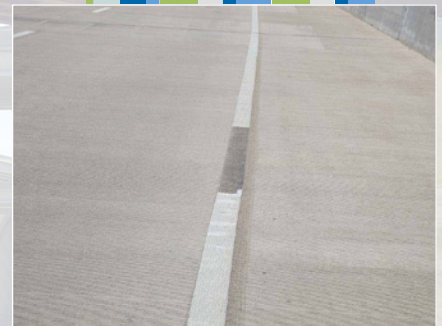




ANNUAL INSPECTION REPORT SPECIAL PROJECTS SYSTEM

FISCAL YEAR 2016

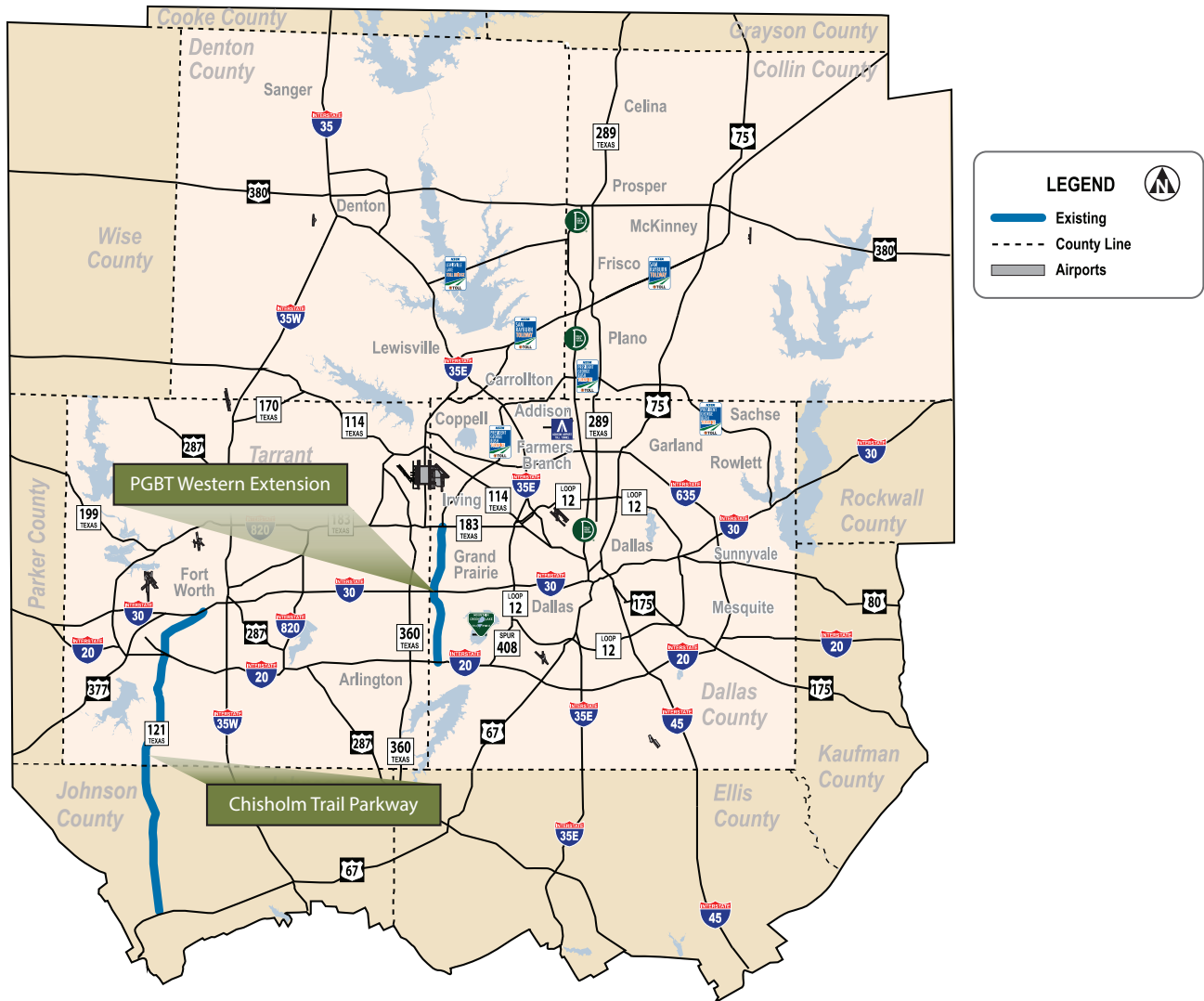


Prepared by Atkins North America, Inc.
General Engineering Consultant

May 2016



05033-WH-15



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May 31, 2016

Gerald Carrigan
Executive Director
North Texas Tollway Authority
5900 W. Plano Parkway
Plano, Texas 75093

Dear Mr. Carrigan:

As General Engineering Consultant to the North Texas Tollway Authority (NTTA) and in accordance with the requirements set forth in the Special Projects System (SPS) Trust Agreement Section 710, Atkins North America, Inc. (Atkins) is pleased to submit the Fiscal Year 16 (FY 16) Special Projects System Annual Inspection Report.

Atkins completed the SPS inspections in April 2016 and reports that the system has been maintained in good repair, working order, and condition. This observation was based on a general visual inspection of the roadway, retaining walls, and bridges. Results of the inspections are presented in greater detail within this report.

Atkins recommends that the Authority continue to implement the routine maintenance as budgeted and scoped, and to implement the major maintenance projects planned for the ensuing fiscal year. Through coordination with the Maintenance Department and review of the anticipated Major Maintenance Projects scheduled for FY 17, the following budgets are recommended:

Operating Maintenance Fund (OMF): \$27.5 million
Major Maintenance Fund (MMF): \$4.3 million

The overall condition of the President George Bush Turnpike Western Extension (PGBT WE) and the Chisholm Trail Parkway (CTP), along with the appropriate funding levels for the SPS Operating Budgets, exemplifies NTTA's commitment to maintain and operate a safe and reliable toll road system in the North Texas region.

Respectfully submitted,



R. Keith Jackson, PE
General Engineering Consultant
Project Director

cc: Elizabeth Mow, PE, NTTA (w/1 copy)
Victor Pavloff, PE, NTTA (w/1 copy)
Horatio Porter, NTTA (w/4 copies and CD)
Scott Brush, PE, VRX (w/1 copy)
File

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Acronyms and Abbreviations

BRINSAP	Bridge Inventory Inspection and Appraisal Program
COSS	Cantilever Overhead Sign Supports
CR	County Road
CTP	Chisholm Trail Parkway
EBFR	Eastbound Frontage Road
FM	Farm to Market Road
FY	Fiscal Year
GASB	Governmental Accounting Standards Board
GEC	General Engineering Consultant
HMIP	High-Mast Illumination Pole
IH	Interstate Highway
MMC	Maintenance Management Consultants
MMF	Major Maintenance Fund
MRP	Maintenance Rating Program
MSE	Mechanically Stabilized Earth
NBFR	Northbound Frontage Road
NBML	Northbound Main Lane
NTTA	North Texas Tollway Authority
OMF	Operating Maintenance Fund
OSB	Overhead Sign Bridges
OSS	Overhead Sign Structure
PGBT WE	President George Bush Turnpike Western Extension
QMS	Quality Management System
SBFR	Southbound Frontage Road
SH	State Highway
SPS	Special Projects System
TRM	Total Routine Maintenance
TxDOT	Texas Department of Transportation
US	U.S. Highway
WBFR	Westbound Frontage Road

Executive Summary

As described in the requirements set forth in the Special Projects System (SPS) Trust Agreement Section 710, the Consulting Engineers make an inspection of the project 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 project has been maintained in good repair, working order, and condition, and (b) their advice and recommendations as to the proper maintenance, repair, and operation of the project during the ensuing fiscal year and an estimate of the amount of money necessary for such purposes.

The SPS consists of the President George Bush Turnpike Western Extension (PGBT WE) in Dallas County and the Chisholm Trail Parkway (CTP) in Tarrant and Johnson Counties. PGBT WE extends from State Highway 183 (SH 183) south to Interstate Highway 20 (IH-20). CTP, which extends from Interstate Highway 30 (IH-30) in Fort Worth south to United States Highway 67 (US 67) near Cleburne, mainlanes were opened to traffic on May 11, 2014. All sections of Chisholm Trail Parkway were inspected this year.

Atkins North America, Inc. (Atkins), as General Engineering Consultant (GEC), completed the inspection in April 2016 of the PGBT WE and the

CTP. The system was found to be maintained in good repair, working order, and condition. This observation was based on a general visual inspection of the roadway, retaining walls, and bridges, conducted in accordance with the Quality Management System (QMS).

Atkins recommends that the agency continue to implement the routine maintenance as budgeted and scoped, and to also implement the major maintenance projects planned for the ensuing fiscal year. Through coordination with the NTTA staff, and in review of the anticipated Major Maintenance Projects scheduled for FY17, the following budgets are recommended:

Operating Maintenance Fund (OMF)	\$27.5M
Major Maintenance Fund (MMF)	\$4.3M

The overall condition of the PGBT WE and Chisholm Trail Parkway, along with the funding levels for the SPS Operating Budgets exemplifies the NTTA's commitment to maintain and operate a safe and reliable toll road system for the North Texas region.

1.0 Introduction

1.1 Background

In February 2016, Atkins began the annual inspection of the NTTA's SPS. This inspection was done in accordance with Section 710 of the Trust Agreement (see Appendix A), which requires the GEC to perform a condition assessment of the project and submit a report with their findings. These inspections provide a basis to plan funding levels needed to maintain assets for the maintenance portion of the OMF and the MMF in the Annual Operating Budget for the ensuing fiscal year.

1.2 Inspection Process

The GEC Annual Inspection assessed four main elements: roadway, retaining walls, bridges, and facilities (as required). The roadway portion of the inspection focuses on pavement, drainage structures, erosion issues, signing and striping, barriers, main lane and ramp plaza gantries, sand storage areas, and overhead safety of the corridor. The retaining wall inspection focused on panels, joints, coping, flumes, mow strips, inlets, rails, slope

paving, visible underdrain pipes, sound walls, and adjacent elements. The bridge inspection addressed the deck, superstructure, and substructure. The buildings/facilities inspection focused on the exterior and interior of all facilities, and administrative office complex. No offices or occupied buildings are located on the PGBT WE or CTP.

Inspections were conducted in accordance with NTTA'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 NTTA, its employees, the GEC, or the Maintenance Management Consultants (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 as shown below.

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.

Table 1: GEC Annual Inspection Rating Scale

1.3 Description of System

The NTTA SPS consists of the President George Bush Turnpike Western Extension (PGBT WE) (Figure 1) and the Chisholm Trail Parkway (CTP) (Figure 2) and serves as a vital component of the transportation system in the North Texas Region.

1.3.1 President George Bush Turnpike Western Extension

The PGBT WE, a limited access all-electronic toll road, extends from SH 183 south approximately 11.5 miles to IH-20. NTTA maintains 53.5 main lane miles and 52 frontage road miles (referenced as State Highway 161 [SH 161]) of the corridor. Interchanges are located at IH-20, Mayfield Road, Pioneer Parkway/Arkansas Lane, Marshall Drive, Dalworth Street/Main Street/Jefferson Street, IH-30, North Carrier Parkway/Egyptian Way, Lower Tarrant Road, Trinity Boulevard/ Shady Grove Road/ Oakdale Road, Conflans Road, and SH 183. There are 49 total bridges, 2 main lane toll gantries, and 18 ramp gantries.

PGBT WE was constructed in four phases. Phases 1-3 were constructed under the direction of the Texas Department of Transportation (TxDOT). Phase 1, consisting of frontage roads from North Carrier Parkway to IH-20, along with the main lane interchange at SH 183, was opened in August 2009.

Phase 2, which included two main lanes in each direction from SH 183 to Egyptian Way, also opened to traffic in August 2009. Phase 3, consisting of service roads and a third main lane from Conflans Road to North Carrier Parkway, opened in April 2010. Phase 4 was administered by NTTA under a design-build contract and was opened to traffic in October 2012. Phase 4 included main lanes from North Carrier Parkway to IH-20, as well as the interchanges at IH-20 and IH-30.

1.3.2 Chisholm Trail Parkway

The CTP is a 27.6-mile toll road that extends from downtown Fort Worth at IH-30 south to Cleburne at US 67. This limited access all-electronic toll road has interchanges located at IH-30, Lowell Avenue, Montgomery Street, Edwards Ranch Road, Arborlawn Drive, SH 183, IH-20, Overton Ridge Boulevard, Oakmont Boulevard, Altamesa Boulevard, Sycamore School Road, McPherson Boulevard, Farm to Market Road 1187 (FM 1187), County Road 920 (CR 920), FM 1902, Caddo School Road, FM 917, CR 904, Sparks Road (future) and US 67. The CTP has 3 main lane gantries and 24 ramp gantries. The CTP mainlanes were open to traffic on May 11, 2014. All sections of the CTP were inspected in FY16.

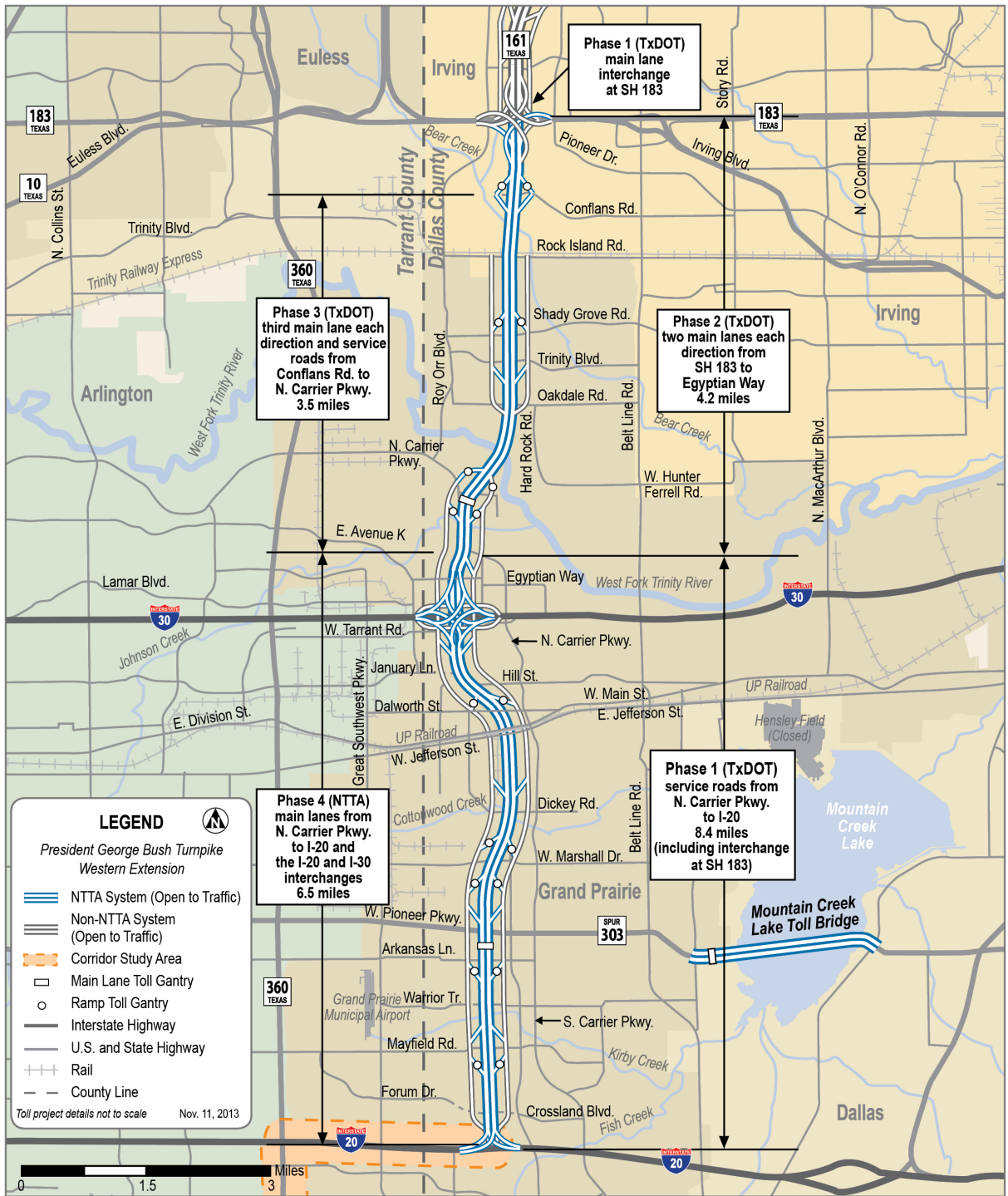


Figure 1: President George Bush Turnpike Western Extension Project Location Map

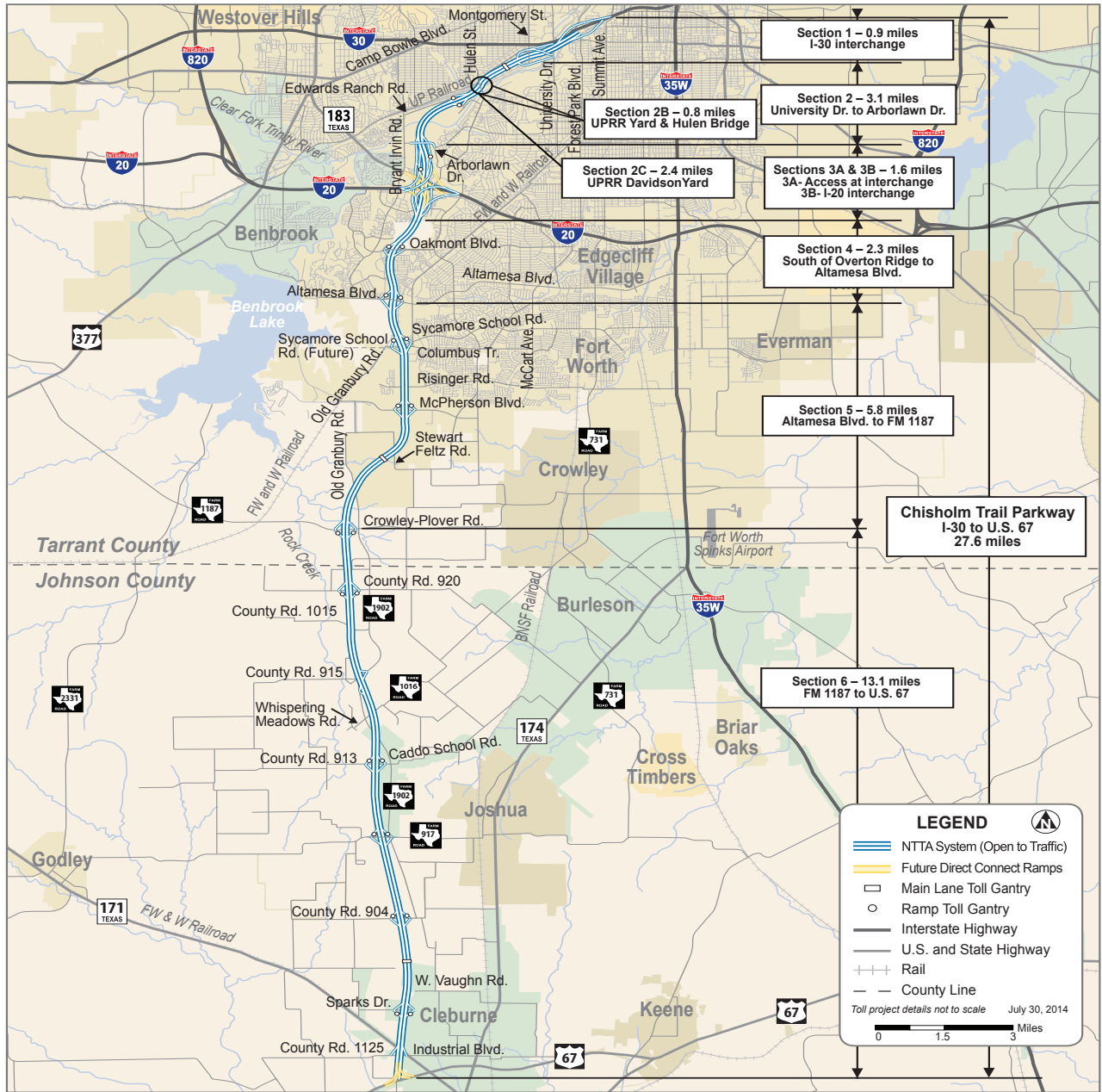


Figure 2: Chisholm Trail Parkway Project Location Map

1.4 Maintenance Program Overview

1.4.1 Organization

The Maintenance Department for NTTA is responsible for the normal day-to-day routine maintenance and major maintenance projects for both the System and the SPS. These Systems total 139 centerline-miles of limited access toll roads, which include 740 main lane miles and 210 frontage road miles. This network also includes 603 bridges (including bridge class culverts) and one tunnel. The Maintenance Department is also responsible for routine and major maintenance for all facilities including the Gleneagles administration office complex and two operation and maintenance facilities. Major maintenance projects include repairs and maintenance, painting, renewals, replacements, improvements, and other projects necessary for the safe or efficient operation of the System and SPS or to prevent loss of revenue. These projects include such costs for engineering, fleet and equipment purchases/additions and replacements, maintenance expenses for roadway, bridge, buildings, walls, etc., and operating expenses not occurring at annual or short periods.

Utilizing both in-house and outsourced resources to accomplish the requirements of routine and major maintenance, the NTTA has created a “check-and-balance” system providing these services to improve efficiency and cost effectiveness. The overall goal is to have about 50 percent of these services outsourced to consultants/contractors. Currently, the Total Routine Maintenance (TRM) contracts for the entire PGBT (including the PGBT WE) and CTP are outsourced to Roy Jorgensen

Associates, Inc. The PGBT is an 8-year contract and is currently scheduled for completion by November 2019, while the CTP is a 3-year contract scheduled for completion in July 2017.

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

- Specialized annual inspections
- Oversight/direction of roadway repairs by NTTA in-house forces
- Plans, specifications, and estimates of Maintenance Department projects (budgeted and non-budgeted)
- Updating 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 Maintenance Department activities. The disciplines VRX utilizes as the MMC include: civil engineering, structural, mechanical and electrical engineering, environmental 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 assets groups (roads, bridges, and facilities) are selected randomly 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

The NTTA conducts four specialized inspections for the roadway pavements, overhead sign structures, high-mast illumination poles, and tunnel. TxDOT is responsible for the specialized bridge inspections. These inspections are conducted every two years for each of the bridges and the reports are filed with the TxDOT Bridge Inventory Inspection and Appraisal Program (BRINSAP) section.

The NTTA contracted a specialized pavement inspection through the MMC to inspect and assess the current condition of the main lane and frontage road pavement. The pavement condition assessment (data collection and evaluation) is complete. For PGBT WE, there were no significant changes in condition for the mainlanes or frontage roads from last year's inspection. There were no significant changes in friction numbers from our last inspection in 2014. For CTP, this was the first specialized pavement inspection. As was expected, there were

no significant findings in this year's condition assessment or the friction testing. The final pavement assessment report will not be ready until the 4th quarter of 2016.

NTTA's overhead sign structure (OSS) inspection program requires all cantilever overhead sign supports (COSS), overhead sign bridges (OSB), and "Tee" overhead structures to be inspected on a five-year cycle by corridor. The cantilever overhead sign supports and OSB were inspected on PGBT WE in 2016. The overall condition of the overhead sign structures on PGBT WE was acceptable. CTP overhead sign structures will be inspected in 2019. A continued monitoring program of all structures is recommended in accordance with OSS inspection program schedule.

NTTA's ongoing high-mast illumination pole (HMIP) inspection program requires each HMIP is cyclical, currently inspected on a five-year cycle. HMIPs at the PGBT WE/SH 183 interchange were inspected in 2012. The newly installed HMIPs at the PGBT WE/IH-30 and IH-20 interchanges will be inspected in 2017 along with the PGBT WE/SH 183 interchange. A continued monitoring program of all HMIPs is recommended to ensure the structural performance of the poles.

The latest available BRINSAP reports for PGBT WE were from 2014 and 2015 inspections. The CTP BRINSAP reports were from 2014 inspections. The BRINSAP reports rate the condition of each bridge element on a scale from 0 to 9, with 9 being excellent. A review of these reports indicates that most bridge elements on the PGBT WE and CTP are in excellent to good condition (9-7 rating). Elements rated 6 (satisfactory condition) or below were

reviewed. No elements rated below 5 (fair condition).

1.4.4 GASB Requirements

Governmental Accounting Standards Board (GASB) Statement 34 requires all governmental organizations to perform asset condition assessments every 3 years. The MMC develops and maintains an inventory of NTTA's infrastructure assets throughout the SPS. The MMC rates the condition and calculates a replacement cost for each asset. The MMC inventory and GEC inspection provide the foundation for compliance with GASB Statement 34.

The GASB 34 rating of PGBT WE for 2015 was an overall score of 9.2. The rating for 2016 will be completed later this year for PGBT WE and CTP.

2.0 Inspection Results

2.1 Overview

The PGBT WE and the CTP have been maintained in good repair, working order and condition. Using the GEC Annual Inspection Rating Scale, no observations were rated below a 3 on any of the three inspected elements: roadways, retaining walls, and bridges.

The findings presented include notable and general observations within each of the three elements inspected.

2.2 President George Bush Turnpike Western Extension (PGBT WE)

2.2.1 PGBT WE Roadway

Roadway elements including sand storage areas were generally in good condition. Three observations relative to the roadway were erosion, ride quality, and pavement markings.

Some areas of erosion were observed under the main lane and frontage road bridges, as illustrated in Figure 3.

The uneven profile of the pavement in some areas of the mainlanes and frontage roads produce a rough ride, as illustrated in Figure 4.

Another observation is the deterioration of pavement markings, as illustrated in Figures 5 and 6.



Figure 3: Erosion along Frontage Road Bridge Columns Sta. 125+00



Figure 4: Frontage Road Settlement SB Sta. 122+00



Figure 5: Faded Pavement Markings on Frontage Road at Mayfield Road

2.2.2 PGBT WE Retaining Walls

The majority of the retaining walls are in like-new condition. There were no areas of concern observed this year.



Figure 6: Faded Pavement Markings on ML Sta. 445+00

2.2.3 PGBT WE Bridges

The majority of bridge elements are also in like-new condition with few issues observed. The only issue concerning bridges is erosion of the slope protection near abutments as noted from previous years reporting as well as currently indicated. Based on observations made, none of the erosion near abutments is impacting the structural integrity of the bridges.

2.2.4 PGBT WE Changes from FY 2015 Inspection

One of the major issues observed during the previous two year's inspections have been mitigated. A maintenance project was conducted in the Summer/Fall 2015 to address this issue.

- Erosion mitigation at Johnson Creek and West Fork Trinity River

Another observation from previous years reporting were areas of water seepage. Previous and current observations include water seeping through the retaining wall on the east side of the northbound frontage road between Dalworth Street and NW 14th Street and at the conduit under the east side

of the mainlane underpass at Dalworth Street. No changes noted to the water seepage.

The GEC inspection is only visual and further investigation would be needed to determine the cause of the seepage. We have identified no increase in water seepage from observations noted in previous inspections. Our recommendation is that the Maintenance Department continue monitoring these observations.

2.3 Chisholm Trail Parkway (CTP)

2.3.1 CTP Roadway

Roadway elements including sand storage areas are in new condition. On observation relative to the roadway is pavement markings peeling and missing reflective pavement markers (as illustrated in Figures 7 and 8).



Figure 7: Pavement Markings Peeling at Entrance Ramp Sta. 1127+00



Figure 8: Reflective Pavement Markers Missing at Exit Ramp Sta. 787+00

2.3.2 CTP Retaining Walls

Retaining wall elements are in new condition. No areas of concern observed.

2.3.3 CTP Bridges

Bridge elements are in new condition. No areas of concern observed.

2.3.4 CTP Changes from FY 2015 Inspection

No issues were observed on the 2015 inspection of CTP, therefore, no changes noted.

3.0 Major Maintenance Projects completed since FY 2015 Inspections

Listed below is the project that has been completed since FY 2015 inspections.

3.1 PGBT WE

- Erosion Mitigation at Johnson Creek and West Fork Trinity River

4.0 Future Maintenance Projects and Recommendations

4.1 Overview

There are three issues that have been identified that require attention and funding from the Major Maintenance Fund. Most items observed can be addressed by the Total Routine Maintenance contract. Through coordination with the Maintenance Department and MMC, a plan will be developed to repair, replace, or monitor all routine maintenance issues.

4.2 PGBT WE Recommendations

Three observations that require attention and funding from the Major Maintenance Fund are listed below:

- Restriping on the main lanes and frontage roads
- Pavement profiling and repairs at various locations on PGTB WE
- Erosion under bridges

Observation 1 – Restriping on the main lanes and frontage road

The first area of concern is the faded pavement markings on the main lanes and frontage roads. The markings are deteriorated in various areas from SH 183 to IH 30 that will require restriping.

The Maintenance Department is planning to restripe mainlanes and frontage roads in 2017.

Observation 2 – Pavement profiling and repairs at various locations on PGTB WE

The Maintenance Department is planning a Pavement Profiling (Polyurethane Injection/Grinding/Grooving) and Pavement Repairs Project.

Observation 3 – Erosion under bridges

The Maintenance Department is planning a project to address erosion issues.

4.3 Chisholm Trail Parkway (CTP) Recommendations

The one observation that requires attention from the Major Maintenance Fund is restriping and placement of pavement markings.

The Maintenance Department is planning to restripe areas of CTP as warranted, replace reflective pavement markers, as well as add pavement markings/reflective pavement markers in areas of low lighting for safety purposes.

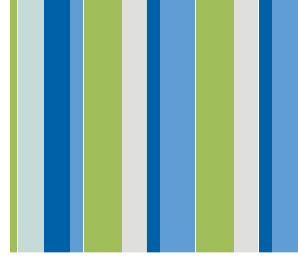
4.4 Budget Recommendations

As required by the Trust Agreement, the GEC also provides recommendations for the annual maintenance operating expenses and major maintenance expenses. The funding levels are set such that NTTA can maintain the overall asset conditions of the PG&T WE and CTP. Through coordination with the MMC, along with a review of the anticipated Major Maintenance Projects scheduled for FY 17, the following budgets shown in Table 2 are recommended.

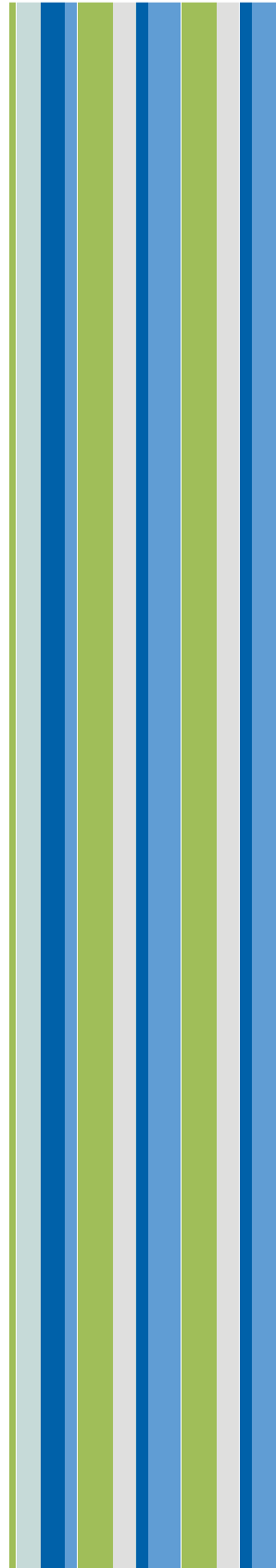
Operating Maintenance Fund (OMF)	\$27.5M
Major Maintenance Fund (MMF)	\$4.3M

5.0 Summary

Overall the PGBT WE and CTP have been maintained in good repair, working order, and condition. The overall condition of the corridor shows NTTA's commitment to funding, maintaining, and operating the SPS in a safe and sustainable manner. Continued routine maintenance on the PGBT WE and CTP will ensure that the SPS provides a reliable mobility option for the North Texas area.



APPENDIX A



TRUST AGREEMENT

BY AND BETWEEN

NORTH TEXAS TOLLWAY AUTHORITY

AND

WELLS FARGO BANK, NATIONAL ASSOCIATION,

SECURING

SPECIAL PROJECTS SYSTEM REVENUE OBLIGATIONS

Dated as of April 1, 2011

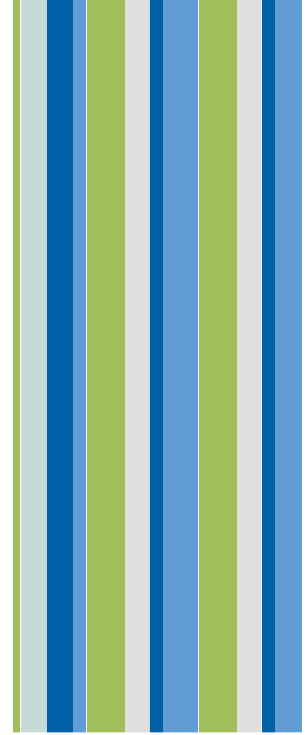
paid in full or provision for such payment shall have been made pursuant to **Article XII**, and except as in this Trust Agreement otherwise permitted, the Authority will not sell, lease or otherwise dispose of or encumber the Project or any part thereof and will not create or permit to be created any charge or lien on the Trust Estate unless such charge or lien on the Trust Estate is made junior and subordinate in all respects to the charge and lien herein made for the benefit of the Obligations in accordance with **Section 708**; *provided* that the Authority may enter into Permitted Ancillary Projects. The Authority may also, from time to time, sell, exchange or otherwise dispose of any machinery, fixtures, apparatus, tools, instruments or other movable property acquired by it from the proceeds of Obligations or from Revenues or otherwise, if the Authority shall determine that such articles are no longer needed or are no longer useful in connection with the construction or operation and maintenance of the Project, and the proceeds thereof shall be applied to the replacement of the properties so sold or disposed of or shall be paid to the Trustee to be held for the credit of the Construction Fund, the Major Maintenance Reserve Fund, or the Capital Expenditures Reserve Fund, as the Authority may direct. The Authority may from time to time sell, exchange or otherwise dispose of any real property or release, relinquish or extinguish any interest therein as the Authority by resolution shall declare is not needed or serves no useful purpose in connection with the maintenance and operation of the Project, and the proceeds thereof, if any, shall be applied as hereinabove provided for the proceeds of the sale or disposal of movable property. Notwithstanding the foregoing, it is acknowledged and agreed that nothing herein shall prevent the Authority from re-conveying or allowing the reversion of property leased or otherwise acquired upon the termination of the lease or agreement pursuant to which such property was originally acquired.

Upon any disposition of property under the provisions of this **Section 709**, the Authority shall notify the Trustee thereof and the amount and disposition of the proceeds thereof.

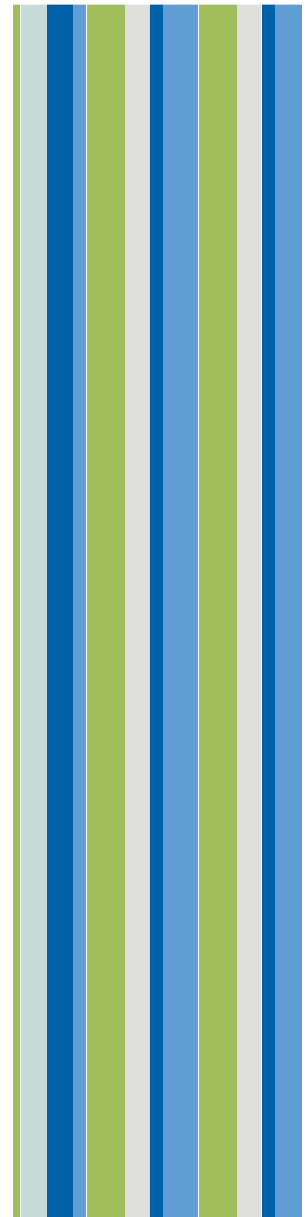
Section 710. Inspection by Consulting Engineers. The Authority covenants that it will cause the Consulting Engineers to make an inspection of the Project on or before the 90th day prior to the end of each Fiscal Year and to submit to the Authority a report setting forth (a) their findings whether the Project has been maintained in good repair, working order and condition, and (b) their advice and recommendations as to the proper maintenance, repair, and operation of the Project 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 Operating Expenses and Major Maintenance Expenses in the Annual Operating Budget for the next ensuing Fiscal Year. Copies of such reports shall be filed with the Trustee and TxDOT.

Section 711. Annual Operating Budget.

(a) *Annual Operating Budget.* The Authority covenants to adopt, prior to the beginning of each Fiscal Year, an Annual Operating Budget, specifying in reasonable detail all projected Revenues, Operating Expenses, Major Maintenance Expenses and Project Capacity Improvements Capital Expenditures and any projected advances under the Toll Equity Loan Agreement for such Fiscal Year on a monthly basis. The Authority may at any time adopt an amended or supplemental Annual Operating Budget for the remainder of the then current Fiscal Year, and when so adopted the Annual Operating Budget as so amended or supplemented shall be treated as the Annual Operating Budget under the provisions of this Trust Agreement. The Authority shall file a copy of each Annual Operating Budget and each amended or supplemented Annual Operating Budget with the Trustee.



APPENDIX B



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

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.

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- 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.

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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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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	10408	Original Release