highway 360 dated February 28, 2014 (the “360 Tollway Project Agreement”), with TxDOT for the 360T, which contains the representations, commitments and obligations of NTTA and TxDOT related to the development, financing, design, construction, operation and maintenance of the 360T. Under the 360T Project Agreement, TxDOT designed and constructed the 360T and, upon its substantial completion on August 1, 2018, TxDOT transferred ownership to NTTA. The 360T was opened to traffic on May 11, 2018.

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Figure 1: 360T Map

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## 1.4 Maintenance Program Overview

### 1.4.1 Organization

At substantial completion of the 360T, NTTA assumed full responsibility for the operations and maintenance of the corridor and all right-of-way with the exception of retained property as set forth in the SH 360 Project Agreement.

Without relinquishing its obligations to operate and maintain the 360T, NTTA engaged TxDOT to perform the operations and maintenance of the Tollway through a Comprehensive Maintenance Agreement with the design-build contractor. The Agreement provides for the performance of the operations and maintenance services for a term of 5 years. The current contractor performing the maintenance under the Comprehensive Maintenance Agreement is DBI Services, Inc.

The Project Delivery Department staff is supported by the Maintenance Management Consultant (MMC), VRX, Inc. As the MMC, VRX provides professional services in support of the Project Delivery Department responsibilities, which include items such as:

- Specialized annual inspections
- Oversight/direction of roadway repairs
- Plans, specifications, and estimates of Project Delivery Department major maintenance projects
- Update of capital improvement plan as necessary to preserve NTTA assets
- Identification of appropriate maintenance and repair actions and cycles to minimize deteriorating conditions of the NTTA assets
- Environmental support

In addition, the MMC provides resources to support the NTTA in the management and administration of the Project Delivery Department activities associated with major maintenance projects. The disciplines VRX utilizes as the MMC include: civil, structural, traffic, environmental, mechanical and electrical engineering, and architectural services.

### 1.4.2 Maintenance Rating Program

The NTTA instituted a Maintenance Rating Program (MRP) in 2002 to evaluate the performance of both in-house and outsourced resources. As part of the MRP,

the NTTA established acceptable levels of maintenance regardless of road type, construction history, or traffic patterns. The MRP monitors current operations and is used to identify recurring problems. The program allows for early identification of maintenance issues, increases accountability, and provides assurance that assets are being maintained adequately.

Under the MRP, sample units for different asset groups (roads, bridges, and facilities) are randomly selected for the entire year. Inspections are conducted monthly on a portion of the sample units for each corridor. Individual characteristics are evaluated on Pass/Fail criteria. The resulting scores are weighted and combined for the asset groups. A total composite score is what is used to evaluate maintenance effectiveness.

### 1.4.3 Specialized Inspections

During the period in which TxDOT provides for the operation and maintenance of the 360T through a Comprehensive Maintenance Agreement, TxDOT will prepare the following reports:

1. Signing, striping and operational reports (TxTAP) annually.
2. Pavement Management Information System (PMIS) reports annually.
3. Texas Maintenance Assessment Program (TxMAP) reports annually.
4. Bridge Inspection and Appraisal Program (BRINSAP) reports biannually.
5. Overhead signs, continuous lighting and high mast lighting reports annually.

### 1.4.4 Governmental Accounting Standards Board Requirements

Governmental Accounting Standards Board (GASB) Statement 34 requires all governments and governmental organizations perform asset condition assessments every three years. The MMC develops and maintains an inventory of NTTA's infrastructure assets throughout the System. Condition ratings and a replacement cost are assigned to each asset. The MMC inventory and GEC inspection provide the foundation for complying with GASB Statement 34. The 2019 GASB rating for the 360T is 9.3 out of 10.

## 2.0 Inspection Findings

### 2.1 Overview

The 360T has been maintained in good repair, working order, and condition. Using the GEC Annual Inspection Rating Scale, no observations were rated below a 3 on the four main elements inspected.

The following sections include observations with respect to the four main elements: roadway, bridges, walls, and facilities/buildings. Recommendations to address these are presented in the following section.

### 2.2 360T Findings

#### 2.2.1 360T Roadway

The observations noted on this year's inspection were: barrier spalling and cracking, pavement joint seal missing, pavement edge drop offs, erosion, pavement cracking and spalling, and missing striping and pavement graphics.

Minor barrier spalling was observed at various locations throughout the corridor as illustrated in Figure 2. There were multiple areas of erosion around riprap and landscape areas as illustrated in Figure 3.

There are multiple isolated locations of pavement drop-offs (Figure 4). One location had missing pavement graphics (Figure 5).

There were multiple areas of pavement cracking and spalling as illustrated in Figure 6. Some of these areas have been repaired (Figure 7).

#### 2.2.2 360T Walls

Wall panels and copings were observed in like-new condition with no negative observations.

#### 2.2.3 360T Bridges

One observation noted was areas of backwall cracking as illustrated in Figure 8.

There was also noted an area where debris was building up against the bridge column (Figure 9).

#### 2.2.4 360T Facilities/Buildings

There are no NTTA Building/Facilities that were inspected on the 360T during the FY19 inspection.

#### 2.2.5 360T Changes from FY18

This is the first annual inspection of the 360T by the GEC so there are no changes from FY 2018 to report.



Figure 2: Barrier Rail Spall at SB 360 South of Tarrant County Line



Figure 3: Erosion at Mow Strip at Walnut Creek Bridge



Figure 4: Pavement Edge Drop-Off at SB Ramp to Holland Road



Figure 5: Missing Pavement Graphic (Arrow) SBFR at Broad Street



Figure 8: Backwall Cracking NB at Green Oaks



Figure 6: Pavement Spall at Rock Hill Bridge



Figure 9: Debris Against Column at Walnut Creek Bridge



Figure 7: Pavement Spall Repair S of Green Oaks

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## 3.0 Projects Completed Since FY18 Inspections

The 360T was opened to traffic in FY18, therefore there are no previous projects to report.

### 3.1 360T Completed Projects

None.

## 4.0 Future Projects and Recommendations

### 4.1 Overview

Through coordination with the Maintenance Department and MMC, a plan will be developed to address or monitor observations reported.

Under the provisions of the 360T Project Agreement with TxDOT, upon substantial completion of the project, NTTA assumed full responsibility for the operation and maintenance of the project. Without relinquishing its obligations to operate and maintain the project after substantial completion, NTTA has engaged TxDOT to perform the Operations and Maintenance through a Comprehensive Maintenance Agreement.

### 4.2 360T Recommendations

The findings presented in this report as well as a comprehensive listing of findings delivered to the NTTA Maintenance Department will be submitted to TxDOT to address with the contractor under the Comprehensive Maintenance Agreement.

### 4.3 Budget Recommendations

As required by the Amended and Restated Trust Agreement, the GEC also provides recommendations for the OMF as well as the RMF.

The funding levels are set such that NTTA can maintain the overall asset condition of the 360T.

<b>Funds</b>	<b>Budget</b>
Operation and Maintenance Fund	\$3.7 million
Reserve Maintenance Fund	None for FY2020

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## 5.0 Summary

Overall, the 360T has been maintained in good repair, working order and condition. The overall condition of the 360T shows NTTA's commitment to funding, maintaining, and operating a safe and reliable roadway.

Continued routine maintenance and the implementation of Reserve Maintenance Projects will ensure the 360T continues to provide a reliable mobility option for the North Texas area.

# Appendix A



**AMENDED AND RESTATED TRUST AGREEMENT**

BY AND BETWEEN

NORTH TEXAS TOLLWAY AUTHORITY

AND

WELLS FARGO BANK, N.A.,  
*Dallas, Texas*

SECURING

SYSTEM REVENUE BONDS

Dated as of April 1, 2008



**Section 503. Revenue Fund.** The special fund held by the Trustee and created and designated "Tollway Revenue Fund" (hereinafter sometimes called the "Revenue Fund") under the Original Agreement is hereby reaffirmed. The Authority covenants that all gross revenues (all tolls, other revenues, and income) arising or derived by the Authority from the operation and ownership of the Tollway (excepting investment income from all Funds and Accounts other than the Revenue Fund) will be collected by the Authority and deposited daily, as far as practicable, with the Trustee for the credit of the Revenue Fund. It shall be the duty of the Trustee to verify the amount of each such daily deposit separately, and to make a report to the Authority of the amount of each such daily deposit as soon as practicable. Tolls collected on behalf of TxDOT pursuant to a project agreement that provides for revenue sharing with TxDOT shall be collected by the Authority and shall be held and transferred to or upon the order of TxDOT as set forth in the project agreement.

**Section 504. Duties of Consulting Engineers.** The Authority covenants that it will cause the Consulting Engineers employed by it under the provisions of Section 704 of this Agreement, to make an inspection of the Tollway on or before the 90th day prior to the end of each Fiscal Year and to submit to the Authority a report setting forth (a) their findings whether the Tollway has been maintained in good repair, working order and condition, (b) their advice and recommendations as to the proper maintenance, repair, and operation of the Tollway during the ensuing Fiscal Year and an estimate of the amount of money necessary for such purposes, including their recommendations as to the total amounts and classifications of items and amounts that should be provided for Current Expenses and the Reserve Maintenance Fund in the Annual Budget for the next ensuing Fiscal Year, and (c) their advice and recommendations as to the amounts and types of insurance which should be carried during the ensuing Fiscal Year with respect to the Tollway under the provisions of Article VII of this Agreement. Copies of such reports shall be filed with the Trustee and mailed by the Authority to each bondholder who shall have filed his name with the Board Representative designated for such purpose, which shall initially be the Chief Financial Officer of the Authority.

**Section 505. Preliminary Budget of Current Expenses, and Payments into Reserve Maintenance Fund; Hearing on Budget; Annual Budget; Failure to Adopt Annual Budget; Amended or Supplemental Annual Budget; Payments for Maintenance, Repair, and Operations.** The Authority covenants that on or before the 60th day prior to the end of each Fiscal Year it will adopt a preliminary budget of Current Expenses and payments into the Reserve Maintenance Fund for the ensuing Fiscal Year. Copies of each such preliminary budget shall be filed with the Trustee and mailed to the Consulting Engineers and each bondholder who shall have filed his name and address with the Board Representative designated for such purpose, which shall initially be the Chief Financial Officer of the Authority.

If the holders of at least five percent (5%) in aggregate principal amount of the bonds then Outstanding shall so request in writing on or before the 60th day prior to the end of any Fiscal Year, the Authority shall hold a public hearing on or before the 30th day prior to the end of such Fiscal Year at which any bondholder may appear in person or by agent or attorney and present any objections he may have to the final adoption of such budget. Notice of the time and place of such hearing shall be mailed, at least ten (10) days before the date fixed by the Authority for the hearing, to the Trustee, the Consulting Engineers, and each bondholder who shall have filed his name and address with the Board Representative designated for such purpose, which shall initially be the Chief Financial Officer of the Authority. The Authority further covenants

Appendix B



<b>NTTA Projects</b>	<b>Original Issue Date: 07/05/2012</b>	<b>GEC-01</b>
Resource: General Engineering Consultant Procedures	Revision: 0 Issue Date: 07/05/2012	Page 1 of 8
<b>Title: GEC Annual Inspection of the NTTA Systems</b>		

**1.0 PURPOSE:**

The purpose of this procedure is to describe the General Engineering Consultant (GEC)'s responsibilities for the general annual visual inspection and assessment of the NTTA System, Special Projects System (SPS), and related facilities as required by Section 504 of the NTTA System Amended and Restated Trust Agreement and Section 710 of the NTTA Special Projects System Trust Agreement.

**2.0 RESPONSIBILITIES:**

**2.1 Project Director (PD)** – The PD shall be a licensed civil engineer with prior experience being a program manager or project director, project manager, and field experience. The PD shall:

- Review and understand the trust agreements with the NTTA and ensure the letters to the bond holders, presentations, and all other work performed during annual inspections is in conformance with the trust agreements.
- Coordinate the NTTA staff review of the letters to the bond holders.
- Perform a quality assurance (QA) review of the final letters to the bond holders to ensure they include the inspection findings, advice and recommendations as to the proper maintenance/repair, and cost estimates thereof, per their respective trust agreements.
- Approve, sign, and deliver the final letters to the NTTA for delivery to the bond holders.
- Perform QA review of, and present to the NTTA board, a PowerPoint presentation discussing the significant aspects of the year's inspection results.

**2.2 Project Manager (PM)** – The PM shall be a licensed civil engineer with prior experience being a project manager as well as inspection field experience. The PM shall:

- Prepare and negotiate the inspection work authorization documents.
  - Organize the pre-inspection kick-off meeting by: writing the agenda; inviting field inspectors, Maintenance Management Consultant (MMC) employees and all required NTTA staff; and facilitating the meeting.
  - Be the point of contact for the GEC inspection team when communicating with the NTTA and the MMC inspection staff.
-

<b>NTTA Projects</b>	<b>Original Issue Date: 07/05/2012</b>	<b>GEC-01</b>
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<b>Title: GEC Annual Inspection of the NTTA Systems</b>		

- Obtain from NTTA:
  - A list of bridges and bridge class culverts to be inspected, as well as the TxDOT Bridge Inventory Inspection and Appraisal Program (BRINSAP) reports on all bridges listed.
  - 11x17 black-and-white aerial photography plan sheets of all roadways in the systems at a scale of approximately 1 inch = 250 feet. Plan sheets should show the roadway centerline, stationing, cross street names and should encompass all collector/distributor and direct connector ramps.
  - A list of facilities required for inspection.
  - Governmental Accounting Standards Board (GASB) ratings for the System and the SPS from the most recent year available.
- Manage the inspection staff to ensure that both budget goals and schedule deadlines are met.
- Oversee the writing of the two letters to the bond holders, one for the NTTA System and one for the SPS.
- Perform a quality control (QC) review of the letters to the bond holders, observation spreadsheet and PowerPoint presentation prior to final submittal to the NTTA.
- Deliver the observation spreadsheet categorized as described in 6.1.7 to the NTTA Maintenance Department and ensure it functions properly on the NTTA computer servers.

**2.3 Roadway Inspector (RI)** – the RI shall be a licensed civil engineer (or if approved an Engineer in Training (E.I.T.) with P.E. supervision) with prior roadway and drainage design and/or inspection experience. The RI shall:

- Perform visual inspection and condition assessment of all roadways and appurtenances while being accompanied by an NTTA staff member.

**2.4 Retaining Wall Inspector (WI)** – the WI shall be a licensed civil engineer (or if approved an E.I.T. with P.E. supervision) with prior retaining wall design and/or inspection experience. The WI shall:

- Perform visual inspection and condition assessment of all retaining wall, sound wall, and tunnel elements while being accompanied by an NTTA staff member.

**2.5 Bridge Inspector (BI)** – the BI shall be a licensed civil engineer (or if approved an E.I.T. with P.E. supervision) with prior bridge design and/or inspection experience. The BI shall:

- Perform visual inspection and condition assessment of all bridges and bridge-class culverts on the list provided by the NTTA while being accompanied by an NTTA staff member.

<b>NTTA Projects</b>	<b>Original Issue Date: 07/05/2012</b>	<b>GEC-01</b>
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<b>Title: GEC Annual Inspection of the NTTA Systems</b>		

**2.6 Facilities Inspector (FI)** – the FI shall be a licensed architect (or if approved an Associate AIA under the supervision of a licensed architect) with prior architectural design and/or inspection experience. The FI shall:

- Perform visual inspection and condition assessment of all of the NTTA's facilities while being accompanied by an NTTA staff member. The facilities to be inspected shall be as directed by the NTTA and may include main lane plazas, operations buildings, ramp plazas, sand storage enclosures, fiber huts, the central maintenance facility and the Gleneagles administration office complex.

**3.0 SCOPE/APPLICABILITY:**

This procedure shall apply to the NTTA annual inspections of both the NTTA System and the SPS, as set forth by the Trust Agreements. The NTTA System shall include the Dallas North Tollway (DNT), the President George Bush Turnpike (PGBT), the Eastern Extension of the George Bush Turnpike (PGBT EE), the Sam Rayburn Tollway (SRT), the Addison Airport Toll Tunnel (AATT), the Lewisville Lake Toll Bridge (LLTB), the Mountain Creek Lake Bridge (MCLB) and associated facilities. The SPS shall include the President George Bush Turnpike Western Extension (PGBT WE) and associated facilities. The inspections, letters to the bond holders, observation spreadsheets and presentations shall be complete 90 days prior to the end of the respective NTTA System and SPS fiscal year, as specified in the trust agreements.

**4.0 REFERENCES:**

- NTTA System Amended and Restated Trust Agreement
- NTTA Special Projects System Trust Agreement
- Prior letters to the bond holders
- Prior observation spreadsheets
- Prior PowerPoint presentations with speaker notes
- BRINSAP reports
- NTTA personnel
- Overhead Sign Structure Inspection
- High Mast Illumination Pole Inspection
- Pavement Management Program
- Texas Accessibility Standards

**5.0 DEFINITIONS & ACRONYMS:**

N/A

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<b>NTTA Projects</b>	<b>Original Issue Date: 07/05/2012</b>	<b>GEC-01</b>
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**6.0 PROCEDURES:**

**6.1 General:** The following procedures include tasks involving all inspectors, and where specifically mentioned, the PM and PD.

- 6.1.1** Prior to beginning any field inspections, the PM will schedule and facilitate the kick-off meeting with primary staff involved in the annual inspections (GEC, MMC and NTTA staff). A list of topics to be covered should include at a minimum; the scope, schedule, extent of the maintenance limits, equipment the inspectors will need to perform their tasks, safety protocol, record keeping, and the teaming of NTTA employees with the field inspectors. A contact list with all participants' names, phone numbers and email addresses should be created and distributed to all inspection staff. At the conclusion of the meeting, all participants should be aware of all submittal dates, safety protocol and the extent of the NTTA's maintenance limits.
  - 6.1.2** Each field inspector is responsible for coordinating their respective inspection schedule with the NTTA point of contact provided by the PM. The NTTA will supply qualified staff members to team up with each GEC inspection personnel. The NTTA staff participating in the inspections should be knowledgeable of the systems they will assist in inspecting and the inspection / maintenance limits of that system.
  - 6.1.3** Perform field inspections only between the hours set by the NTTA maintenance staff and within the limits of NTTA maintenance for the roadways. During inspections, all inspectors must wear the required safety equipment and adhere to all safety protocol set forth by the NTTA. Areas outside of NTTA maintenance responsibility are not required to be included in the inspections. When in the vicinity of ongoing construction or maintenance activities, inspections should not be performed within or near active construction areas.
  - 6.1.4** When areas are unsafe or unreachable for pedestrian access during inspections, a rolling lane closure should be requested so that visual inspections may be performed from inside the vehicle. The vehicle shall travel at the slowest safe speed possible for each particular inspection and location, using the roadway shoulder wherever possible. Rolling lane closures should be requested at least 2 weeks in advance, and must be approved and scheduled by the respective NTTA roadway section supervisors. In areas where rolling lane closures are unsafe or where pedestrian access is not feasible, it should be documented as such.
  - 6.1.5** If a safety concern requiring immediate attention by the maintenance department is observed, the inspector shall immediately contact the PM, who must in turn inform the NTTA Maintenance Department Director or Assistant Director.
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- 6.1.6 At the conclusion of each inspection day, store/update all pictures, notes, and spreadsheets digitally on a single drive location accessible by the entire GEC inspection staff. Files should be set up in a clear and consistent manner for all inspectors. In cases where all staff may not have daily access to this drive, work should be downloaded at least every other week to this drive. Backup files should be created regularly to prevent loss of productivity or re-work if by chance system files are lost.
  - 6.1.7 Organize and hyperlink all pictures in an observation spreadsheet in such a manner that they may be sorted by damage description, facility/roadway, station/location, direction of travel, date inspected, priority, and any other useful categories deemed helpful by the NTTA and MMC. All field inspectors will complete the portion of the observation spreadsheet for their discipline. Upon completion of the observation spreadsheet, upload the spreadsheet and all pictures to the NTTA server, and confirm the hyperlinked pictures will work on the server properly.
  - 6.1.8 Determine condition ratings for all locations after the completion of the field inspections, organization of notes and pictures, and the observation spreadsheet. Using this information, assess which specific locations should be mentioned in the bond letter for maintenance, monitoring, or repair, and begin writing the letters to the bond holders. Each member of the inspection team must assist with the writing of the letters to the bond holders by contributing information on the condition of each component of the system, relating general trends as well as noting specific concerns and improvements.
  - 6.1.9 The PM should assemble findings from each inspection team members and prepare the report to submit to the bond holders. The final letters should include the inspection findings, advice and recommendations as to the proper maintenance/repair, and cost estimates thereof, and the GASB ratings provided by the NTTA for the respective systems. The PM will also perform a quality control (QC) review of the letter prior to submitting to the PD for Quality Assurance (QA). Once QC and QA are complete, the PD will submit the letter to the Maintenance Department and MMC for review. The inspection team, working with the PM and PD, should address any comments received from the Maintenance Department and MMC and submit the final version of the letters to the NTTA for final review. The final approved letters must be completed and delivered to the NTTA with sufficient time to mail them to the bond holders 90 days prior to the end of the respective NTTA System and SPS fiscal year.
  - 6.1.10 All field inspectors will assist with the creation of two PowerPoint presentations, one for the NTTA System, and one for the SPS, each summarizing the annual inspection findings for their respective systems. The PowerPoint presentations must be completed in sufficient time to be presented by the PD at the first NTTA board meeting following the delivery of the respective letter to the bond holders.
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## 6.2 Roadway Inspector

- 6.2.1 Perform visual inspection and condition assessment on the following roadway elements: all drainage structures (storm sewer, ditches, concrete flumes and culverts), erosion issues, signing and striping, both rigid and flexible barriers, and a design safety review of the complete systems.
- 6.2.2 Perform visual inspections of all roadway elements while riding with the NTTA roadway section supervisors. The supervisor should drive slowly and carefully along both the inside and outside shoulders allowing the RI time to properly inspect the roadway elements. For those areas deemed unsafe to perform inspections in this manner, a rolling lane closure should be requested to accomplish the inspection.
- 6.2.3 Take pictures of all observed findings along each roadway. At the RI's discretion, pictures may be taken noting overall roadway conditions.
- 6.2.4 Note the observation, location, date, and direction of each picture on the aerial photography plan sheets provided by the PM.

## 6.3 Retaining Wall Inspector

- 6.3.1 Perform visual inspection and condition assessment on the following retaining wall, sound wall, and tunnel elements: panels, joints, coping, flumes, mow strips, inlets, rails, riprap, slope paving, visible underdrain pipes, sound wall columns; and adjacent: sidewalks, curbs, fencing, roadways, shoulders, soil slopes, and landscaping.
  - 6.3.2 Perform visual inspections of every retaining wall on the systems by walking both top and bottom of each wall, except in areas deemed unsafe for pedestrians (i.e. cut sections along PGBT where the main lanes are within 15 feet of the walls; fill sections along DNT where the top of retaining walls coincide with the main lane barrier rail) In areas where it is unsafe to walk the top or bottom of any wall, a rolling lane closure should be requested to accomplish the inspection.
  - 6.3.3 Perform visual inspections of every sound wall by either walking or driving (depending on accessibility) the front and back side.
  - 6.3.4 Take pictures of all observed findings along each wall whether visible from the top or bottom of the wall. General pictures may be taken at each wall location for common types of widespread deterioration, and should be noted as such. Overall condition pictures should be taken at intervals sufficient to encompass all lengths of all walls for documentation of areas that do not exhibit deterioration or areas of concern.
  - 6.3.5 Note the observation, location, date, direction, and number of each picture on the aerial photography plan sheets provided by the PM.
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**6.4 Bridge Inspector**

- 6.4.1 Review the BRINSAP reports prior to the bridge inspections. Note any deficiency on the reports, especially ratings less than 6, to be specifically investigated during the visual inspection of each bridge.
- 6.4.2 Perform visual inspections and condition assessment on the following bridge elements: deck, superstructure, substructure, channel and culvert, by walking above, below and alongside the structure, except in areas that are unreachable or deemed unsafe for pedestrians. Such areas are roadways with less than 6 foot shoulders, direct connector ramps, or any other condition which the inspector deems unsafe. Rolling should be requested when inspecting these areas.
- 6.4.3 Visual inspections must be performed while maintaining a clear, detailed view of all bridges, including high level interchanges and bridges over waterways; binoculars may be used to achieve this level of detail.
- 6.4.4 Bridges that cross over large bodies of water, such as MCLB and LLTB, shall be inspected from a NTTA provided motorized boat.
- 6.4.5 Take pictures of all observed findings at each bridge and bridge class culvert location. At the BI's discretion, pictures may be taken noting overall bridge condition.
- 6.4.6 Note the observation, location, date, direction and number of each picture on the bridge inspection form.

**6.5 Facilities Inspector**

- 6.5.1 Perform visual inspection and condition assessment of the exterior and interior of all facilities, observing all readily accessible areas including enclosed but unlocked plenums, attic spaces, and storage areas. Note any evidence of leaks, insect infestation, structural movement, malfunctioning components, impact damage, and general wear and tear. Note any deterioration of elements, in particular those relevant to Texas Accessibility Standards and the Building Code for Life, Health, and Safety Standards. Record any issues reported to the inspectors by occupants. Spot check function of light fixtures, HVAC, and electrical outlets. Verify that areas and elements intended to be secured are secured.
  - 6.5.2 Take pictures of all observed findings at each facility location. General pictures may be taken at each facility for common types of widespread deterioration, and should be noted as such. Take a representative sample of overall condition pictures at intervals sufficient to encompass all facilities for documentation of areas that do not exhibit areas of concern.
  - 6.5.3 Note the observation, location, and date of each picture.
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**7.0 REGULATORY REQUIREMENTS:**

N/A

**8.0 RELATED BOARD POLICY:**

N/A

**9.0 COMPONENT DOCUMENTS:**

GEC-01-F1 NTTA Annual Inspection Observations

**10.0 FLOWCHART:**

N/A

**11.0 REVISION HISTORY:**

Revision	Revised by:	Date Issued	DRN No.	Reason for Revision
0	Stephanie Halliday	07/05/2012	<b>10408</b>	Original Release

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