A Grand Parkway Transportation Corporation Project

System Inspection Report
FY 2016
THE GRAND PARKWAY SYSTEM

Submitted June 1, 2016
by CH2M as GEC
FY 2016 System Inspection Report
Grand Parkway Segments D (Harris County), E, F-1, F-2 & G

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INTRODUCTION

As described in the requirements set forth in Section 504 of the Grand Parkway Transportation Corporation (GPTC) Trust Agreement, the General Engineering Consultant (“GEC”) is employed pursuant to Section 704 of the Trust Agreement to make an inspection of the System and submit a report setting forth (a) their findings whether the Grand Parkway System 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 System 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, Major Maintenance Expenses, Major Maintenance Requirement, capital expenditures and the Operation and Maintenance Reserve Fund in the Annual Budget for the next ensuing Fiscal Year and for Major Maintenance Expenses and capital expenditures for the next following three Fiscal Years. CH2MILL was selected as the GEC for the Grand Parkway System Segments D (Harris County), E, F-1, F-2 & G.

Major Maintenance Expenses, Major Maintenance Requirement, and capital expenditures are collectively referred to as Capitalized Major Maintenance in this report. The GEC has not included information held by TxDOT for Toll Operations, Administration, and Professional Services Fees in this report.

This System Inspection Report sets forth the GEC findings pursuant to an inspection made in April 2016 as well as recommendations as to the proper maintenance, repair and operation of the System during the ensuing Fiscal Year and budget estimates for the next following Fiscal Years 2017-2020. With the exceptions noted within this report, and based on the observed infrastructure and records, the System has been maintained in good repair, working order and condition over the past reporting period.

PROJECT DESCRIPTION

Segment D (Harris County) extends 2.6 miles from the Fort Bend-Harris County line to 0.30 mile north of Colonial Parkway. Proceeds of the Bonds are being used to construct a four-lane, controlled access toll road with continuous frontage roads, including six direct connectors, from 0.72 mile north of Kingsland Boulevard to 0.30 mile north of Colonial Parkway, which represents the northern most 0.9 mile of Segment D (Harris County). The main lanes of Segment D (Harris County) was opened to traffic in December 2013, including five Direct Connectors with the three remaining Direct Connectors completed in June 2014, with active tolling in place as of February 2014.

Segment E is a 14.4-mile, four-lane, controlled access toll road with intermittent frontage roads from 0.30 mile north of Colonial Parkway to US 290 through northwest Harris County. Segment E was opened to traffic in December 2013 with active tolling in place as of February 2014.

Segment F-1 is a 12.1-mile project that consists of the construction of a four-lane, divided toll road on a new location in Harris County that begins at the existing terminus of Segment E at US 290 and ends at SH 249. Segment F-1 consists of two 12-foot mainlanes in each direction with a 48-foot median and intermittent frontage roads occurring within a ROW width of 400 feet. Segment F-1 also includes direct connector tie-ins at US 290. Segment F-1 was opened to traffic on February 5, 2016 with active tolling in place as of February 15, 2016.
Segment F-2 is a 12.2-mile project that consists of the construction of a four-lane, divided toll road on a new location in Harris County that begins at SH 249 and ends at Interstate Highway 45 (IH) 45. Segment F-2 is a four-lane, controlled access toll road with intermittent frontage roads occurring within a ROW width of 400 feet. Segment F-2 also includes direct connectors at IH 45. Segment F-2 was opened to traffic on February 5, 2016 with active tolling in place as of February 15, 2016.

Segment G is a 13.5-mile project that consists of the construction of a four-lane, divided toll road on a new location in Harris and Montgomery counties that begins at IH 45 and ends at IH 69/US 59. Segment G is a four-lane, divided toll road with intermittent frontage roads occurring within a ROW width of 400 feet. Segment G also includes two direct connectors at the IH 69/US 59 interchange and four direct connectors at the Hardy Toll Road. Segment G (excluding the Hardy Toll Road connectors that are subject to a third party agreement) was opened to traffic on March 29, 2016 with active tolling in place as of April 4, 2016.

The status of Segments F-1, F-2 and G is summarized in Table 1 below:

<table>
<thead>
<tr>
<th>Segment</th>
<th>Substantial Completion</th>
<th>Warranty Commenced</th>
<th>Open to Traffic</th>
<th>Tolling Commenced</th>
<th>Anticipated Segment Final Acceptance*</th>
<th>Anticipated Overall Project Final Acceptance</th>
<th>Anticipated CMA Initial Period**</th>
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<tbody>
<tr>
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<td>2-Feb-16</td>
<td>2-Feb-16</td>
<td>5-Feb-16</td>
<td>15-Feb-16</td>
<td>31-May-16</td>
<td>25-Jul-16</td>
<td>1-Jun-17 31-May-22</td>
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<tr>
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<td>5-Feb-16</td>
<td>15-Feb-16</td>
<td>3-Jun-16</td>
<td></td>
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</tr>
<tr>
<td>G</td>
<td>28-Mar-16</td>
<td>28-Mar-16</td>
<td>29-Mar-16</td>
<td>4-Apr-16</td>
<td>25-Jul-16</td>
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<td></td>
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</table>

* - Anticipated 120 days after Substantial Completion, subject to process completion. Delayed for F-1 and F-2 due to flooding in Harris and Montgomery Counties

** - Subject to completion of Warranty period (re-starts if defect is noted)

**SCOPE OF OPERATIONS AND MAINTENANCE WORK**

Segment D (Harris County) and Segment E completed construction under design-bid-build contracts and are currently open to traffic. Segment D reached Final Acceptance on December 12, 2014 and Segment E reached Final Acceptance on November 17, 2014. The Tolling System is functioning and collecting tolls as of February 2014.

Routine and Major Maintenance for roadway within Segments D (Harris County) and E has been carried out and will continue to be carried out by TxDOT Houston District Office (by maintenance staff and / or maintenance contractors) but paid for by the Grand Parkway Project.

Segments F-1, F-2 & G are currently being constructed as part of a single design-build Development Agreement (DA). Each Segment is currently Substantially Complete and is within the warranty period. Tolling has commenced on each Segment. TxDOT is maintaining each of the Segments during the warranty period until Final Acceptance.

Major Maintenance for roadway within Segments F-1, F-2 & G will be maintained by the Developer under a Capital Maintenance Agreement (CMA) for the first five years, commencing one year after Final
Acceptance of the first Segment of the Project to be constructed, with the possibility of a CMA extension for two additional five year periods. TxDOT and/or maintenance contractors will continue to carry out Routine Maintenance within Segments F-1, F-2 & G.

**General O&M Requirements**

For Segments F-1, F-2 & G, during FY 16, until Substantial Completion, Section 19.1 (General Requirements) of the Technical Provisions to the DA required the Developer to take all necessary actions to achieve the following:

- Maintain the Project and Related Transportation Facilities in a manner appropriate for a facility of the character of the Project.
- Minimize delay and inconvenience to Users and, to the extent Developer is able to control, users of Related Transportation Facilities.
- Identify and correct all Defects and damages from Incidents.
- Monitor and observe weather and weather forecasts to proactively deploy resources to minimize delays and safety hazards due to heavy rains, snow, ice, or other severe weather events.
- Remove debris, including litter, graffiti, animals, and abandoned vehicles or equipment from the Project ROW.
- Minimize the risk of damage, disturbance, or destruction of third-party property during the performance of maintenance activities.
- Coordinate with and enable TxDOT and others with statutory duties or functions in relation to the Project or Related Transportation Facilities to perform such duties and functions.

These requirements for Segments F-1, F-2 & G are substantially similar to those performed by the TxDOT Houston District Office for Segments D (Harris County) and E and as carried out by TxDOT for Segments F-1, F-2 & G post-Substantial Completion.

For FY 2016 and FY 2017, the Developer has a Maintenance Management Plan (MMP) in place that is consistent with the general maintenance obligations described in Section 19.1 (General Requirements) of the Technical Provisions to the DA and defines the process and procedures for the maintenance of the Project for the Period of the Agreement up to Substantial Completion and transfer to TxDOT at the start of the warranty period. The MMP forms a chapter of the Developer’s Project Management Plan and includes performance requirements, measurement procedures, threshold values at which maintenance is required, inspection procedures and frequencies, and subsequent maintenance to address noted deficiencies, for each physical Element of the Project in accordance with Table 19-1, including impacts to Related Transportation Facilities. The MMP identifies response times to mitigate hazards, permanently remedy, and permanently repair Defects. Response times shall be in accordance with the Performance and Measurement Table Baseline, or better. The Developer differentiates response times for Defects that require prompt attention due to immediate or imminent damage or deterioration, excluding those items which have no impact on any parties other than Developer, and response times for other Defects. The Developer updates this plan as required or at least annually. No update has been submitted since May 30, 2013.

The MMP includes procedures for managing records of inspection and maintenance activities, including appropriate measures for providing protected duplication of the records. Inspection and maintenance records are to be kept for the Period of the Agreement and provided to TxDOT at Final Acceptance or earlier termination of the Agreement.
During FY 2016, the Developer of Segments F-1, F-2 & G has been required to perform systematic GP Project inspections, periodic maintenance, and routine maintenance in accordance with the provisions of Developer’s Maintenance Management Plan and the Developer’s Safety Plan. The Developer has been responsible for providing all resources necessary for the performance of all activities in the Maintenance Management Plan. The Performance and Measurement Table Baseline is included in Table 19-1 of the Technical Provisions.

**Warranty Period**

During a portion of FY 2017, Segments F-1, F-2 and G will continue to be subject to the Development Agreement Warranty requirements. Routine maintenance will be the responsibility of TxDOT. TxDOT maintains and operates the roadway in accordance with TxDOT published manuals:

- Maintenance Operations Manual, Revised December 2010

The Development Agreement for Segments F-1, F-2 and G, requires a warranty ensuring that: all work conforms to good industry practice; the project shall be free of defects, including design errors; the project shall be fit for use for the intended function; materials and equipment furnished for the project shall be of good quality and new, and, the work shall meet all of the requirements of the contract documents. A $100 million dollar warranty bond will be provided by the Developer upon Final Acceptance.

The term of the warranty for each Segment commences upon substantial completion and remains in effect until one year after final acceptance of the Segment. For elements owned by persons other than TxDOT (such as utility owners), the warranty commences with acceptance of the work by the owners and extends one year thereafter. If TxDOT determines that any of the work has not met the required standards at any time within the applicable warranty term, then the Developer shall correct the work, even if corrections extend beyond the warranty term. The warranty period then re-starts in order that each element of the Project has at least a one-year warranty period (but not to exceed two years from Project Final Acceptance).

The Developer bears all costs for work corrections, including additional testing and inspections, and will be required to obtain all permits to complete the work. If TxDOT and the Developer cannot agree on a work correction, then TxDOT will have the right for the corrections to be performed by a third party, with costs to be borne by the Developer.

**Maintenance Responsibility**

The following Table 2 defines the assigned responsibility for Routine and Major Maintenance on the Grand Parkway System in FY 2016 and FY 2017:

<table>
<thead>
<tr>
<th>FY16 and FY 17 - During F-1, F-2, G Warranty Period</th>
<th>FY 17 - Post F-1, F-2, G Warranty Period</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Segment</strong></td>
<td><strong>Routine</strong></td>
</tr>
<tr>
<td>D</td>
<td>TxDOT</td>
</tr>
<tr>
<td>E</td>
<td>TxDOT</td>
</tr>
<tr>
<td>F-1</td>
<td>TxDOT</td>
</tr>
<tr>
<td>F-2</td>
<td>TxDOT</td>
</tr>
<tr>
<td>G</td>
<td>TxDOT</td>
</tr>
</tbody>
</table>
Notes:
1  TxDOT letting 2-year routine maintenance contract(s) to commence in FY2017 (excludes bridges)
2  Capital Maintenance Agreement (CMA) covers Major Maintenance for: Roadway, Structures (Bridges), Earthworks (Embankments and Cuttings)
3  Tolling structures routine and major maintenance covered by Tolling Agreement
4  Bridge and Pavement inspection to be outsourced by TxDOT
5  Any remaining activities - TxDOT

During FY 2017, the transition of routine maintenance to TxDOT during the warranty period (reference MMP, Section 2C.1.4) can be expected to be complete and that TxDOT will take on major maintenance responsibility for all infrastructure outside of the CMA for Segments F-1, F-2 and G. It should be noted that routine maintenance activities are critical to avoid the need for major maintenance activities earlier than planned and potential additional maintenance costs. The establishment and documentation of TxDOT and ZOPB maintenance interface and monitoring protocols that will carry through into the CMA commencement is recommended during the warranty period.

VISUAL SYSTEM INSPECTION

A System Visual Inspection of the 54.8 total center lane miles was conducted jointly by the TxDOT Construction Manager and the GEC Construction Oversight Manager. Subsequent information has been provided through the GEC related to incidents that have occurred since the visual system inspection. The findings of the Visual System Inspection relied upon the following resources:

- Operations and Maintenance information provided by TxDOT Houston District Office for Segments D (Harris County) and E.
- The Developer’s Maintenance Management Plan and inspection records maintained by the Developer for Segments F-1, F-2 & G are not available until Final Acceptance. The previous FY 2015 System Inspection Report and information in addition to construction inspection records maintained by the GEC were used to inform the review of current construction and maintenance issues.
- During preparation of the recommendations of the Grand Parkway System Inspection Report FY 2014, the GEC “investigated the effects of a significant rainfall event that caused regional local flooding in Harris County and discovered that the NB off ramp for FM 529 has flooding at the intersection with SH 99 which, however, does not affect the main lanes of the Grand Parkway Segment E.” It was recommended that “a review of the drainage be completed by the designer to determine the root cause and solution for the flooding.” As reported in the Grand Parkway System Inspection Report FY 2015 “the GEC inspected this area again on May 26, 2015 following another significant rainfall event. It was observed that flooding at this intersection remains an issue and the GEC recommends again that a drainage review be performed.”

Following another significant rainfall event in 2016, it is again apparent that the NB off ramp for FM 529, and other areas at the intersection will flood in heavy rains. It is not anticipated that this drainage review and resolution would require any changes to the estimated budget recommendations of this report.

In addition to the NB off ramp for FM 529, it has been observed that a number of locations will flood in heavy rains:
- E – FM 529 and between FM 529 and Clay Road (SB)
- F1-Telge
- F2-Boudreaux, Frontage Roads
• G – Riverwalk, Alligator Pond @ Riley Fuzzel, Townsen
• Detention ponds

The GEC recommends that a review of the drainage be completed by the designer for each of these areas to determine the root cause and potential solution to prevent future flooding.

It is not anticipated that this drainage review and resolution would require any changes to the estimated budget recommendations of this report.

Visual Inspections of Segments D, E, F-1, F-2 and G are described in the following report sections.

**Visual inspection – Segments D and E**

The visual inspection of Segments D (Harris County) and E was conducted on April 13, 2016. The 17 miles of Segments D and E consist of 2 lanes in each direction with acceleration and deceleration lanes at ramps. Frontage roads are continuous in Segment D and intermittent in Segment E. Segments D and E also include direct connector ramps at the IH 10 and US 290 interchanges. Both Segments were operational at the time of the inspection. The following maintenance issues were observed during the Segments D and E visual inspection (see related photographs on pages 9-11):

• Debris/litter pick-up and sweeping needed in various locations.
• Bridge rail slot drains and bridge expansion joints need cleaning in multiple locations.
• Mowing needed throughout the Segments (TxDOT mowing season begins May 1). Note: outsourced contracts for Segments D and E, will require more frequent mowing.
• Weed removal needed at drop inlets, riprap, mow strips, brick pavers, etc. in various locations.
• Water ponding in ditches at various locations throughout the Segments.
• Cable barrier system needs maintenance in multiple locations.
• Right turn pavement markers failing at Colonial Franz Parkway.
• Luminaire pole down North of Morton Road, NB.
• Water ponding observed at Bridgeland intersection NB ramp.

It is anticipated that TxDOT will address these items as a part of routine maintenance activities. At this time, it is not anticipated that these routine maintenance items would require any changes to the estimated budget recommendations provided in this report. TxDOT/GEC’s examination of available records for Segments D (Harris County) and E did not discover any operations and maintenance issues of concern.

**Segments D & E – Bridges**

No visual defects were observed to the bridges in Segments D & E. The inspection of SH 99 bridges from US 290 to IH 69/US 59 commenced in April 2016. The inspections are scheduled to be completed by end of June and reports are expected to be submitted in July.

**Segments D & E – Pavement**

The mainline pavement type is a continuously reinforced concrete pavement (CRCP). The condition assessment score and distress score classes of the pavement between the Fort Bend county line and US 290 is “Very Good”, per the Harris County FY 2015 PMIS report (dated April 7, 2015). The Ride score classes vary between good and very good. No CRCP punch outs were noted in 2015.
Only one portion of Segments D & E was noted to have spalling; a concrete pavement joint at Stockdick School Road, NB before FM 529 was also noted during the FY 2016 survey.

Annual Average Daily Traffic ADT on Segments D & E is 1,001 to 5,000 vehicles per day (Ramps to US 290: 5,001 to 10,000 vehicles per day) and the Truck Traffic % is 0% to 5.0% (Ramps to US 290: 10.01% to 15.0%). Truck traffic is the most important factor for the pavement life. For the GPTC continuously reinforced concrete pavement the current levels of truck traffic are low and do not present a current maintenance concern.
Visual Inspection – Segments D & E

Photograph E.1 - Luminaire Pole down North of Morton Road, NB

Photograph E.2 - Spall in Pavement joint – Stockdick School Road NB
Photograph E.3 - Cable Barrier damage near Beckendorff Road

Photograph E.4 - Ponding at Bridgeland NB ramp

Photograph E.5 - Typical vegetation control need (Segments D and E)

Photograph E.6 – Typical vegetation control need (Segments D & E)

Flood – E.7 – Between FM529 and Clay Road
Main Line SB
flooded btwn 529 and Clay rd on GP

Main Line SB
flooded btwn 529 and Clay rd on GP

Flood – E.7 – Between FM529 and Clay Road
Main Line SB
Visual inspection – Segments F-1, F-2 & G

The visual inspection of Segments F-1, F-2 & G was conducted over 2 days on April 12 & April 14, 2016. The 37.8 miles of Segments F-1, F-2 & G consist of 2 lanes in each direction with acceleration and deceleration lanes at ramps. All 3 Segments have intermittent frontage roads. Segments F-1, F-2 & G also include direct connector ramps at the US 290, IH-45 & IH 69/US 59 interchanges. All 3 Segments were operational at the time of the inspection. However, construction activities are still on-going in all 3 Segments as the Developer continues to work toward achieving Final Acceptance. The following maintenance issues were observed during the Segments F-1, F-2 & G visual inspection (see related photographs on pages 13-20):

- Debris/litter pick-up and sweeping are needed in various locations.
- Roadway maintenance is needed on various existing roadways/cross-streets.
- Mowing will soon be needed throughout the Segments (TxDOT mowing season begins May 1).
- Guardrail and cable barrier repair are needed in various locations due to damage from vehicles.
- Damaged pavement markings (skips) were observed in several locations in Segments F-1 & F-2. It is anticipated that these issues will be addressed by the Developer as part of Final Acceptance and/or the warranty period.
- Slope erosion was observed throughout the Segments, and the majority of the project is not yet adequately stabilized with vegetation. It is anticipated that these issues will be addressed by the Developer as part of Final Acceptance and/or the warranty period.
- Ponded water was observed in various drainage ditches throughout the Segments. Ditch regrading and sediment removal are needed. It is anticipated that these issues will be addressed by the Developer as part of Final Acceptance and/or the warranty period.
- Detention ponds were noted to be incomplete throughout the Segments. Excavation, installation of drainage structures, and stabilization activities are on-going. It is anticipated that these issues will be addressed by the Developer as part of Final Acceptance and/or the warranty period.
- An abandoned truck was noted as potentially in the right of way. To be investigated and removed as necessary.
- The traffic signals at the FM 1314 Intersection, NB were not responding to traffic. It is anticipated that this issue will be addressed by the Developer as part of Final Acceptance and/or the warranty period.
- There are various locations that require additional GPTC access or access prevention e.g. at Market Place Drive in Montgomery, SB. GPTC to review and make access adjustments (System improvements), as necessary.

Items noted for future GPTC monitoring:

All outstanding non-conformances are being monitored as part of a punch-list, and a transition punch-list is to be maintained by the Developer as part of the MMP (reference Section 2C.1.4). However, from the GEC quality management records and non-conformances noted, there are several known issues that have the potential to mean that future maintenance may be required earlier, more frequently and more costly than planned:

1. Confirmation of positive drainage of local channels in closed portions – there are currently a number of closed drainage areas that are holding standing water, indicating that these locations are either incomplete, blocked or have an ineffective design. The status of each location is recommended to be established and action taken to rectify where needed.
2. Pavement sub-grade material – unconfined compressive strengths in some areas have exceeded the upper specification limit and may cause future reflective cracking and pavement maintenance issues.
3. Pavement repairs - ~1,600ft of partial depth pavement repair was required during construction between Telge and SH 249 WB that may require future modified maintenance intervals. Numerous minor pavement spall repairs were also performed during construction.

4. Bridge Repairs – Joint repairs were needed during construction at Little Cypress Creek NB/SB, Telge EB/WB and Gosling Road EB. Multi-polymer bridge overlays were required at Energy Drive EB and White Oak Creek EB. Numerous minor substructure and superstructure spall repairs were also performed during construction. Provide additional monitoring at these five bridges for related maintenance repair needs.

5. Pump Stations – the required equipment warranty period term is to be established.

6. Pavement Markings – it has been recorded that there were some issues during placement that may lead to early failure of pavement markings. Currently, the CMA covers this risk. An exit ramp at Riley Fuzzel Northbound within Segment G in Montgomery appears to have missing striping between the ramp and the mainline.

7. Detention Ponds – all fencing and access is yet to be completed.

8. Slope maintenance and stabilization – local sandy silt soil conditions leave the slopes prone to erosion that may require some early and more frequent maintenance. Much of the slope erosion protection still needs to be completed.

9. Tolling fiber hit – the tolling fiber-optic cable was hit by a third party at the south side of the GPTC ROW between Hildebrandt and Northcrest, May 5, 2016. It is anticipated that up to 2 new splices will be required. TxDOT advises that toll revenue collections were not affected.

10. Following flooding events in April 2016, a full inventory check is recommended to identify any damage and any longer term maintenance or design issues to address. Particular intersection locations with flooding issues included FM 529, Telge, Boudreaux and Hildebrandt, Riverwalk, Alligator Pond, and Townsen. Detention ponds should also be assessed for adequacy based on their completed condition.

11. A review of operations procedures for preparation, response and clean up after similar future events on the GPTC is also recommended.

12. A review of MMP Information to be received from the Developer at Final Acceptance for issues that may require modification to planned maintenance or ongoing monitoring.

13. Some of the F-1, F-2 and G designs deviate from typical TxDOT details (e.g. asphalt pavement at exit ramps, cable barriers, striping). This leads to some uncertainty about maintenance requirements in the longer term and should be monitored by GPTC.

The maintenance items listed are not expected to affect the budget period 2016-2020 presented in this report. It is recommended that TxDOT continues to review each of these items during the preparation of ensuing annual budgets.

**Segments F-1, F-2 & G – Bridges**

No visual defects were observed to the bridges in Segments F-1, F-2 & G. The inspection of Segments F-1, F-2 & G bridges is anticipated to commence in 2018. Pre-traffic inspection and load test records are expected to be provided by the Developer upon Final Acceptance.

**Segments F-1, F-2 & G – Pavement**

The mainline pavement type is a continuously reinforced concrete pavement (CRCP). It is expected to be in “Very Good” condition at Final Acceptance. Truck traffic is anticipated to be similar to Segments D & E and as such does not represent a current maintenance issue. Ramps are asphalt pavement and will be in “Very Good” condition at Final Acceptance. Performance of the asphalt ramp pavement to be monitored under the CMA.
At this time, it is not anticipated that these items would require any changes to the estimated budget recommendations provided in this report. TxDOT/GEC’s examination of available records for Segments F-1, F-2 & G did not discover any operations and maintenance issues of immediate concern.
Visual Inspection – Segments F-1 & F-2

Photograph F-1.1 – Typical drainage sediment removal required and ditch grading between Cumberland Ridge Drive and Cypresswood Drive NB

Photograph F-1.2 – Typical drainage completion required Cumberland Ridge Drive intersection NB
Photograph F-1.3 – Striping placed during rains – Cumberland Ridge Drive intersection NB

Photograph F-1.4 – Typical grading example – Cumberland Ridge Drive NB

Photograph F-1.5 – Bridge joint patching to resolve cracking issue over Little Cypress Creek NB

Photograph F-1.6 - Cable barrier down EB at Mueschke Rd

Photograph F-1.7 – Typical edge erosion issue at Cypress Rosehill Drive WB

Photograph F-1.8 - 1,600ft of pavement repair due to placement issues Between Telge and SH 249 WB
Photograph F-1.9 – Typical drainage completion required between Telge and SH249 WB

Flood – F-1.10 – Telge Entrance Ramp EB
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Photograph F-2.1 – Damaged skip over Huffsmith Kohrville Road EB

Photograph F-2.2 – Cable barrier down near Spring Stuebner Road

Photograph F-2.3 Gosling Road Bridge repair due to issues during concrete placement at workbridge EB

Photograph F-2.4 – Typical incomplete drainage and erosion protection near Lonesome Pine Road WB
Photograph F-2.5 – Typical status of retention pond near Lonesome Pine Road WB

Photograph F-2.6 - Abandoned truck in right of way EB

Photograph F-2.7 - Tolling fiber-optic cable hit between Hildebrandt and Northcrest EB

Flood - F-2.8 – Boudreaux EB Plaza

Flood - F-2.9 – Frontage Road at Hildebrandt Interchange WB
Visual Inspection – Segment G

Photograph G.1 – Standing water in drainage at I-45 intersection

Photograph G.2 – Cable barrier down at Spring Trails Ridge (Montgomery)

Photograph G.3 – Cable barrier down at Birnham Woods Drive (Montgomery)

Photograph G.4 – Damaged guardrail at bridge G-12
**Photograph G.5 – Signal Timing at FM 1314 Intersection WB**

**Photograph G.6 – Damaged guardrail Abutment # 47**

**Photograph G.7 - Overlay requirement due to reduced bridge deck cover White Oak Creek EB**

**Photograph G.8 - Access need at frontage road (Market Place Drive) (Montgomery) WB**

**Flood - G.9 – Riverwalk Intersection main line WB**

**4-19-16 DAMAGED GUARD RAIL @ GP99 G-11-WBML-ABUT#47**

**4-20-16 GP99 (EB) OFF RAMP @ TOWNSEND**

**Flood G.10 – Townsen Blvd Off-Ramp on mainline EB**
Flood G.11 – Alligator Pond at Riley Fuzzel
FISCAL YEARS 2016-2020 BUDGET RECOMMENDATIONS

An estimate of Roadway Routine Maintenance Expenses for Fiscal Year FY 2017, and Capitalized Major Maintenance Expenditures for Fiscal Years 2017 through 2020 are shown in the following Summary Tables 3 and 4.

Table 3 FY 2017 Roadway Routine Maintenance Expenses Budget Recommendations

<table>
<thead>
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<th>Roadway Routine Maintenance Expenses</th>
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<td>D (Harris County)</td>
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<td>$749,727</td>
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<tr>
<td><strong>Total Roadway Routine Maintenance Expenses</strong></td>
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Table 4 FY 2017 – FY 20 Capitalized Major Maintenance Budget Recommendations

<table>
<thead>
<tr>
<th>Capitalized Major Maintenance</th>
<th>FY 2017</th>
<th>FY 2018</th>
<th>FY 2019</th>
<th>FY 2020</th>
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<tr>
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<td>$217,971</td>
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<tr>
<td>E</td>
<td>$74,973</td>
<td>$77,222</td>
<td>$79,539</td>
<td>$1,729,008</td>
</tr>
<tr>
<td>F-1</td>
<td>$400,891</td>
<td>$798,004</td>
<td>$798,004</td>
<td>$798,004</td>
</tr>
<tr>
<td>F-2</td>
<td>$404,205</td>
<td>$804,599</td>
<td>$804,599</td>
<td>$804,599</td>
</tr>
<tr>
<td>G (Harris)</td>
<td>$62,619</td>
<td>$124,647</td>
<td>$124,647</td>
<td>$124,647</td>
</tr>
<tr>
<td>G (Montgomery)</td>
<td>$384,657</td>
<td>$765,688</td>
<td>$765,688</td>
<td>$765,688</td>
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<tr>
<td><strong>Total Capitalized Major Maintenance</strong></td>
<td><strong>$1,341,861</strong></td>
<td><strong>$2,585,112</strong></td>
<td><strong>$2,587,878</strong></td>
<td><strong>$4,439,918</strong></td>
</tr>
</tbody>
</table>

Tables 3 & 4 Notes:
- FY 2017 includes a substantial portion of the one-year warranty period on Segments F-1, F-2 & G.
- Capitalized Major Maintenance for Segments F1, F2 & G FY17-FY20 updated to match agreement amounts. Amounts have been split between the Segments according to center-lane mile length. An additional 5% has been added to account for TxDOT Major Maintenance responsibility.
- FY17-FY19 adjustments made per advice from Houston District that there is no planned Capitalized Major Maintenance for Segments D & E. An allowance of ~10% of Routine Maintenance has been made for FY17-FY19 to cover anticipated Major Maintenance requirements.
• FY 2020 Capitalized Major Maintenance figures for Segments D & E are based on the Engineers Report plus deferred maintenance from previous years.
• Capitalized Major Maintenance includes Major Maintenance Expenses, Major Maintenance Requirement, and capital expenditures.

**TxDOT FY 2016 Maintenance Costs**

A comparison of budget versus actual costs for Fiscal Year 2016 is made to assess whether the Grand Parkway System has been maintained in good repair, working order and condition. This comparison is summarized in Table 5. The comparison indicated that sufficient budget has been applied to maintain the System in good repair, working order and condition.

**Table 5 TxDOT FY2016 Maintenance Costs**

<table>
<thead>
<tr>
<th></th>
<th>FY 2016 GPTC Final Budget</th>
<th>FY 2016 Actuals + Estimated</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Roadway Routine Maintenance Expenses</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D (Harris County)</td>
<td>$484,059</td>
<td>$132,527</td>
</tr>
<tr>
<td>E</td>
<td></td>
<td>$733,998</td>
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<tr>
<td>F-1</td>
<td>$1,000,000</td>
<td>$326,067</td>
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<tr>
<td>F-2</td>
<td></td>
<td>$166,885</td>
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<tr>
<td>G (Harris)</td>
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<td>$30,181</td>
</tr>
<tr>
<td>G (Montgomery)</td>
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<td>$99,617</td>
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<tr>
<td><strong>Total Roadway Routine Maintenance Expenses</strong></td>
<td>$1,484,059</td>
<td>$1,489,276</td>
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<tr>
<td><strong>Capitalized Major Maintenance</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>D (Harris County)</td>
<td>$13,000</td>
<td>–</td>
</tr>
<tr>
<td>E</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>F-1</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>F-2</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>G (Harris)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>G (Montgomery)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td><strong>Total Capitalized Major Maintenance</strong></td>
<td>$13,000</td>
<td>$0</td>
</tr>
</tbody>
</table>

**Tables 5 Notes:**

- FY 2016 routine actual and estimated figures do not include TxDOT admin / overhead costs, O&M costs associated with toll collection and operations (roadside toll equipment maintenance, transaction processing, back office operations, processing fee, collection costs, administration and oversight). This estimate also does not include professional services such as accounting, financial, legal, engineering, and administration.
- FY 2016 includes a substantial portion of the one-year warranty period on Segments F-1, F-2 & G.
- Assumed no major maintenance in FY 2016.
- A portion of potentially non-maintenance items from TxDOT cost reports (up to $95,000) have been used in the
development of estimated FY 2016 Roadway Routine Maintenance Expenses. Table 5 figures. TxDOT are to review and advise whether and how these costs should be charged to GPTC.

- FY 2016 Actual figures are split across Segments according to center lane miles. Additions made to Segments F-1, F-2 and G to account for ramp-up in maintenance activity after handover.
- Capitalized Major Maintenance includes Major Maintenance Expenses, Major Maintenance Requirement, and capital expenditures.

**Major Maintenance Requirement**

Table 4 provides the outcome of GEC’s review of budgeted amounts for Major Maintenance of the asset.

**Operation and Maintenance Reserve Fund**

GEC is not able to provide recommendations as to budget amounts in the O&M Reserve Fund Pursuant to Trust Agreement Section 504 as GEC’s review was limited to Roadway Routine Maintenance. Due to this limitation in scope, recommendation on the total Operation and Maintenance Reserve Fund is not possible.
Grand Parkway Project Map