EAST END CROSSING TUNNEL

OPERATION AND MAINTENANCE AGREEMENT

Contract ID: 22-9001

A PROJECT OF THE

KENTUCKY TRANSPORTATION CABINET

1 GENERAL

1.1 Parties

This Operation and Maintenance Agreement ("Agreement") for the East End Crossing Tunnel (the "Project") is entered into by and between the Kentucky Transportation Cabinet (the "Cabinet") and Webber Infrastructure Management, Inc. (the "Contractor") (collectively, the "Parties").

1.2 Effective Date

This Agreement is effective as of the date last signed by the Parties (the "Effective Date").

1.3 Term

The term of this Agreement includes an initial term and an option to extend the initial term. The maximum term of this Agreement, including the extension thereof, is 10 years.

The initial term shall commence on the date of Notice to Proceed and shall expire seven years from the Notice to Proceed, unless terminated earlier in accordance with the terms of this Agreement.

Upon mutual agreement, the Parties may renew the Agreement and extend the term for a three-year period. The Cabinet shall provide the Contractor notice of intent to renew 180 days prior to the expiration of the initial term. The Parties shall negotiate any mutually agreeable changes to the Agreement as part of the renewal process. Changes to the Agreement and agreement to renew shall be documented in writing and signed by both Parties. The renewal term shall commence as of the expiration of the initial term and shall continue for a period of three years, unless terminated earlier in accordance with the terms of this Agreement.

1.3.1 Notice to Proceed

The Parties agree that due to the nature of the Scope of Work, the Contractor will require lead in time to meet their Routine Maintenance obligations pursuant to Section 2.1 (Requirements for Routine Maintenance) and any Renewal Work obligations pursuant to Section 2.2 (Requirements for Renewal Work). Upon the Effective Date, all Cabinet and Contractor obligations shall be in full force and effect except for the Routine Maintenance requirements identified in Section 2 (Scope of Work) and Exhibit B (Routine Maintenance), any Renewal Work obligations identified in Section 2.2 and Exhibit C (Renewal Project Plan Requirements), and any payment obligations identified in Section 3 (Payment). Within 90 days of the Effective Date, the Contractor shall provide a written Request for Notice to Proceed to the Cabinet indicating it is prepared to meet the obligations for the Routine Maintenance and, if necessary, Renewal Work. The Request for Notice to Proceed shall include the following information:

1. An affirmative statement that the Contractor is prepared to meet all requirements of Section 2.1, Section 2.2, Exhibit B, and Exhibit C.

2. A suggested Notice to Proceed date.

3. Identification of all Subcontractors that will perform Work on the Project.

Upon receipt and Approval of the Request for Notice to Proceed, the Cabinet will issue a written Notice to Proceed to the Contractor within 14 days after the suggested Notice to Proceed date. After the Notice to Proceed is issued, the Contractor will be responsible for complying with all requirements of the Contract Documents, including Attachment B-1 (O&M Performance Requirements) with no grace period.

1.4 Definitions and Acronyms

Wherever abbreviations or capitalized terms are used in the Contract Documents, they shall have the meanings set forth in Exhibit A (Definitions and Acronyms).

1.5 Order of Precedence

Each of the documents listed below (collectively, the "Contract Documents") is an essential part of this Agreement, and a requirement occurring in one is as binding as though occurring in all. The Contract Documents are intended to be complementary and describe and provide for a complete Agreement. In the event of any conflict among the Contract Documents, the order of precedence shall be as set forth below:

1. Change Orders and amendments to this Agreement;
2. The main body of this Agreement, as executed by the Cabinet and the Contractor;
3. Exhibit A (Definitions and Acronyms);
4. Exhibit B (Routine Maintenance) and its attachments;
5. Any Approved Renewal Project Plan; and
6. Applicable Standards.

1.6 Reference Information Documents

The Contractor understands and agrees that the Cabinet shall not be responsible or liable in any respect for any loss, damage, injury, liability, cost, or cause of action whatsoever suffered by the Contractor by reason of any use of any information contained in the Reference Information Documents or any action or forbearance in reliance thereon. The Contractor further acknowledges and agrees that:

1. if and to the extent the Contractor or anyone on the Contractor's behalf uses any of said information in any way, such use is made on the basis that the Contractor, not the Cabinet, has approved and is responsible for said information; and
2. the Contractor is capable of conducting and obligated hereunder to conduct any and all studies, analyses, and investigations as it deems advisable to change, recreate, verify, or supplement said information, and that any use of said information is entirely at the Contractor's own risk and at its own discretion.

2 SCOPE OF WORK

The Contractor shall provide Routine Maintenance and Renewal Work for the East End Crossing Tunnel and related transportation facilities along KY 841 (I-265) between approximately MP 35.15 (west of the I-71/KY 841 (I-265) interchange) and approximately MP 37.75 (west of Harrod's Creek), as more fully described in this Agreement and shown in Attachment B-4 (Project Limits).

Except as specifically identified as a Cabinet obligation, the Contractor shall provide all resources required for performance of the Work.

Unless specifically identified as applying only to Routine Maintenance or Renewal Work, requirements in this Agreement shall be interpreted to apply to all Work.

2.1 Requirements for Routine Maintenance

The Contractor shall perform Routine Maintenance in accordance with:

1. Good Industry Practice;

2. The requirements, terms, and conditions set forth in this Agreement and Approved Maintenance Management Plan; and
3. Applicable Laws.

Exhibit B (Routine Maintenance) sets out the minimum Performance Requirements for Routine Maintenance. Failure to meet minimum Performance Requirements per Exhibit B will result in Non-Performance Deductions assessed in accordance with Section 3.1.1.3 (NCE Points and Non-Performance Deductions).

The Contractor shall cooperate with the Cabinet in all matters relating to Routine Maintenance, including the Cabinet's monitoring, reviewing, inspecting, testing, reporting, auditing, and other oversight functions for the Project.

The Contractor shall coordinate planning and performance of Routine Maintenance activities with any operation, maintenance, construction, or tolling activities being performed by the Cabinet. The Contractor acknowledges that the Cabinet may deliver projects on or adjacent to the Project Limits and that no actions of the Cabinet shall relieve the Contractor of its obligation to perform Routine Maintenance.

2.1.1 Maintenance Management Plan

The Contractor shall develop and maintain a Maintenance Management Plan as described in Exhibit B (Routine Maintenance).

2.1.2 Maintenance Payment and Performance Bond

The Contractor shall provide to the Cabinet prior to the Effective Date and shall maintain during the term of the Agreement, including the extended three-year term if applicable, a Maintenance Payment and Performance Bond in the form of Exhibit D (Form of Maintenance Payment and Performance Bond).

The amount of the Maintenance Payment and Performance Bond shall equal the total sum of Maintenance Price payments to be made in the applicable term in accordance with Exhibit E (Routine Maintenance Price) and shall be updated when adjustments to such amounts made in accordance with Section 3.1.1.2 (Payment Escalation) cause the Maintenance Price to increase to a sum exceeding 110% of the current amount of the Performance Bond.

The Maintenance Payment and Performance Bond shall be issued by a Surety authorized to do business in the Commonwealth of Kentucky and be rated in the top two categories by two nationally recognized rating agencies or A.M. Best rating of at least A (Excellent) or better, or as otherwise approved by the Cabinet in its discretion.

2.1.3 Cabinet Responsibilities for Routine Maintenance

The Cabinet will provide, at cost to the Cabinet, the following resources, materials, and assistance to the Contractor:

1. Water at existing access points within the Project Limits.
2. Electricity at existing meter locations within the Project Limits.
3. Roadway ice and snow removal in a manner that is consistent with other Cabinet facilities.
4. Incident management resources and coordination as further described in Exhibit B (Routine Maintenance).

2.1.4 Third Party Coordination

The Contractor shall coordinate with Third Parties as further described in Exhibit B (Routine Maintenance).

2.2 Requirements for Renewal Work

Renewal Work includes any Renewal Project the Cabinet authorizes the Contractor to perform.

Renewal Work shall be performed in accordance with this Agreement, including Exhibit C (Renewal Project Plan Requirements). Authorization of a Renewal Project shall be subject to mutual agreement of the Parties to a Renewal Project Plan.

Unless specifically described in an Approved Renewal Project Plan, the Contractor shall not be relieved of Routine Maintenance responsibilities due to the Cabinet's authorization of Renewal Projects.

2.2.1 Renewal Project Plan

To authorize a Renewal Project, the Cabinet shall request the Contractor to submit a Renewal Project Plan in the form described in Exhibit C (Renewal Project Plan Requirements). The Contractor shall submit a Renewal Project Plan to the Cabinet within 30 days of request. The Cabinet may Approve the Renewal Project Plan or make comments and return the Renewal Project Plan to the Contractor. The Contractor shall address any Cabinet comments and resubmit the Renewal Project Plan to the Cabinet or notify the Cabinet that it declines to perform the Renewal Project requested by the Cabinet. A Renewal Project shall be authorized upon the Cabinet's Approval of a Renewal Project Plan.

2.2.2 Renewal Project Phases

The Cabinet may Approve a Renewal Project in phases and authorize Preconstruction Services separately from Construction Services. The Cabinet shall notify the Contractor of the Cabinet's intent to Approve a Renewal Project in phases when requesting a Renewal Project Plan. If a Renewal Project Plan is Approved for Preconstruction Services only, the Contractor shall submit a revised Renewal Project Plan for the Cabinet's Approval prior to commencement of Construction Services. The Cabinet's Approval of a Renewal Project Plan for Preconstruction Services does not obligate the Cabinet to Approve a Renewal Project Plan for Construction Services.

2.2.3 Performance Security

The Contractor shall provide a payment and performance bond equal to 100% of the cost of each Renewal Project meeting the requirements of Section 103.05 of the Standard Specifications unless otherwise approved by the Cabinet in its sole discretion. The payment and performance bond provided under this Section 2.2.3 shall be separate from the form of Maintenance Payment and Performance bond identified in Section 2.1.2 (Maintenance Payment and Performance Bond). If a Renewal Project will be Approved in phases, the Contractor shall provide the payment and performance bond prior to commencement of Construction Services.

2.2.4 Nonconforming Renewal Work

The Contractor shall correct any Nonconforming Work in the manner and within the time frames required by the Contract Documents.

The Cabinet may, in its sole discretion, accept any Nonconforming Work without requiring it to be fully corrected, and shall be entitled to a pay adjustment or reimbursement in an amount determined by the Cabinet.

2.3 Requirements for the Work

2.3.1 Access to Site

The Cabinet shall grant access to the right of way identified in Attachment B-4 (Project Limits) to the Contractor for the purpose of carrying out the Contractor's rights and obligations under this Agreement.

2.3.2 Traffic Control

The Contractor shall perform the Work in a manner that recognizes the safety of the public, convenience of the traveling public, and providing a safe work environment for all workers are of prime importance. The Contractor shall perform its traffic control and operations in accordance with the Contract Documents and applicable regulations including but not limited to the Manual of Uniform Traffic Control Devices.

2.3.3 Site Security

The Contractor shall provide appropriate security for the Site during the performance of the Work, including securing any buildings from entry, and shall take all reasonable precautions and provide protection to prevent damage, injury or loss to the Work and materials and equipment to be incorporated therein, as well as all other property at the Site, whether owned by the Contractor, the Cabinet, or any other Person. The Contractor's obligation to provide security for the Site shall, at any given time, only extend to those parts of the Site to which the Contractor has been provided access pursuant to Section 2.3.1 (Access to Site).

2.3.4 Environmental Compliance

In performance of the Work, the Contractor shall comply with all requirements of all applicable Environmental Laws and Governmental Approvals issued thereunder, whether obtained by the Cabinet or the Contractor. The Contractor acknowledges and agrees that it will be responsible for all fines and penalties that may be assessed in connection with any failure to comply with such requirements.

2.3.5 Hazardous Materials

The Contractor shall be responsible for the management, treatment, handling, storage, monitoring, remediation, removal, transport, and disposal of all Hazardous Materials identified on the Project in accordance with the Applicable Standards. Except for Hazardous Materials introduced on the Project by the Contractor, and Hazardous Materials identified as a Contractor responsibility in a Renewal Project Plan, the Contractor shall be entitled to a Change Order for increased costs incurred to satisfy the requirements of this Section 2.3.5.

2.3.5.1 Notification to the Cabinet

If the Contractor becomes aware of Hazardous Materials, the Contractor shall immediately notify the Cabinet, stop Work, and secure the area. In case of a sudden release of Hazardous Materials, the Contractor shall take minimum action necessary to stabilize and contain the relevant release without prior notice but shall promptly notify the Cabinet of the release. Operations within the area shall be temporarily suspended and shall not be resumed at that location unless and until authorized by the Cabinet.

2.3.5.2 Remediation Coordination

The Cabinet will confirm whether the discovered condition is in fact a Hazardous Material. The Contractor shall provide support to assist the Cabinet in its determination. The Contractor shall coordinate measures to either remove the Hazardous Material or render the Hazardous Material harmless.

2.3.5.3 Generator Status

As between the Cabinet and the Contractor, the Cabinet will be deemed the sole generator and arranger under 40 CFR Part 262 for all Hazardous Materials presently existing in, under, or on the Project Limits as of the Effective Date. The Cabinet agrees to be identified as the sole generator and arranger of such Hazardous Materials on waste manifests and any other documentation submitted to transporters, disposal facilities, or Governmental Entities.

As between the Cabinet and the Contractor, the Contractor will be deemed the sole generator and arranger under 40 CFR Part 262 for all Hazardous Materials attributable to the actions, omissions, negligence, willful misconduct, or breach of applicable legal requirements by the Contractor, and for all Hazardous Materials arranged to be brought onto the Site by the Contractor.

2.3.5.4 Obligation to Minimize Impacts

The Contractor shall ensure that all reasonable activities are undertaken in a manner that will minimize the effect of Hazardous Materials on surrounding property and the public to the maximum extent practicable.

2.3.6 Prequalification

2.3.6.1 Routine Maintenance

The Contractor shall possess a Certificate of Eligibility as provided in regulations published by the Cabinet according to KRS Section 176.140 and as stipulated in Section 102.01 of the Standard Specifications for Road and Bridge Construction, Current Edition. This certificate shall be for any Work items that require prequalification in the State.

All specified certification requirements shall be maintained through the term of the Agreement. Certification shall again be provided upon renewal. For information on the prequalification process please contact the Prequalification Branch Manager in the Division of Construction Procurement at 502-564-3500.

2.3.6.2 Renewal Work

Each Renewal Project Plan shall identify prequalification requirements for the applicable Renewal Project. The Contractor shall obtain prequalification before commencing any Renewal Work for which prequalification is required.

2.3.7 Submittals

2.3.7.1 Standards for Review of, Comment on, and Approval of Submittals

In all cases where approvals, acceptances, or consents are required to be provided by the Cabinet or the Contractor hereunder, such approvals, acceptances, or consents shall not be withheld unreasonably, except in cases where a different standard is specified. In cases where sole discretion of the Cabinet is specified, the decision is in the sole discretion of the Cabinet and shall not be subject to dispute resolution hereunder.

2.3.7.1.1 Approval

When the Contractor is required to submit an item to the Cabinet "for Approval," the Contractor shall obtain the Cabinet's written approval of such item and may not proceed to incorporate that item into the Work or the Project without the Cabinet's written Approval.

2.3.7.1.2 Review and Comment

When the Contractor is required to submit an item to the Cabinet "for Review and Comment," the Cabinet shall have an opportunity to review and comment on such submittal. If the Cabinet does not provide any comments within 7 days, then the Contractor may assume that the Cabinet does not have any comments and the Contractor may proceed.

2.3.8 Subcontracting Requirements

All references to the Contractor shall be construed to encompass both the Contractor and any Subcontractors. The Contractor shall provide the Cabinet with Subcontractor information for Approval prior to the Subcontractor performing any Work on the Project. Evidence of Work being performed by any Subcontractor that has not been Approved, shall be considered an Event of Default. The Contractor shall not add, delete, or change the role of Subcontractors without the prior written Approval of the Cabinet.

2.3.8.1 Limitation on Subcontracted Work

The Contractor shall self-perform at least 30% of the Work. The percentage of the Work subcontracted shall be determined by dividing the total dollar value of the Subcontracts for the Work by the total dollar value of the Work as a whole.

2.3.8.2 Assignment of Subcontract Rights

Each Subcontract shall provide that:

1. The Cabinet is a third-party beneficiary of the Subcontract and shall have the right to enforce all terms of the Subcontract for its own benefit; and
2. All guarantees and warranties, express and implied, shall inure to the benefit of the Cabinet as well as the Contractor. Any acceptance of assignment of a Subcontract from the Cabinet, its successors, or assigns shall not operate to make the assignees responsible or liable for any breach of the Subcontract by the Contractor or for any amounts due and owning under the Subcontract included in an invoice paid by the Cabinet.

2.3.8.3 Responsibility for Work by Subcontractors

Notwithstanding any Subcontract or agreement with any Subcontractor, the Contractor shall be fully responsible for all of the Work. The Cabinet shall not be bound by any Subcontract, and no Subcontract shall include a provision purporting to bind the Cabinet.

2.3.8.4 Prompt Payment

All Subcontracts must provide for the payment of Subcontractors for satisfactory performance of subcontracted work no later than 7 days after receiving payment from the Cabinet for such work or sooner if required by applicable legal requirements.

The Cabinet may hold disputed funds under a Subcontract with any DBE Subcontractor until the dispute is resolved.

2.3.9 Equal Employment Opportunity

2.3.9.1 Equal Employment Opportunity Policy

The Contractor confirms that it will maintain in place an equal employment opportunity policy ensuring equal employment opportunity without regard to race, color, national origin, sex, age, religion, sexual orientation, gender identity, disability, or genetic information; and that it maintains no employee facilities

segregated on the basis of race, color, religion or national origin. The Contractor shall comply with the Cabinet's Equal Employment Opportunity Policy.

2.3.9.2 Non-Discrimination

Discrimination (because of race, religion, color, national origin, sex, sexual orientation, gender identity, age, or disability) is prohibited. During the performance of the Project, the Contractor agrees as follows:

1. The Contractor will not discriminate against any employee or applicant for employment because of race, religion, color, national origin, sex, sexual orientation, gender identity, or age. The Contractor further agrees to comply with the provisions of the Americans with Disabilities Act, Public Law 101-336, and applicable federal regulations relating thereto prohibiting discrimination against otherwise qualified disabled individuals under any program or activity. The Contractor agrees to provide, upon request, needed reasonable accommodations. The Contractor will take affirmative action to ensure that applicants are employed and that employees are treated during employment without regard to their race, religion, color, national origin, sex, sexual orientation, gender identity, age, or disability. Such action shall include employment, upgrading, demotion or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensations; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices setting forth the provisions of this non-discrimination clause.
2. The Contractor will, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants will receive consideration for employment without regard to race, religion, color, national origin, sex, sexual orientation, gender identity, age, or disability.
3. The Contractor will comply with all provisions of Executive Order No. 11246 of September 24, 1965, as amended, and of the rules, regulations, and relevant orders of the Secretary of Labor.
4. The Contractor will furnish all information and reports required by Executive Order No. 11246 of September 24, 1965, as amended, and by the rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records, and accounts by the administering agency and the Secretary of Labor for purposes of investigation to ascertain compliance with such rules, regulations, and orders.
5. In the event of the Contractor's noncompliance with the nondiscrimination clauses of this Agreement or with any of the said rules, regulations or orders, this Agreement may be cancelled, terminated, or suspended in whole or in part and the Contractor may be declared ineligible for further government contracts or federally-assisted construction contracts in accordance with procedures authorized in Executive Order No. 11246 of September 24, 1965, as amended, and such other sanctions may be imposed and remedies invoked as provided in or as otherwise provided by law.
6. The Contractor will include the provisions of paragraphs (1) through (6) of section 202 of Executive Order 11246 in every subcontract or purchase order unless exempted by rules, regulations, or orders of the Secretary of Labor, issued pursuant to section 204 of Executive Order No. 11246 of September 24, 1965, as amended, so that such provisions will be binding upon each Subcontractor or vendor. The Contractor will take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions including sanctions for noncompliance; provided, however, that in the event the Contractor becomes involved in, or is threatened with, litigation with a Subcontractor or vendor as a result of such direction by the agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.

2.3.10 Insurance

The Contractor shall procure and keep in effect the insurance policies required by the Applicable Standards, Standard Specifications Section 107.18 (Insurance Requirements).

2.3.11 Toll Charges

The Contractor acknowledges and agrees that for the term of the Agreement it is responsible for paying all toll charges and any violation charges for use of toll facilities.

2.3.12 Road User Damage

The Contractor acknowledges and agrees that its obligations under the Agreement include the repair, rehabilitation, restoration, and replacement of damage caused by third parties ("Road User Damage").

No later than 90 days after repairing Road User Damage, the Contractor shall provide the Cabinet the following information to allow the Cabinet to seek recovery from the Person who caused the Road User Damage:

1. Police report if available.
2. Description of damage.
3. Documentation of repair costs.
4. Other reasonably requested information.

2.3.12.1 Limitation on Obligation Related to Road User Damage

If the estimated cost of repairing any single event of Road User Damage exceeds $100,000, the Contractor shall immediately notify the Cabinet upon becoming aware of the Road User Damage. The Contractor shall not be required to repair any single event of Road User Damage estimated to cost more than $100,000 unless the Work is authorized by the Cabinet as Renewal Work. The Cabinet may authorize any repair of Road User Damage as Renewal Work. If the repair of Road User Damage is authorized as Renewal Work, costs shall be paid pursuant to the Approved Renewal Project Plan. Costs paid as Renewal Work shall not be considered in determining if the Contractor is entitled to a Change Order as described in Section 2.3.12.2 (Right to Recover).

2.3.12.2 Right to Recover

Once the Contractor has provided information required by this Section 2.3.12, the Contractor shall be entitled to request a Change Order pursuant to Section 4 (Changes) for costs exceeding $50,000 in any reporting year that the Contractor incurred repair of Road User Damages. In developing the Change Order, eligible costs shall include documented direct costs plus a mark-up of 10% for the first $50,000 of recoverable costs and a mark-up of 15% for recoverable costs exceeding $50,000.

2.3.13 Damage to Off-Site Property

The Contractor shall take all reasonable precautions and provide protection to prevent damage, injury, or loss to property adjacent to the Site or likely to be affected by the Work. The Contractor shall restore damaged, injured, or lost property caused by an act or omission of the Contractor to a condition similar or equal to that existing before the damage, injury, or loss occurred.

2.3.14 Indemnity by Contractor

The Contractor for itself and for all Subcontractors shall release, defend, indemnify, and hold harmless the Cabinet and each of its employees, commissioners, office-holders, agents, consultants, and their respective successors and assigns and their respective shareholders, officers, directors, agents and employees from and against any and all claims, disputes, demands, causes of action, suits, judgments, investigations, legal or administrative proceedings, penalties, fines, damages, losses, liabilities, costs and expenses, including any injury to or death of persons or damage to or loss of property (including damage to utility facilities), and including attorneys', accountants' and expert witness fees and costs, in each case whether actual, prospective, or contingent, whether then-currently ascertainable, and whether asserted, suffered, or incurred, arising out of, relating to or resulting from:

1. Any breach or alleged breach of this Agreement by the Contractor;
2. Any actual or alleged failure of the Contractor to comply with any Applicable Laws or Governmental Approvals in performing the Work;
3. Any actual or alleged patent or copyright infringement or other allegedly improper appropriation or use of trade secrets, patents, proprietary information, know-how, copyright rights or inventions in the Contractor's performance of the Work;
4. Any actual or alleged negligent act, negligent omission, willful, or intentional misconduct, illegal activities (or inaction), fraud, other criminal conduct, or bad faith of the Contractor;
5. Any and all claims by any governmental or taxing authority claiming taxes based on gross receipts, purchases or sales, or the use of any property or income of the Contractor;
6. Any spill, release, threatened spill, threatened release, or exacerbation of Hazardous Materials attributable to the negligence, willful misconduct, or breach of contract by the Contractor;
7. Inverse condemnation, trespass, nuisance, interference with use and enjoyment of property or similar taking of or harm to real property by reason of the Contractor's failure to comply with Good Industry Practices, requirements of this Agreement, or Governmental Approvals; negligence, willful misconduct, or breach of contract; or entry onto or encroachment upon another's property;
8. Other defects or Errors in the Work that fail to comply with Good Industry Practice; or
9. The claim or assertion by the any other contractor engaged by the Cabinet that the Contractor interfered with, or hindered the progress or completion of, work being performed by such other contractor, or failed to cooperate reasonably with such other contractor so as to cause inconvenience, disruptions, delay or loss, except where the Contractor was not in any manner engaged in performance of the Work.

2.3.15 Suspension for Convenience

The Cabinet may, at any time and for any reason, by written notice, order the Contractor to suspend all or any part of the Work required under the Agreement for the period of time that the Cabinet deems appropriate for the convenience of the Cabinet. The Contractor shall promptly comply with any such written suspension order. The Contractor shall promptly recommence the Work upon receipt of written notice from the Cabinet directing the Contractor to resume Work. The Contractor shall be entitled to request a Change Order for increased costs incurred as a result of the suspension of Work.

2.3.16 Cabinet Right to Request Removal of Personnel

The Cabinet shall have the right to request the Contractor to remove Project personnel that the Cabinet determines are not performing to an acceptable standard.

2.3.17 Oversight, Inspection, and Testing by the Cabinet and Others

The Contractor shall perform the quality management necessary for the Contractor to comply with its obligations under the Contract Documents.

All materials and each part or detail of the Work shall also be subject to oversight, audit, and testing by the Cabinet. The Contractor hereby consents to such oversight, inspection, and testing by the Cabinet. Upon request from the Cabinet, the Contractor shall furnish information to such Persons as are designated by the Cabinet to perform oversight, audit, inspection, and testing and shall permit such Persons access to the Site and all parts of the Work.

2.3.17.1 No Estoppel

The Contractor shall not be relieved of obligations to perform the Work in accordance with the Contract Documents, or any of its warrant or indemnity obligations, as the result of oversight, spot checks, audits, reviews, tests, or inspections performed by any person, approvals or acceptances made by any person, or failure of any person to take such action. The Cabinet shall not be precluded or estopped, by any measurement, estimate, or certificate made at any time, or by making payment, from showing that any such measurement, estimate, or certificate is incorrectly made or untrue, or from showing the true amount and character of the Work performed and materials furnished by the Contractor, or from showing that the Work does not conform in fact to the requirements of the Contract Documents. Notwithstanding any such measurement, estimate, certificate, or payment made in accordance therewith, the Cabinet will shall not be precluded or estopped from recovering from the Contractor and its Sureties such damages as the Cabinet may sustain by reason of the Contractor's failure to comply or to have complied with the terms of the Contract Documents.

2.3.18 Maintenance of Records and Audits

The Contractor shall maintain a complete set of all records identified in the Approved Maintenance Management Plan. The Cabinet may inspect the place of business of the Contractor or any Subcontractor under the Agreement these records and any additional records related to the Project. The Cabinet may audit the books and records of the Contractor and any Subcontractor at any time until three years from the date of final payment under the Agreement. Books and records shall be maintained by the Contractor and all Subcontractors for a period of three years from the date of final payment under the Agreement. The Contractor shall include this audit requirement in all Subcontracts.

2.3.19 Disputes

The Contractor and the Cabinet shall resolve all disputes pursuant to the requirements of 603 KAR 2:015.

3 PAYMENT

3.1 Monthly Invoice and Performance Report

The Contractor shall submit a Monthly Invoice and Performance Report for Work in accordance with this Section 3.1. Payments will be made within 30 Business Days after receipt of the Contractor's Monthly Invoice and Performance Report in accordance with KRS 45.453 and KRS 45.454. A penalty payment of one percent (1%) per month shall be added to the amount due to the Contractor for each full or partial month that the payment exceeds 30 Business Days.

In addition to the required components of the Monthly Invoice and Performance Report in this Section 3, the Contractor shall include other information reasonably requested by the Cabinet and shall periodically update the form of the Monthly Invoice and Performance Report to make communication of progress more effective.

3.1.1 Routine Maintenance

During the term of the Agreement, in full consideration for the performance by the Contractor of its duties and obligations under the Contract Documents, the Cabinet shall pay the amounts determined as set forth in Section 3.1.1.1 (Monthly Payments), as adjusted in accordance with Section 3.1.1.2 (Payment Escalation) subject to deductions as provided in Section 3.1.1.3 (NCE Points and Non-Performance Deductions). The term Routine Maintenance Price as used herein shall mean the yearly maintenance costs described in Exhibit E (Routine Maintenance Price). The Routine Maintenance Price shall be paid in accordance with this Section 3.1.1. Except for escalation as described in Section 3.1.1.2, the Routine Maintenance Price (and the individual components thereof) shall be increased or decreased only by a Change Order issued in accordance with Section 4 (Changes) or by an amendment to this Agreement. No portion of the Routine Maintenance Price shall be payable on account of services provided prior to the Notice to Proceed or after the termination, expiration, or non-renewal of this Agreement.

3.1.1.1 Monthly Payments

The Contractor shall be paid for Routine Maintenance provided under this Agreement, a monthly payment which shall be calculated by dividing the yearly Routine Maintenance Price by twelve. Such amount shall be payable in arrears pursuant to Monthly Invoice and Performance Reports submitted on the first day of each month.

3.1.1.2 Payment Escalation

The annual Routine Maintenance Price will be escalated or reduced based on changes in the Engineering News Record Construction Cost Index (ENR CCI) commencing on the Notice to Proceed and continuing annually thereafter during the term of the Agreement. The procedure for determining the escalation or reduction shall be as follows:

1. The average of the ENR CCI for the month three months prior to the month in which this Agreement is executed will establish the Base Index.
2. A Current Index will be created by taking the average of the ENR CCI for the month three months prior to the month in which the term year commences.
3. The annual Routine Maintenance Price for the ensuing term year shall be adjusted by multiplying the annual Routine Maintenance price for such year by the Current Index and dividing such amount by the Base Index.
4. The formula that reflects the foregoing is:

   Adjusted annual Routine Maintenance Price = (annual Routine Maintenance Price) x Current Index/Base Index.

3.1.1.3 NCE Points and Non-Performance Deductions

The Contractor shall accrue Non-Compliance Event (NCE) Points for failure to comply with Routine Maintenance Performance Requirements. NCE Points are listed in Attachment B-1 (O&M Performance Requirements). Accrual of NCE Points is cumulative and exponential until the nonperformance is cured. Until cured, the NCE Points assessed in month one is equivalent to one times the NCE Point assessment, in month two, it is two times the NCE Point assessment and added to the prior month, in month three it is three times the NCE point assessment and added to the prior months, etc. The Contractor shall self-monitor and include an itemized summary of the accrued NCE Points in each Monthly Invoice and Performance Report.

Example:

- The Contractor accrues 2 NCE Points for a specific non-performance in month 1.
- If the non-performance item is not cured in month 2, the contractor accrues 4 NCE points which are in addition to the 2 NCE points already assessed in month 1 for a total of 6 NCE points.
- If the non-performance item is not cured in month 3, the contractor accrues 6 NCE points which are in addition to the 6 NCE points from months 1 and 2 for a total of 12 NCE points.
- This continues until the non-performance item is cured.

The Cabinet shall have the right to assess Non-Performance Deductions based on accrued NCE Points. The value of Non-Performance Deductions shall be determined by multiplying the value of accrued NCE Points by $1000.

3.1.1.4 Final Payment for Routine Maintenance

The Contractor shall be paid a final payment upon satisfaction of all obligations of this Agreement which shall be subject to inspection and verification by the Cabinet. The final payment shall be equal to 20% of the final year Routine Maintenance Price.

3.1.2 Renewal Work

The Contractor shall include in the Monthly Invoice and Performance Report:

1. Amounts payable to the Contractor pursuant to any Approved Renewal Project Plan.
2. Amounts that may be deducted from payments to the Contractor pursuant to any Approved Renewal Project Plan. These may include any liquidated damages, road user charges, or other deductions included in an Approved Renewal Project Plan.
3. All other information required by the Approved Renewal Project Plan.

Each Renewal Project shall be separately itemized in the Monthly Invoice and Performance Report.

3.1.3 Penalties Assessed by a Governmental Entity

The Contractor shall include in the Monthly Invoice and Performance Report identification of any fines or penalties that may have been assessed by a Governmental Entity against the Cabinet in connection with any failure to comply with Environmental Laws and Governmental Approvals for which the Contractor is responsible for indemnifying the Cabinet pursuant to Section 2.3.14 (Indemnity by Contractor).

3.1.4 Lien Releases

The Contractor shall include lien releases for all work performed by Subcontractors during the reporting period with each Monthly Invoice and Performance Report.

4 CHANGES

During the term of the Agreement, a modification shall not be permitted unless the Contractor receives a written Change Order from the Cabinet.

4.1 Routine Maintenance Changes

The Contractor shall be entitled to seek compensation upon the occurrence of any of the following related to Routine Maintenance:

1. Any change to the Performance Standards which are clearly discriminatory to the Project and are not generally applicable to the transportation facilities under the control of the Cabinet.
2. Cost incurred for remediation of Hazardous Materials pursuant to Section 2.3.5 (Hazardous Materials).
3. A Force Majeure Event.
4. A Cabinet-Directed Change.

4.2 Renewal Work Changes

The Contractor shall be entitled to seek compensation upon the occurrence of any of the following related to Renewal Work:

1. A Cabinet-Directed Change.
2. Unavoidable delays, arising from a suspension order pursuant to Section 2.3.15 (Suspension for Convenience).
3. The discovery of a Differing Site Condition.
4. Cost incurred for remediation of Hazardous Materials pursuant to Section 2.3.5 (Hazardous Materials).
5. The occurrence of a Force Majeure Event.
6. The occurrence of any Relief Event as described in an Approved Renewal Project Plan.

4.3 Contractor Requested Change

The Contractor shall provide notice to the Cabinet within 30 days of becoming aware of an event that entitles the Contractor to a change to the Agreement. The notice shall include supporting information to allow the Cabinet to make a determination of entitlement to and amount of the change. The Cabinet shall either Approve or deny the change or request additional supporting information. The Parties shall resolve any dispute related to a requested change in accordance with Section 2.3.19 (Disputes).

4.4 Cabinet-Directed Changes

If the Cabinet desires to evaluate whether to initiate a Cabinet-Directed Change for a Renewal Project, the Cabinet may, at its discretion, issue a Request for Change Proposal (RCP) to the Contractor. The Contractor shall respond to the RCP within 14 days. The Cabinet and the Contractor shall consult to negotiate the scope of the change. If the Parties agree to the scope of the change, the Cabinet shall issue a Change Order.

5 DEFAULT AND TERMINATION

5.1 Default by Contractor

5.1.1 Events of Default

Breaches of this Agreement including those identified below shall be considered Events of Default:

1. The Contractor fails to perform the Work with sufficient resources to ensure the prompt completion thereof;

2. The Contractor fails to perform the Work in accordance with the Contract Documents, refuses to remove and replace rejected materials or Nonconforming Work, or fails to remove and replace workers as directed by the Cabinet;
3. The Contractor breaches any other material agreement, representation, or warranty contained in the Contract Documents, or the Contractor fails to perform any other material obligation under the Contract Documents;
4. The Contractor fails to provide and maintain the required insurance, payment bonds, and performance bonds;
5. The Contractor fails to furnish insurance certificates, indicate the contract number on the insurance certificate, or provide an up-to-date copy of insurance certificates upon renewal of the policy.
6. The Contractor assigns or transfers the Contract Documents or any right or interest therein, except as expressly permitted under Section 6.18.2 (Assignment by the Contractor);
7. The Contractor fails, absent a valid dispute, to make payment when due for labor, equipment, or materials in accordance with its agreements with Subcontractors and applicable law; fails to comply with any Legal Requirement or Governmental Approval; or fails reasonably to comply with the instructions of the Cabinet consistent with the Contract Documents;
8. The Contractor shall have become insolvent, generally does not pay its debts as they become due, admits in writing its inability to pay its debts, or makes an assignment for the benefit of creditors;
9. Insolvency, receivership, reorganization, or bankruptcy proceedings shall have been commenced by or against the Contractor and not dismissed within 60 days;
10. The Contractor is a party to fraud;
11. The Contractor has allowed work to commence by any Subcontractor not previously Approved by the Cabinet.

5.1.2 Right to Cure

The Cabinet agrees to allow the Contractor and Surety (for Renewal Projects) a reasonable opportunity to cure Defaults within a 90 day period after the Contractor's receipt of written notice of Default. The Cabinet shall notify the Contractor of the cure deadline when providing notice of Default. Notwithstanding the foregoing, if the Cabinet believes a condition affecting the Work poses an immediate danger to public health or safety, the Cabinet may rectify the condition at the Contractor's cost. The imposition of cost to the Contractor related to the Cabinet's decision to rectify the condition is subject to dispute resolution pursuant to Section 2.3.19 (Disputes).

5.2 Remedies

5.2.1 Liability of Contractor

If an Event of Default has occurred, the Contractor and Surety (for Renewal Projects) shall be jointly and severally liable to the Cabinet for all costs reasonably incurred by the Cabinet or any party acting on the Cabinet's behalf in completing the Work or having the Work completed by another Person (including any re-procurement costs, throw away costs for unused portions of the completed Work and increased financing costs). Upon the occurrence of an Event of Default, the Cabinet shall be entitled to withhold all or any portion of further payments to the Contractor until such time as the Cabinet is able to determine how much (if any) remains owing to the Contractor.

5.3 Right to Stop Work if Undisputed Payment is Not Made

The Contractor shall have the right to stop Work if the Cabinet fails to make an undisputed payment due hereunder within 30 days after receipt of notice of nonpayment. Any such Work stoppage shall be deemed a suspension. The Contractor shall have the right to terminate this Agreement for default if the Cabinet fails to make an undisputed payment due hereunder within 90 days after receipt of notice of nonpayment. In such event, the Contractor's sole and exclusive remedy shall be to receive termination compensation.

5.4 Termination For Convenience

The Cabinet may, at any time and for any reason including for lack of appropriation in accordance with 200 KAR 5:312, terminate this Agreement or any Approved Renewal Project Plan, in whole or in part, if the Cabinet determines, in its discretion, that a termination is in the Cabinet's best interest. The Cabinet shall terminate by delivering to the Contractor a written Notice of termination of all or part of the Agreement specifying the extent of termination and its effective date.

5.5 Termination Compensation

Upon termination, the Cabinet shall deliver to the Contractor a Notice of Termination. The Cabinet shall pay the Contractor for services performed between the last payment to the Contractor and the date of the Notice of Termination. Upon receipt of the Notice of Termination, the Contractor shall take all necessary and reasonable steps to minimize costs associated with the termination. Within 60 days of receipt of a Notice of Termination, the Contractor shall submit a termination settlement proposal to the Cabinet in a form acceptable to the Cabinet. This termination settlement proposal may include all direct costs associated with the termination including demobilization costs. In no event shall the Cabinet be liable for any indirect or incidental costs, special damages, or lost profits. The Cabinet will either Approve the termination settlement proposal, request additional supporting information, or reject it. The Parties shall resolve any dispute related to Approval of a termination settlement proposal in accordance with Section 2.3.19 (Disputes) which shall survive termination of the Agreement.

6 MISCELLANEOUS

6.1 Entire Agreement

The Agreement contains the entire understanding of the parties with respect to the subject matter hereof and supersede all prior agreements, understandings, statements, representations, and negotiations between the parties with respect to its subject matter.

6.2 Interpretations

In this Agreement, where appropriate:

1. The singular includes the plural and vice versa;
2. References to statutes or regulations include all statutory or regulatory provisions consolidating, amending, or replacing the statute or regulation referred to as of the date of execution of this Agreement;
3. Words such as "herein," "hereof," and "hereunder" refer to the entire document in which they are contained and not to any particular provision or section;
4. Words not otherwise defined that have well-known technical or construction industry meanings are used in accordance with such recognized meanings;
5. References to Persons include their respective permitted successors and assigns and, in the case of Governmental Persons, Persons succeeding to their respective functions and capacities;

6. Words of any gender used herein include each other gender where appropriate;
7. The words "including", "includes" and "include" mean "including, without limitation", "includes, without limitation" and "include, without limitation", respectively;
8. The captions of the sections of the Agreement and its exhibits are for convenience only and shall not be deemed part of this Agreement or considered in construing this Agreement.

6.3 Omission of Details; Clarification by the Cabinet

The Contractor shall not take advantage of any apparent Error in the Agreement. Should it appear that the Work to be done or any matter relative thereto is not sufficiently detailed or explained in the Agreement, the Contractor shall promptly notify the Cabinet of all Errors and shall obtain specific instructions in writing regarding any such Error before proceeding with the Work affected thereby.

6.4 Computation of Periods

If the date to perform any act or give any notice specified in the Agreement (including the last date for performance or provision of notice "within" a specified time period) falls on a non-Business Day, such act or notice may be timely performed on the next succeeding Calendar Day that is a Business Day. Notwithstanding the foregoing, requirements contained in the Agreement relating to actions to be taken in the event of an emergency shall be required to be performed as specified, even though the date in question may fall on a non-Business Day.

6.5 Time is of the Essence

Time is of the essence with respect to the time periods and limitations with respect to notices and submittals, and the time periods, limitations, and milestones identified under the Contract Documents, and in each case, except where this Agreement expressly provides for extension of time, the Contractor hereby waives any right at law or in equity to tender or complete delivery, response, or performance, as applicable, beyond the applicable time period, or to require the Cabinet to accept such delivery, response, or performance.

6.6 Organization

The Contractor has all requisite power to own its properties and assets and carry on its business as now conducted or proposed to be conducted. The Contractor is duly qualified to do business, and is in good standing, in the State, and will remain in good standing throughout the term of the Agreement and for as long thereafter as any obligations remain outstanding under the Agreement.

6.7 Authorization

The execution, delivery, and performance of this Agreement have been duly authorized by all necessary actions of the Contractor, and, if applicable, the Contractor's members, and will not result in a breach or a default under the organizational documents of any such Person or any indenture, loan, credit agreement, or other material agreement or instrument to which any such Person is a party or by which its properties and assets may be bound or affected.

6.8 Intellectual Property Rights

The Contractor acknowledges that all intellectual property rights created as a direct result of the performance of Work under this Agreement shall be the exclusive property of the Cabinet. If the Contractor incorporates existing intellectual property into any system provided to the Cabinet as part of the Work which is intended to have a useful life beyond the termination of this Agreement, the Contractor hereby grants to the Cabinet a paid-up, non-exclusive, world-wide, irrevocable, transferable license, for the Cabinet

to continue to use the system. The Contractor shall have no obligation to support the Cabinet's use of any system beyond the termination of this Agreement.

6.9 Legal, Valid, and Binding Obligation

This Agreement constitutes the legal, valid, and binding obligation of the Contractor and, if applicable, of each member of the Contractor.

6.10 Counterparts and Electronic Signatures

This instrument may be executed in two or more counterparts, each of which shall be deemed an original, but all of which together shall constitute one and the same instrument. Signatures may be made and delivered electronically.

6.11 Designation of Representatives

Identified below are representatives of the Cabinet and the Contractor who are authorized to make decisions and bind the parties on matters relating to the Agreement. Such designations may be changed by a subsequent written notice delivered to the other party in accordance with Section 6.13 (Notices and Communications). The parties may also designate technical representatives who shall be authorized to investigate and report on matters relating to the construction of the Project and negotiate on behalf of each of the parties but who do not have authority to bind the Cabinet or the Contractor.

The Cabinet's representative is Tracy Nowaczyk, P.E.

The Contractor's representative is Daniel Filer.

6.12 The Cabinet's Representative to Execute Change Orders

The only person who can execute Change Orders and other amendments to this Agreement, including any Notice to Proceed, on behalf of the Cabinet is Tracy Nowaczyk, P.E. Such designation may be changed by a subsequent written notice delivered by the Cabinet to the Contractor in accordance with Section 6.13 (Notices and Communications).

6.13 Notices and Communications

Notices and all other communications under this Agreement shall be in writing and shall be delivered personally, sent by certified mail with return receipt requested, sent by a recognized overnight mail or courier service with delivery receipt requested, or sent by facsimile email communication followed by a hard copy and with receipt confirmed by telephone to the address set forth below.

All notices, correspondence and other communications to the Cabinet shall be marked as regarding the East End Tunnel O&M and shall be delivered to the following address or as otherwise directed by the Cabinet's Authorized Representative:

Kentucky Transportation Cabinet
200 Mero Street
Frankfort, KY 40622
Attn: Tracy Nowaczyk, P.E
502-782-5595
Tracy.Nowaczyk@ky.gov

All notices, correspondence and other communications to the Contractor will be marked as regarding the East End Tunnel O&M and will be delivered to the following address or as otherwise directed by the Contractor's Authorized Representative:

Webber Infrastructure Management, Inc.
10415 Morado Circle, Building 2, Suite 200
Austin, TX 78759
Attn: Daniel Filer
Daniel.filer@webber.com
512-900-0552

6.14 Title

The Contractor warrants that it owns, or will own, and has, or will have, good and marketable title to all materials, equipment, tools, and supplies furnished, or to be furnished, by it and its Subcontractors that become part of the Project or are purchased for the Cabinet for the operation, maintenance, or repair thereof, free and clear of all Liens. Title to all such materials, equipment, tools and supplies which shall have been delivered to the Site shall pass to the Cabinet, free and clear of all Liens, upon the sooner of: (i) incorporation into the Project; or (ii) payment by the Cabinet to the Contractor of invoiced amounts pertaining thereto. Notwithstanding any such passage of title, the Contractor shall retain sole care, custody, control, and risk of loss of such materials, equipment, tools, and supplies, and shall exercise due care with respect thereto as part of the Work until termination of this Agreement.

6.15 Compliance with Public Records Laws

6.15.1 Applicability of Law

The Contractor acknowledges and agrees that all records, documents, drawings, plans, specifications, and other materials in the Contractor's or the Cabinet's possession directly related to the Project, including materials submitted to the Cabinet by the Contractor, are subject to the provisions of Public Records Laws. If any of the materials submitted by the Contractor to the Cabinet are clearly and prominently labeled trade secret, privileged information, or confidential commercial, financial, geological, or geophysical data by the Contractor, the Cabinet shall provide notice to the Contractor of any request for the disclosure of such materials prior to making any such disclosure and give the Contractor an opportunity to assert, in writing and at its sole expense, a claimed exception under Public Records Laws or other applicable Legal Requirement within the time period specified in the notice issued by the Cabinet and allowed under Public Records Laws.

6.15.2 Confidential Materials

Under no circumstances will the Cabinet be responsible or liable to the Contractor or any other Person for the disclosure of any such labeled materials, whether the disclosure is required by law, by court order or occurs through inadvertence, mistake, or negligence on the part of the Cabinet.

6.15.3 Cooperation with the Cabinet regarding Public Records Laws

In the event the Cabinet receives a public records request for documents that are in the custody and control of the Contractor, the Contractor shall cooperate with the Cabinet in responding to the request in a timely manner under the applicable Public Records Laws.

6.16 Gratuities and Conflicts of Interest

The Contractor certifies that it will not offer or provide gifts to Cabinet employees in excess of $25.00 in any single calendar year as defined in KRS 11A.045 (1) and KYTC General Administration and Personnel Policy GAP-808. Moreover, the Contractor certifies that it will not offer any ticket to a sporting event to a

Cabinet employee without being reimbursed the face value amount for said ticket as defined in KRS 11A.045 (2).

It is agreed and understood that non-compliance with the above provisions may result in the suspension of vendor procurement participation, contract termination, and/or debarment.

6.17 Independent Contractor

The Contractor is an independent contractor, and nothing contained in the Agreement shall be construed as constituting any relationship with the Cabinet other than that of Project owner and independent contractor. In no event shall the relationship between the Cabinet and the Contractor be construed as creating any relationship whatsoever between the Cabinet and any of the Contractor's employees. Neither the Contractor nor any of its employees is or shall be deemed to be an employee of the Cabinet. Except as otherwise specified in the Agreement, the Contractor has sole authority and responsibility to employ, discharge and otherwise control its employees and has complete and sole responsibility as a principal for its agents, for all Subcontractors and for all other Persons that the Contractor or any Subcontractor hires or engages to perform or assist in performing the Work.

6.18 Successors and Assigns

The Agreement shall be binding upon and inure to the benefit of the Cabinet and the Contractor and their permitted successors, assigns and legal representatives.

6.18.1 Assignment by the Cabinet

The Cabinet may assign all or part of its right, title, and interest in and to this Agreement, including rights with respect to the surety bonds required hereunder and any other performance security provided, to any Person with the prior written approval of the Contractor.

6.18.2 Assignment by the Contractor

The Contractor may assign its rights to receive payment under the Agreement and in compliance with the requirements of the Agreement. The Contractor shall not otherwise sublet, transfer, assign, or dispose of any portion of this Agreement, or delegate any of its duties hereunder, except with the Cabinet's prior written approval, which approval shall be at the Cabinet's sole discretion. The Contractor's assignment or delegation of any of its Work under the Agreement shall be ineffective to relieve the Contractor of its responsibility for the Work assigned or delegated, unless the Cabinet, in its sole discretion, has Approved such relief from responsibility.

6.19 Limitation on Third Party Beneficiaries

It is not intended by any of the provisions of the Agreement to create any third-party beneficiary hereunder, or to authorize anyone not a party hereto to maintain a suit for personal injury or property damage pursuant to the terms or provisions hereof, except to the extent that specific provisions (such as the warranty and indemnity provisions) identify third parties and state that they are entitled to benefits hereunder. The duties, obligations, and responsibilities of the parties to the Agreement with respect to such third parties shall remain as imposed by law. The Agreement shall not be construed to create a contractual relationship of any kind between the Cabinet and a Subcontractor or any other Person except the Contractor.

6.20 Waiver

6.20.1 No Waiver of Subsequent Rights

Either Party's waiver of any breach or failure to enforce any of the terms, covenants, conditions, or other provisions of the Contract Documents at any time shall not in any way limit or waive that party's right thereafter to enforce or compel strict compliance with every term, covenant, condition, or other provision, any course of dealing or custom of the trade notwithstanding. Furthermore, if the parties make and implement any interpretation of the Contract Documents without documenting such interpretation by an instrument in writing signed by both parties, such interpretation and implementation thereof will not be binding in the event of any future disputes. The consent by one party to any act by the other party requiring such consent shall not be deemed to render unnecessary the obtaining of consent to any subsequent act for which consent is required, regardless of whether similar to the act for which consent is given.

6.20.2 Mutual Waiver of Consequential Damages

The Parties hereby waive all claims against each other for all consequential damages arising out of or relating to this Agreement.

6.20.3 Custom Does not Constitute Waiver

No act, delay, or omission done, suffered, or permitted by one party or its agents shall be deemed to waive, exhaust, or impair any right, remedy, or power of such party under any Contract Document, or to relieve the other party from the full performance of its obligations under the Contract Documents. No custom or practice between the parties in the administration of the terms of the Contract Documents shall be construed to waive or lessen the right of a party to insist upon performance by the other party in strict compliance with the terms of the Contract Documents.

6.20.4 Waivers Must be in Writing

No waiver of any term, covenant, or condition of the Contract Documents shall be valid unless in writing and signed by the party providing the waiver.

6.21 Signatures

IN WITNESS WHEREOF, the Parties have executed this Agreement.

WEBBER INFRASTRUCTURE MANAGEMENT, INC.

By: _____
Signature

_____
Typed or Printed Name

_____
Date

KENTUCKY TRANSPORTATION CABINET

By: _____
Signature

_____
Typed or Printed Name

_____
Date

APPROVED AS TO FORM AND LEGALITY

By: _____
Signature

_____
Typed or Printed Name

_____
Date

Exhibit A
Acronyms and Defined Terms

As used in the Agreement to which this Exhibit A is attached (unless otherwise specified therein), the following acronyms shall have the meanings set forth below.

ACRONYMS	
Abbreviation	**Title or Description**
CFR	Code of Federal Regulations
DBE	Disadvantaged Business Enterprise
DMS	Dynamic message sign
EECT	East End Crossing Tunnel
EEO	Equal Employment Opportunity
EMS	Emergency Medical Services
ENR CCI	Engineering News Record Construction Cost Index
EPA	(U.S.) Environmental Protection Agency
FHWA	Federal Highway Administration
ISO	International Organization for Standards
KRS	Kentucky Revised Statutes
KYTC	Kentucky Transportation Cabinet
LCS	Lane control sign (arrows)
LED	Light emitting diode
NCE	Non-Conformance Event
NEPA	National Environmental Policy Act (42 U.S.C. §§ 4321 et seq.)
NFPA	National Fire Protection Association
NTIS	National Tunnel Inspection Standard
O&M	Operations and Maintenance
OJT	On-the-Job Training
OSHA	United States Occupational Safety and Health Administration
PTZ	Pan-tilt-zoom camera
RCO	Request for Change Order
RCP	Request for Change Proposal
RFP	Request for Proposals
RID	Reference Information Documents
ROW	Right of Way
SOQ	Statement of Qualification
TCB	Telecommunications Certification Body
TOMIE	Tunnel Operations, Maintenance, Inspection and Evaluation
U.S.C.	United States Code
USDOT	United States Department of Transportation

As used in the Agreement to which this Exhibit A is attached (unless otherwise specified therein) the following terms shall have the meanings set forth below.

"Applicable Law" means (a) any statute, law, code, regulation, ordinance, rule or common law, (b) any binding judgment (other than regarding any dispute), (c) any binding judicial or administrative order or decree (other than regarding any dispute), or (d) any written directive or other governmental restriction (including those resulting from the initiative or referendum process, but excluding those by the Cabinet within the scope of its administration of the Contract Documents or in the normal course of its adoption of new or revised technical standards), in each case which is applicable to the Project or the Work or any party to this Agreement or affiliated Person, whether taking effect before or after the Effective Date, including Environmental Laws. "Law" includes any federal or State emergency declaration, travel restriction, or other order, decree, directive, or requirement, in each case, having the force of law regarding public conduct in response to COVID-19 or any other epidemic or pandemic. "Laws", however, excludes Governmental Approvals.

"Applicable Standards" All standards, guidelines, manuals, policies, and other Cabinet-published requirements that govern the planning, design, and construction of projects delivered by the Cabinet, subject to exceptions, deviations, or variances included in the Agreement or an Approved Renewal Project Plan. Applicable Standards shall not be used as a basis of payment or the assessment of damages and do not include Division 100 of the Kentucky Standard Specifications, unless specifically identified in the Contract Documents.

"Approve" or **"Approval"** The meaning is set forth in Section 2.3.7.1.1 (Approval) of the Agreement.

"Authorized Representative" The applicable Person(s) and/or party(ies) authorized to act on behalf of each of the Cabinet and the Contractor, respectively as specified in the Agreement. All notices, deliveries, responses, Approvals, and other communications among the Cabinet and the Contractor shall be directed to the respective Authorized Representative for each of the aforementioned, unless expressly provided to the contrary in the Agreement.

"Business Day" A day that the Cabinet is open for business.

"Cabinet" The Kentucky Transportation Cabinet acting directly or through a representative authorized in writing, who is responsible for administrative supervision of the Project, whichever the context requires.

"Cabinet-Directed Change" Any changes in the Work (including changes in the standards applicable to the Work) that the Cabinet has directed the Contractor to perform.

"Change Order" A written amendment to the terms and conditions of the Contract Documents issued in accordance with Section 4 (Changes) of the Agreement.

"Construction Services" Work associated with a phased Renewal Project that includes the construction efforts associated with Renewal Work.

"Contract Documents" The meaning set forth in Section 1.5 (Order of Precedence) of the Agreement.

"Contractor" The meaning set forth in Section 1.1 (Parties) of the Agreement including their employees, agents, officers, affiliates, Subcontractors, and all other Persons for whom Contractor may be legally or contractually responsible.

"day" Each and every day shown on the calendar, including Saturdays and Sundays, beginning and ending at midnight.

"Differing Site Conditions" A condition that (i) is a subsurface or latent condition encountered at the exact boring holes identified in the geotechnical reports produced as part of any Preconstruction Services, and (ii) differs materially from those conditions indicated in the geotechnical reports for such boring holes. The foregoing definition specifically excludes Utility facilities, Hazardous Materials, non-contaminated water, and any other conditions that would otherwise constitute a Relief Event.

"Disadvantaged Business Enterprise" A contracting firm certified to participate in the U.S. Department of Transportation financial assistance programs as a DBE by the Cabinet.

"Effective Date" The latest date of execution of the O&M Agreement by the Parties.

"Environmental Laws" All Legal Requirements now or hereafter in effect relating to the environment or to emissions, discharges, releases, or threatened releases of Hazardous Materials into the environment, including into the air, surface water or groundwater, or onto land, or relating to the manufacture, processing, distribution, use, treatment, storage, disposal, transport, or handling of Hazardous Materials or otherwise relating to the protection of public health, public welfare, or the natural environmental (including protection of nonhuman forms of life, land, surface water, groundwater, and air), including the statutes listed in the definition of Hazardous Materials; the National Environmental Policy Act, 42 U.S.C. §§ 4321 et seq.; the Occupational Safety and Health Act, as amended, 29 U.S.C. §§ 651 et seq.; and the Hazardous Materials Transportation Act, 49 U.S.C. §§ 5101 et seq.; the Endangered Species Act, 16 U.S.C. §§ 1531 et seq.; the Clean Water Act, 33 U.S.C. §§ 1251 et seq.; the Safe Drinking Water Act, 42 U.S.C. §§ 300f et seq.; the Migratory Bird Treaty Act, 16 U.S.C. §§ 703 et seq.; and the Eagle Protection Act, 16 U.S.C. § 668, each as amended.

"Error" An error, omission, or other defect.

"Event of Default" A default as described in Section 5 (Default and Termination) of the Agreement, following notice and opportunity to cure to the extent permitted by Section 5.1.2 (Right to Cure) of the Agreement and issuance by the Cabinet of notice that an Event of Default has occurred.

"Force Majeure Event" Any of the following acts, events, conditions, or occurrences to the extent that the same are beyond the Contractor's reasonable control, which could not have been either foreseen or avoided by the exercise of due diligence, and which has an adverse effect on the Contractor's ability to perform its obligations hereunder:

- fire, explosion, flood, earthquake, hurricane, windstorm, or tornado, in each case that causes direct physical damage to the Project;
- any pandemic, epidemic, or quarantine restrictions occurring within the vicinity of the Project;
- war (including civil war and revolution), invasion, armed conflict, violent act of foreign enemy, military or armed blockade, or military or armed takeover of the Project, in each case occurring within the State;
- any act of terrorism or sabotage that causes direct physical damage to the Project;
- riot and civil commotion on or in the immediate vicinity of the Project that has a direct adverse impact on the Contractor's ability to perform the Work; and

- Work stoppages, work slowdowns, or other labor disruptions, unless caused by or otherwise under the control or influence of the Contractor occurring within the vicinity of the Project.

"Good Industry Practice" The exercise of the degree of skill, prudence, and foresight which would reasonably and ordinarily be expected from a skilled and experienced contractor seeking in good faith to comply with its contractual obligations engaged in the same type of undertaking under circumstances and conditions similar to those within the same geographic area as the Project and which complies with applicable Legal Requirements. Good Industry Practice includes, without limitation, taking reasonable steps to assure sufficient personnel are employed and available to perform the work and such personnel are adequately skilled, experienced, and trained to complete the Work.

"Governmental Approval" Any approval, authorization, certification, consent, decision, exemption, filing, lease, license, permit, agreement, concession, grant, franchise, registration or ruling, required by or with any Governmental Person in order to design and construct the Project.

"Governmental Person" Any federal, state, local, or foreign government and any political subdivision or any governmental, quasi-governmental, judicial, public, or statutory instrumentality, administrative agency, authority, body, or entity. The term includes the Commonwealth of Kentucky and agencies and subdivisions thereof, other than the Cabinet.

"Hazardous Materials" Any of the following:

- Substance, product, waste, or other material of any nature whatsoever which is or becomes listed, regulated, or addressed pursuant to the Comprehensive Environmental Response, Compensation and Liability Act, 42 U.S.C. §§ 9601 et seq.; the Hazardous Materials Transportation Act, 49 U.S.C. §§ 5101 et seq.; the Resource Conservation and Recovery Act, 42 U.S.C. §§ 6901 et seq. ("RCRA"); the Toxic Substances Control Act, 15 U.S.C. §§ 2601 et seq.; the Clean Water Act, 33 U.S.C. §§ 1251 et seq.; the Clean Air Act, 42 U.S.C. §§ 7401 et seq.; all as amended, or any other federal, state or local statute, law, ordinance, resolution, code, rule, regulation, order or decree regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic or dangerous waste, substance or material, as now or at any time hereafter in effect;

- Any substance, product, waste or other material of any nature whatsoever which may give rise to liability under any of the above statutes or under any statutory or common law theory based on negligence, trespass, intentional tort, nuisance or strict liability or under any reported decisions of a state or federal court;

- Petroleum or crude oil excluding de minimis amounts and excluding petroleum and petroleum products contained within regularly operated motor vehicles; and

- Asbestos or asbestos-containing materials in structures and or other improvements on or in the site (other than mineral asbestos naturally occurring in the ground).

"Key Personnel" The persons identified in Exhibit B (Routine Maintenance) as key personnel, subject to revision in accordance with the Contract Documents.

"Legal Requirements" All applicable federal, State, and local laws, codes, ordinances, rules, regulations, judgments, decrees, directives, guidelines, policy requirements, orders, and decrees of any Governmental Person having jurisdiction over the Project, the practices involved in the Project, any Work, or any Utility

Work being performed by a Utility Owner. The term "Legal Requirements" does not include Governmental Approvals or tax laws.

"Maintenance Management Information System" means the system described in Section 2 (Maintenance Management Information System) of Exhibit B (Routine Maintenance).

"Maintenance Payment Bond" means the payment bond delivered by the Contractor in the form attached to the Agreement as Exhibit D (Form of Maintenance Payment and Performance Bond).

"Maintenance Performance Bond" means the performance bond delivered by the Contractor in the form attached to the Agreement as Exhibit D (Form of Maintenance Payment and Performance Bond).

"Major Repairs" means repairs or replacements intended to prolong or extend the life of the asset. It is intended that these repairs or replacements will be made in accordance with Exhibit C (Renewal Work).

"Minor Repairs" mean maintenance or repairs intended to allow the asset to continue to function as designed or meet the minimum performance requirements. It is intended that spare parts for minor repairs will either be kept in the Contractor's inventory or readily available from suppliers to meet the repair timeframes noted in Attachment B-1 (O&M Performance Requirements). The Cabinet may provide relief on timeliness requirements if the Contractor promptly orders parts and, due to supply chain issues beyond the Contractor's control, the parts are not readily available.

"Monthly Invoice and Performance Report" The monthly report required to be submitted by the Contractor in order to receive compensation for the work as further described in Section 3.1 (Monthly Invoice and Performance Report) of the Agreement.

"Non-Conformance Event Points" means the points shown in Attachment B-1 to be assessed in the Contractor's failure to meet the Performance Requirements.

"Nonconforming Work" means Work that:

- otherwise does not conform to the requirements of the Contract Documents;
- is not performed in accordance with the Approved Maintenance Management Plan; or
- does not conform the requirements of Governmental Approvals or applicable Laws.

"Non-Performance Deductions" Deductions in compensation assessed to the Contractor pursuant to Section 3.1.1.3 (NCE Points and Non-Performance Deductions) of the Agreement for Work not completed in accordance with the Performance Requirements.

"Notice of Termination" A notice issued by the Cabinet or the Contractor to terminate the O&M Agreement.

"Notice to Proceed" A notice issued by the Cabinet in accordance with Section 1.3.1 (Notice to Proceed) of the Agreement after reviewing the Request for Notice to Proceed provided by the Contractor.

"Operations" means Work that does not relate to repairs or maintenance but allows the asset(s) to function. For example: management and administrative work.

"Operation and Maintenance Agreement" The O&M Agreement executed by the Cabinet and the Contractor (to which this Exhibit A is attached), and any and all amendments thereto.

"Parties" The Cabinet and the Contractor.

"Performance Requirements" For each asset type, the quality and timeliness requirements set forth in Attachment B-1 (O&M Performance Requirements).

"Person" Any individual, corporation, company, voluntary association, partnership, trust, unincorporated organization, or Governmental Person, including the Cabinet.

"Preconstruction Services" Work associated with a phased Renewal Project that may include the overall planning, coordination, and design efforts associated with Renewal Work.

"Project" The performance of Routine Maintenance and Renewal Work within the Project Limits , as described by the Contract Documents.

"Project Limits" The extents of the Project as shown in Attachment B-4 (Project Limits).

"Proposal" Those documents constituting the Contractor's proposal in response to the RFP, including any supplements to proposals as may have been requested by the Cabinet.

"Public Records Laws" Any applicable law describing the Cabinet's rights and obligations as related to the disclosure to the public of information in the possession of the Cabinet.

"Reference Information Documents" The collection of information, data, documents and other materials that the Cabinet has provided to the Contractor for general or reference information only.

"Releif Event" The occurrence of an event included in an Approved Renewal Project Plan describing the Contractor's right to seek adjustments to the schedule or compensation upon the occurrence of certain events during Contractor's delivery of a Renewal Project.

"Renewal Project" Renewal Work subject to an Approved Renewal Project Plan as described in an Approved Renewal Project Plan.

"Renewal Project Plan" The plan submitted by the Contractor and negotiated with the Cabinet for a Renewal Project pursuant to Exhibit C (Renewal Project Plan Requirements).

"Renewal Work" Work authorized by the Cabinet that is not Routine Maintenance and is subject to an Approved Renewal Project Plan.

"Request for Change Proposal" A proposal issued by the Cabinet to the Contractor in order to evaluate whether a Change Order will be issued.

"Request for Notice to Proceed" A request generated by the Contractor after the Effective Date indicating the Contractor is prepared to meet all performance obligations of the O&M Agreement.

"Request for Proposals" The Request for Proposals for the Project issued by the Cabinet on October 7, 2022, including all addenda thereto.

"Request for Qualifications" The Request for Qualifications for the Project issued by the Cabinet on August 16, 2022, including all addenda thereto.

"Road User Damage" The meaning is set forth in Section 2.3.12 (Road User Damage) of the Agreement.

"Routine Maintenance" All duties and services to be furnished and provided by the Contractor as required by Section 2.1 (Requirements for Routine Maintenance) of the Agreement.

"Routine Maintenance Price" The pro-rated yearly maintenance cost for year one as set forth in Exhibit E (Routine Maintenance Price).

"State" The Commonwealth of Kentucky.

"Statement of Qualifications" Those documents constituting the Contractor's qualifications in response to the RFQ, including any supplements as may have been requested by the Cabinet.

"Subcontract" Any subcontract to perform any part of the Work or provide any materials, equipment or supplies for any part of the Work between the Contractor and a Subcontractor, or between any Subcontractor and its lower tier Subcontractor, at any tier.

"Subcontractor" Any Person with whom the Contractor has entered into any Subcontract, and any other Person with whom any Subcontractor has further subcontracted any part of the Work, at any tier.

"Surety" A corporate body duly authorized to do business in the Commonwealth of Kentucky, and which has issued one or more of the Maintenance Payment and Performance Bonds.

"Third Party" Any Governmental Person, railroad, property owner or other third party having regulatory jurisdiction or property rights over or in any aspect of the Project, Work, or the right of way.

"Tunnel Operations Center" means the building located directly adjacent to the tunnel which contains monitoring equipment, fire pumps, administrative office, etc.

"Work" Depending upon the placement and context of its use, work shall mean one or more of the Routine Maintenance, Renewal Work, or all of the work. In general, work shall include, in totality, as applicable, all duties and services to be furnished and provided by the Contractor as required by the Contract Documents necessary or appropriate to receive final payment except for those efforts which the Contract Documents specify will be performed by the Cabinet or other Persons. In certain cases, the term is also used to mean the products of the work.

Exhibit B
Routine Maintenance Work

TABLE OF CONTENTS

Attachments

Attachment B-1: O&M Performance Requirements (Provided in Excel Format)

Attachment B-2: List of Required Plans (Provided in Excel Format)

Attachment B-3: Asset Listing (Provided in Excel Format)

Attachment B-4: Project Limits

Attachment B-5: Maintenance Schedules (Provided in Excel Format)

This Exhibit B includes requirements for Routine Maintenance authorized by KYTC pursuant to Section 2.1 (Requirements for Routine Maintenance) of the Agreement.

1 ROUTINE MAINTENANCE SCOPE

1.1 General Requirements

The Project consists of a tunnel with an adjacent operations building control room (which houses the life safety and monitoring systems located at 8000 US-42 Prospect, KY 40059), a nearby communications shed in the west quadrant of the I-71 and I-265 Interchange, and included roadway, bridge, and drainage assets as detailed in Attachment B-3 (Asset Listing) and Attachment B-4 (Project Limits).

The Contractor shall:

1. Comply with the relevant performance requirements as detailed in Attachment B-1 (O&M Performance Requirements), as amended from time to time. All references to scheduled or periodic inspection, maintenance, repairs, etc. are detailed in Attachment B-1.
2. Comply with the Operations and Maintenance Plans.
3. Respond to customer (citizen) requests for service in accordance with Attachment B-1. Customer requests outside of the scope of work of Attachment B-1 will be referred back to the Cabinet. The Contractor shall not act as an agent or representative of the Cabinet. A Cabinet representative will accompany Contractor staff to attend onsite meetings, if required, to determine scope and intent of complaint as well as assist in resolution if the issue is Cabinet retained scope. The Contractor is not obligated to provide roadside or truck-mounted signage with Contractor phone number.

1.2 Mobilization Planning

The Contractor shall outline mobilization activities prior to the Effective Date. The Mobilization Plan shall outline all pre-Operations activities to be completed or delivered by the Contractor including all activities, deliverables, commencement dates, completion dates, responsibilities, and dependencies. The Contractor shall attend meetings and coordinate with the Cabinet and all third-party stakeholders in the drafting and implementation of the Mobilization Plan. The plan shall also consider cross-training opportunities working with the existing O&M provider and the Cabinet.

The Mobilization Plan shall be a high-level document of five to 10 pages describing the general approach to the Contractor's plan to start the Project. The Contractor shall submit the Mobilization Plan to the Cabinet 60 days prior to the start of Operations.

The Mobilization Plan shall clearly state the expected participation and contribution from the Cabinet in meeting the plan requirements. It is expected that this Plan will act as a management tool between the Cabinet and the Contractor to assess progress in meeting the pre-Operations activities. The Contractor shall provide updates to the Cabinet in relation to the progress of the Mobilization Plan.

1.3 Operation and Maintenance Plans

The Contractor shall submit a draft Operations and Maintenance Plan within timeframe noted in Attachment B-2 (List of Required Plans). The plans shall consist of the following sub-plans and be updated and submitted to the Cabinet within 30 days prior to the end of the first year of operations and subsequently annually. The annual update shall be used to make changes to work practices affecting the Project, include technological developments, and integrate with relevant elements of the Control Room Operations Plan.

1.4 Plans & Procedures

The Contractor shall provide and update the annual Operations and Maintenance Plan for the Project. The Contractor shall utilize the existing O&M Plan as a basis for the new O&M Plan. Any plan listed therein that does not currently exist, shall be drafted and submitted by the Contractor.

The Annual Operations and Maintenance Plans shall include:

1. List of skills and resources necessary for the provision of the Work.
2. Plan to optimize resource usage including water, power, and waste disposal.
3. Cooperate and coordinate with the Cabinet, and any other authorized third party to access the Project.
4. Take reasonable steps to preserve the Cabinet's rights under warranties and insurance policies pertaining to the Project and equipment.
5. Provide specialist technical personnel or Subcontractors to support the operations and maintenance activities of the Project.
6. Respond to alarms reported in the control room in accordance with agreed time frames as defined in Attachment B-1 (O&M Performance Requirements).
7. Perform routine testing of machinery and equipment to relevant Operations and Maintenance Standards as detailed in Attachment B-1.
8. Procedures for record keeping in accordance with NBIS and NTIS requirements.

The Contractor shall provide sufficient detail on the following topics:

1. Tunnel Maintenance Management Plan including:
    a. Machinery and Equipment Management Plan, with details on Routine Maintenance frequencies and methods.
    b. Consumable and spare parts list and outline for managing these elements.
2. Operations Plan including:
    a. Control Room Operations Plan.
    b. Incident Management/ Emergency Response Plan.
    c. Disaster Recovery Plan including information on the Business Continuity Plan.
    d. Risk Management Plan.
3. Annual work plan for roadway assets.
4. Subcontracting Plan.
5. Quality Assurance Plan.
6. Communications Plan.
7. Interface Protocols.
8. Health and Safety and Environmental Plan.
9. Monthly report template.

The Renewal Work Asset Management Plan shall be developed by the Contractor in conjunction with the Cabinet. This plan will utilize results of prior inspections and condition reports of equipment and systems. The Renewal Work Asset Management plan shall be a high-level plan for assets nearing the end of their useful life or nearing technical obsolescence. This plan shall be developed within the first two months of the Project and be submitted to the Cabinet for use in their annual submittal to KPTIA; then annually thereafter.

1.5 Personnel

The Contactor shall provide personnel to fill the below positions. The Project is performance-based and unless otherwise noted, the positions may be filled full time, part-time, or by Subcontractors as the Contractor deems necessary to fulfill the requirements of the Project. The Contractor must denote Project personnel considered to be generally on-site or available to the site within 30 minutes from 8:00 am to 8:00 pm, Monday through Friday.

Any position may be combined with other positions as detailed in the Contactor's proposal provided all performance requirements are met; therefore, no position is mandatory except Key Personnel. No position is required to be full-time. Project personnel can include:

1. Project manager
2. Control room manager
3. Control room staff
4. Facility manager
5. Roadway superintendent
6. Roadway foremen and/or technicians
7. Electrician
8. HVAC mechanic
9. Carpenter
10. Pipefitter
11. Equipment mechanic
12. Plumber
13. Painter
14. Fire suppression system technician
15. Other specialist technicians and skilled/unskilled labor as needed

2 MAINTENANCE MANAGEMENT INFORMATION SYSTEM (MMIS)

There is an existing MMIS for tunnel assets. The Contractor shall provide and manage the Maintenance Management Information System (MMIS) for maintenance activities and longer-term planning of asset preservation and replacement strategies, along with the provision of records of maintenance for all assets included within the Project Limits.

The Contractor may use the existing MMIS and modify it to include roadway assets or utilize the Contactor's preferred MMIS for roadway assets if it is not feasible to modify the existing MMIS for this purpose. If using a Contractor-supplied system; the system shall have all exterior Project assets geo-located to an accuracy of +/ 5 feet. Interior (control room) assets shall be detailed in a plan layout format.

The MMIS shall be electronic, web-based, and mobile to allow data entry by field staff on-site at or near the asset's actual location. The Contractor may provide any system which meets the reporting requirements provided the Cabinet shall have read-only access to all modules and have the capability to download data. The MMIS shall be:

1. Capable of transferring data in the format required by the Cabinet.
2. Capable of delivering reports and information, in both electronic and hard copies, that can be accessed by the Cabinet.

The Contractor shall capture data in the MMIS as outlined below:

1. Work planned (to include all tasks and procedures)
2. Work performed, including time, date, location, quantity of work performed, condition of the asset, and address timeliness requirement(s) for the work
3. Spare Parts, consumables, and other items used

3 TUNNEL SERVICES

The Contractor shall operate and maintain the tunnel elements in this Section 3. Specific performance criteria and assets are detailed in the Operations and Maintenance Performance Requirements in Attachment B-1 (O&M Performance Requirements) and Attachment B-3 (Asset Listing).

3.1 Control Room Monitoring

The Contractor shall monitor all systems and dispatch technicians to address the issues and provide Routine Maintenance. The Contractor shall provide one control room staff person in the tunnel control room during the hours of 8:00 a.m. to 5:00 p.m. Monday through Friday, excluding Holidays. Other time periods will be monitored by existing TRIMARC or other Cabinet-provided personnel. The Contractor shall assume reasonable break-periods for the control room staff person; the control room may be unattended during these break periods.

The control room staff person shall monitor and respond to any issues in accordance with Attachment B-1 (O&M Performance Requirements). Any messaging required for variable message signs or other motorist warnings will be coordinated between TRIMARC, Cabinet, or Contractor staff.

3.2 Environmental Monitoring System

Carbon-monoxide monitors within the tunnels will alert the control room staff person when unacceptable levels are imminent. The Contractor shall ensure that ventilation systems are activated to restore desirable air quality.

3.3 Lighting System

The tunnel facility has an artificial lighting system which monitors and controls the levels of illumination to ease transition. The Contractor shall monitor lighting systems and provide repairs and replacements in accordance with timeliness and quality metrics specified in Attachment B-1 (O&M Performance Requirements).

3.4 Supervisory Control and Data Acquisition (SCADA) System

The SCADA system links every tunnel operating system into a main control system. The Contractor shall monitor this system and its sub-systems, ensuring Routine Maintenance items that need to be addressed are performed in a timely manner. In accordance with Attachment B-1 (O&M Performance Requirements), the

Contractor shall perform work required for software releases and upgrades; cost for these upgrades, if any, will be considered Renewal Work.

3.5 Ventilation System

Ventilation fans are used to maintain acceptable air quality levels in the tunnels. They also remove smoke or fumes from the tunnels in the event of an incident. The Contractor shall monitor this system. Maintenance requirements for this system are detailed in Attachment B-1 (O&M Performance Requirements).

3.6 Fire Protection System

The control room staff shall monitor the fire protection system. Additionally, the Contractor shall be responsible for the maintenance and repair of the system that consists of smoke detectors, pull stations, and linear heat detectors installed within the tunnels. Multiple water tanks with pump systems are in the portal control room equipment room. The Contractor shall be responsible for portal buildings that house standpipe and sprinkler systems. The Contractor shall provide periodic visual inspections of valve stations located within the tunnel for fire-fighting purposes. Maintenance requirements of this system are detailed in Attachment B-1 (O&M Performance Requirements).

3.7 Drainage System

The Contractor shall be responsible for maintenance of roadway drainage within the tunnel. Water is recycled to a roadway drainage treatment facility which contains, holds and filters effluent from rainwater, fire suppression, or Hazardous Material response. The Contractor shall be responsible for proper disposal of runoff, including Hazardous Material, collected within the drainage treatment facility. Cost for Hazardous Materials removal may be a cost reimbursable item pursuant to Section 2.3.5 (Hazardous Materials) of the Agreement.

3.8 Closed-Circuit Television System (CCTV)

Tunnel CCTV cameras will be utilized by control room staff. The Contractor shall be responsible for Routine Maintenance, repairs, diagnostics, and CCTV replacement if functionality cannot be restored. The Contractor shall manage an inventory of CCTV spares and component parts as detailed in Attachment B-1 (O&M Performance Requirements). Outside of the tunnel, camera equipment is maintained by others.

3.9 Power Supply System

The Contractor shall monitor and maintain the power supply system. This system consists of an un-interruptible power supply and a standby generator. The Contractor shall perform inspections and testing in conformance with Performance Requirements described in Attachment B-1 (O&M Performance Requirements) and Attachment B-5 (Maintenance Schedules).

3.10 Telephone System

The telephone system includes dial-up data and emergency phones along the tunnel corridor. The Contractor shall conduct periodic visual inspections and functionality tests to ensure functionality and performance compliances detailed in the Performance Requirements specified in Attachment B-1 (O&M Performance Requirements).

3.11 Traffic Surveillance Control System (TSCS)

The TSCS consists of the electronic and computer systems that monitor and control traffic via the TRIMARC office in downtown Louisville. Live video feeds and other data from the TSCS are made available on multiple monitors in the tunnel control room. It provides the Contractor's control room staff with information to manage traffic incident responses as see general roadway information and conditions.

Operators shall use the TSCS to monitor traffic, detect incidents, identify the type of incident, and implement the response strategy

The Contractor shall liaise with TRIMARC and other third-party service providers as necessary if there are issues with TSCS performance and availability.

4 TUNNEL CONTROL ROOM

The Contractor shall provide all general office stationery such as pens, notepads, etc. for its everyday use. The Contractor shall be responsible for the cleaning and trash removal services in the Tunnel Operations Center.

The Cabinet will provide the existing office furniture for the Contractor or Subcontractor employees in the tunnel control room.

The Contractor shall furnish and equip any necessary maintenance workshop(s) and/or storage or laydown yard(s) they require.

If the Contractor or any of its Subcontractors carries out any material modification to the control room, the Contractor shall prepare and provide to the Cabinet as-built drawings showing such amendments as are necessary to reflect the modification of the asset.

5 CONTROL ROOM & TUNNEL BUILDING MANAGEMENT

System performance specifications, inspection procedures, repair frequencies, etc. are detailed in Attachment B-1 (O&M Performance Requirements) and Attachment B-5 (Maintenance Schedules). The Contractor shall provide the following core facility management services:

1. Required inspections “walk throughs” of all interior and exteriors of the control room to determine any defects, repairs, or replacement requirements including common repair items such as plumbing or carpentry maintenance repair items.
2. Replacement of consumables (for example light bulbs, minor fixtures, and fittings).
3. Repairs to doors, furniture, and other hardware.
4. Internal and external areas of the building or facility where crack-sealing or “touch-up” painting is required.
5. Removal of bugs and insects.
6. Litter and debris removal from the interior and perimeter of the building and grounds.
7. Repairs of any requirements identified above.
8. Undertaking ground keeping, arboriculture, and landscaping requirements.
9. Conduct inspections to determine the need for HVAC, plumbing, and other maintenance.
10. Provide fire sprinkler system monitoring and repair.
11. HVAC systems and subsystems inspection and repairs.
12. Mechanical and electrical system maintenance, inspection, and repair.
13. UPS/PDU monitoring and repairs.
14. Janitorial services including all aspects of cleaning and refuse removal.
15. Parking lot snow removal including sidewalks.

16. Provide 24/7 on-call services to the facility, responding to issues as they arise.
17. On-site response for third party maintenance service providers.
18. Review and manage an inventory of common maintenance commodity items such as filters, light bulbs, cleaning, and janitorial products.
19. Manage an inventory of consumables to ensure sufficient quantity to meet the needs of the facility staff and users.
20. Provide written email correspondence and reports to the Cabinet as they relate to the services detailed herein.
21. Fire extinguishers located throughout the control room and tunnel shall be fully functional and not missing parts or in any way damaged.
22. Refilling and recalibration of fire extinguishers in accordance with all applicable National fire Protection Association specifications.
23. Ensure all inspections and vendor service and maintenance procedures are completed in compliance with all local, State, and federal laws.

Systems will generally be based on assets included in Attachment B-3 (Asset Listing) as detailed in the Control Room Plans and existing O&M manuals and records.

6 EMERGENCY RESPONSE

The Contractor shall be responsible for managing tunnel-related emergencies from the control room and on-site by dispatching all appropriate response personnel, in conformance with the Incident Management Plan.

The Contractor, in coordination with the Cabinet, shall secure agreements with all authorities having jurisdiction required to obtain assistance and implement the Incident Management Plan in emergency response. Existing agreements will be reviewed and utilized to the extent possible. Under no conditions shall these agreements require tunnel emergency response equipment or personnel to be absent from the tunnel facility. The Contractor shall provide Incident Response Services in conformance with Attachment B-1 (O&M Performance Requirements).

1. Provide all necessary equipment and labor resources required for Incident Response Services to be delivered 24 hours a day, seven days a week in accordance with the Levels of Service and KPIs outlined at Attachment B-1.
2. Assist the TRIMARC control room operator for the management of large incidents (including evacuation support, customer welfare, etc.).
3. Assist emergency services/first responders and/or Contractor-dispatched Hazardous Materials contractors with the management and containment of hazardous and non-hazardous spills on the Project and where required take appropriate action to render the situations safe and operational.
4. The Contractor shall:
    a. Report all major incidents to the Cabinet through the TOC as detailed in the Communication Plan/Incident Management Plan.
    b. Provide information to the TOC to assist in the documentation of all aspects of incidents including type, response time, actions taken, and other necessary information as required.
    c. Provide appropriate support to emergency response personnel.

d. Participate in post incident reviews and debriefs with the Cabinet and other interested authorities having jurisdiction when requested by the Cabinet.

5. Provide all services within the time limits and Performance Requirements as noted in Attachment B-1.
6. All Contractor personnel and relevant Subcontractors shall be trained in the following areas and updated per each training modules requirements:
    a. National Traffic Incident Manager Responder Training Program (Hazard Communication - Right to Know (29CFR 1910.1200)
    b. Personal Protective Equipment (29CFR 1910.132)
    c. Blood Borne Pathogens (29 CFR 1910.1030)
    d. Fire Extinguishers and Hazardous Materials (29 CFR 1910.157 and 29CFR 1910.106)
    e. Traffic Control - Highway Safety
    f. First Aid/CPR
    g. Basic Hazard Awareness

7 ROADWAY OPERATIONS AND MAINTENANCE SERVICES

The Contractor shall maintain and repair all assets in accordance with Attachment B-1 (O&M Performance Requirements).

The Contractor shall maintain all assets under the Agreement in accordance with the quality and timeliness performance criteria specified in Attachment B-1, Attachment B-3 (Asset Listing), and Attachment B-4 (Project Limits).

The Contractor shall adhere to all lane closure restrictions. The Contractor may:

1. Close a single lane or ramp with a detour between:
    a. Weekdays: Monday through Friday 9:00 a.m. to 3:00 p.m. and 7:00 p.m. to 6:00 a.m.
    b. Weekends: Anytime.
2. Close two lanes with a detour:
    a. With 14 day's advance notice and concurrence from the Cabinet.
    b. Between 7:00 p.m. to 6:00 a.m. weekday or weekend.

No lane closures shall occur between 3:00 p.m. the day before and 6:00 a.m. the day after all major national holidays.

The Contractor shall abide by and utilize the existing communications protocol for public notification of pending lane closures.

8 ASSET MANAGEMENT & LIFECYCLE PLANNING

The Contractor shall work with the Cabinet to provide the following lifecycle planning.

1. Assist the Cabinet to optimize the effective life of the Project.
2. Assist the Cabinet to optimize the long-term reliability and efficiency of the Project.

3. Demonstrate the benefits of capital expenditure recommendations to the Cabinet.
4. Assist the Cabinet in establishing an effective capital expenditure budgeting and approval processes.
5. Assist the Cabinet to establish a process to ensure that assets of no further use are identified and disposed of appropriately.
6. Establish a system for the measurement, recording, and reporting of machinery and equipment asset history and condition.
7. Identify projects, including improvements and expansions, for further investigation and/or action for the Cabinet's approval.

9 INSPECTIONS

The Cabinet reserves the right to inspect the Project at any time and for any reason; any issues found will be reported directly to the Contractor who shall enter the issue into the MMIS and proceed with repairs as noted in Attachment B-1 (O&M Performance Requirements).

The Contractor shall plan and implement a program of routine inspections of the Project that:

1. Prioritizes defects requiring immediate and urgent attention because they are likely to create a danger or serious inconvenience to drivers.
2. Identifies defects or replacements outside of the scope of services for inclusion within the annual Maintenance Plan.
3. Is responsive to reports or complaints received from stakeholders and citizens.
4. Monitors the effects of extreme weather conditions.
5. Collates data to monitor performance of the Project and to establish priorities for future maintenance operations.
6. Conduct inspections after extraordinary events such as severe weather or major incident.
7. Undertake an asset condition analysis of the material Project assets (e.g., pavements, ventilation systems, safety systems, drainage, and lighting) so that:
    a. The condition profile is updated annually.
    b. An ongoing update to the condition profile is maintained between the annual updates.
8. The Contractor shall establish inspection procedures and carry out inspections so that:
    a. All defects that present a hazard or could cause serious driver inconvenience are identified and repaired such that the hazard is mitigated within the timeliness requirements set out in Attachment B-1 (O&M Performance Requirements) and Attachment B-5 (Maintenance Schedules)
    b. All other defects are identified and repaired within the timeliness requirements set out in Attachment B-1 and Attachment B-5

10 PERFORMANCE MEASUREMENT

The Contractor shall undertake performance monitoring against the agreed set of performance indicators included in Attachment B-1 (O&M Performance Requirements) that satisfy the relevant requirements of the O&M Plans.

11 EQUIPMENT AND SPARES INVENTORY

The Contractor shall be responsible for maintaining a sufficient inventory of spare parts and equipment to ensure minimum delays in repairs or maintenance. See Exhibit A (Acronyms and Defined Terms) for details on spares relating to Minor Repairs and Major Repairs.

Any existing spare parts will be turned over to the Contractor, at no charge for use in operating and maintaining the Project. The Contractor shall be responsible for ensuring storage facilities are adequate to store spare parts and conduct necessary repairs.

12 REPORTING

The Contractor shall:

1. Provide reports relating to the operations and maintenance; details of the layout and format will be determined during the mobilization phase of the Agreement.
2. Provide other reports as reasonably requested by the Cabinet.
3. Provide reports in accordance with the O&M Plans that provide indicators as to the maintenance effectiveness and condition of the Project assets.
4. Provide reports that satisfy the requirements in accordance with Attachment B-1 (O&M Performance Requirements).
5. Provide advice and reports that a good practice operator would reasonably provide on required Major Repairs, Improvement and Expansion, or additional works required for upgrades to the Project.
6. Provide reports in relation to replacement of Spare Parts that detail the need for the spares containing, when relevant, a failure mode analysis of the defect, or fault and justification that spares are required to be procured due to equipment defect, and not maintenance deficiencies.

13 ENVIRONMENTAL COMPLIANCE

The Contractor shall provide all information to the Cabinet to manage environmental compliance in accordance with the Project environmental management system, and as a minimum, meet or exceed relevant legislative and regulatory requirements.

14 TRAINING REQUIREMENTS

The Contractor shall:

1. Provide training and familiarization associated with high voltage systems including managing failure events.
2. Provide training to all new staff and twice-yearly continuing training for all employees responsible for control room operations.
3. Train tunnel control room operator staff on new equipment installed / and procedures developed by the Contractor in delivering the Services required in this Agreement.
4. Safety training for maintenance staff on safe working procedures, equipment handling, and use as detailed in the Health and Safety and Environmental Plan.
5. Training in KYTC work area protection standards and placement of traffic control devices in accordance MUTCD standards.

6. The Contractor shall ensure all staff are fully trained prior to the Commencement Date. Specific attention should be given to training and familiarization associated with operation and maintenance of tunnel safety critical systems outlined in Attachment B-1 (O&M Performance Requirements).
7. The Contractor shall provide the required continuing education and re-certification training for the above listed programs as required The Incident and Emergency Management Plan shall outline a course of action and designate the personnel, equipment, and materials expected to be used in confronting incidents resulting from traffic accidents, systems failures, Hazardous Materials exposure, medical emergencies, and natural causes.

15 COMMUNICATIONS AND IT NETWORK

The Cabinet will provide the land line and telephone usage within the Tunnel Operations Center telephones for the Contractor's use. Mobile telephones and/or mobile data services shall be the Contractor's responsibility.

The Contractor shall not connect Contractor computers or similar devices to the Cabinet or tunnel networks. The use of mobile hotspots or similar will be permitted.

16 ADDITIONAL SERVICES

The Contractor may be requested to provide or may suggest additional works outside those identified within the Services specified in Attachment B-1 (O&M Performance Requirements). Such additional services may be provided as Out of Scope Services in accordance with Exhibit C (Renewal Project Plan Requirements), including:

1. Improvement and Expansions (including capital expenditure Renewal Work with the intent of creating new assets.
2. Increasing the capacity of existing assets beyond their original design capacity or service potential.
3. Increasing the capability and value of the asset.
4. Major Repairs (being any repairs that are not Minor Repairs) in accordance with Cabinet direction. In accordance with O&M Agreement Section 2.3.7.1 , the Cabinet retains absolute discretion with respect to Out-of-Scope Proposals.

16.1 Excluded Services

The following are specifically excluded from the scope of Services to be provided by the Contractor, however if any issues with the below items occur, the Contractor shall notify the Cabinet:

1. Maintenance of communications and public utilities on the Project right of way.
2. Maintenance of fiber trunk.
3. Project wide snow and ice removal.

EXHIBIT B: O&M PERFORMANCE REQUIREMENTS

Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
	PAVEMENT	**PAVEMENT**				
A	Pavement	Cast-In-Place Reinforced Concrete Pavement	Safe, smooth, durable.	Quality Requirements •No individual pavement failures ≥ 1" depth and 16 square inches. Initial response within 48 hours, Final repair within 7 days. •No pavement distresses that present a safety hazard. •No pavement spalling / potholes. •≤20% of surface area measured per panel, has cracks > 3/8" wide with faulting > 1/8".* •≤25% of joint material missing, no silt, debris, or grass growing in joint. *As noted in KYTC PAVEMENT DISTRESS IDENTIFICATION MANUAL & GUIDELINE FOR PREVENTIVE MAINTENANCE TREATMENTS 2009 as amended and updated (PM Field Manual 09). Timeliness Requirements •All pavement failures greater than 2" depth and 16 square inches, and patches ≥ 0.5" higher or lower than surrounding pavement area, are considered a safety hazard and must be mitigated within 2 hours and permanently repaired within 10 days of notification or discovery with a product listed on the KYTC approved patching material list for concrete repairs. •Temporary repairs to spalling/potholes of any size larger than noted above shall be repaired within 2 hours of notification or discovery with an additional 2 hours after cessation of frozen precipitation. Temporary repairs are considered permanent provided the repair remains intact for 30 days . Temporary repairs which deteriorate to the point of a Pavement failure must be repaired again until a permanent repair is achieved. •≥ 75 linear feet of unsealed cracks ≥1/2" wide shall be repaired within 60 days. •Joint and cracking issues shall be repaired within 45 days.	1	3
A	Pavement	Flexible Pavements (Asphalt Concrete or Bituminous Concrete)	Safe, smooth, durable.	Quality Requirements •No individual pavement failures ≥ 1" depth and 16 square inches. Initial response within 48 hours, Final repair within 7 days. •No pavement distresses that present a safety hazard. •No missing lids, grates, or other covers. •No potholes. •No patches or distresses ≥ 0.5" higher or lower than surrounding pavement. •≤ 75 linear feet of unsealed cracks ≥ 0.5" in width. Timeliness Requirements •All pavement failures greater than 2" depth and 16 square inches, and patches ≥ 0.5" higher or lower than surrounding pavement area, are considered a pavement failure and safety hazard and must be mitigated within 2 hours, additionally, repairs must be made within 2 hours of cessation of frozen precipitation. •Temporary repairs to spalling/potholes of any size shall be repaired within 2 hours of notification or discovery during seasons when asphalt plants are operating or within 30 days of asphalt plants opening for the season with a product listed on the KYTC approved patching material list. Temporary repairs are considered permanent provided the repair remains intact for 30 days. Temporary repairs which deteriorate to the point of a Pavement Failure must be repaired again until a permanent repair is achieved. •Permanent repairs to potholes/pavement failures shall be completed within 30 days of notification or discovery •≥ 75 linear feet of unsealed cracks > 0.5" wide shall be repaired within 45 days.	1	3

EXHIBIT B: O&M PERFORMANCE REQUIREMENTS

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
A	Pavement	Paved Shoulders (Flexible or Rigid) and Rumble Strips	Safe, smooth, functional.	Quality Requirements •No individual pavement failures ≥ 1" depth and 16 square inches. Initial response within 7 days, Final repair within 30 days. •No pavement distresses that present a safety hazard. •No potholes. •≤105 cumulative linear feet of edge drop-off from travel lane to shoulder – High or low >1.5”. •≤105 cumulative linear feet of separation > 0.5” wide. •No false ditch on shoulder that causes or could cause water to stand on shoulder or drain onto the travel lanes. •≤10% of rumble strips not functioning as intended. •≤ 75 linear feet of unsealed cracks ≥ 0.5” in width. Timeliness Requirements •Temporary repairs to shall be completed within two days of notification or discovery. Temporary patches shall be maintained until patches are permanent. •All pavement failures greater than 2" depth and 16 square inches, and patches ≥ 0.5” higher or lower than surrounding pavement area, are considered a pavement failure and safety hazard and must be mitigated within 24 hours and permanently repaired within 10 days of notification or discovery during seasons when asphalt plants are operating or within 30 days of asphalt plants opening for the season with a product listed on the KYTC approved patching material list. •≥ 75 linear feet of unsealed cracks > 0.5” wide shall be repaired within 60 days. •Edge drop off, false ditch & rumble strips, permanent repair within 60 days.	1	3
A	Pavement	Unpaved Shoulders	Safe, smooth, functional.	Quality Requirements •No shoulder failures defined as 3" or greater and 64 square inches in area. •≤105 linear feet edge drop off high or low > 1.5”. •No false ditch on shoulder that causes or could cause water to stand on shoulder or drain onto the travel lanes. •No erosion > 2” deep. Timeliness Requirements •Mitigate any safety issues / hazards immediately upon notification or discovery •Failed shoulders shall be repaired within 30 days of notification or discovery. •Erosion or drop offs > 2” deep shall be repaired within seven days of notification or discovery.	2	2
	ROADSIDE	ROADSIDE				
B	Roadside	Crossovers	Safe, functional.	Quality Requirements •Properly signed / blocked if restricted access. •Properly maintained driving surface (as constructed). Timeliness Requirements •Safety issues shall be mitigated within 2 hours of notification / discovery . •Damaged locations shall be repaired within 30 days of notification or discovery. Quality Criteria for Concrete Pavement, Flexible Pavement or Paved Shoulders shall govern depending on the type of crossover.	1	1

EXHIBIT B: O&M PERFORMANCE REQUIREMENTS

Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
B	Roadside	Fence	Functional, structurally sound.	Quality Requirements •Remove and dispose of items damaging fence •Mitigate damaged or fallen fence that allows access •≤ 10% fence in need of repair. Timeliness Requirements •Mitigate damage to fence that allows access within 24 hrs of notification / discovery •Items to be removed from fence and permanent repairs/replacements shall be completed within 7 days of notification or discovery. •Remove vegetation within 45 days of notification or discovery.	2	2
B	Roadside	Retaining Walls	Structurally sound, safe, clean, stable.	Quality Requirements •Free of vegetation and debris. •≥ 90% of weep hole diameter open. •No damaged or missing parts. •Joints intact and joint material intact. Timeliness Requirement •Damaged or misaligned wall sections due to accidents/incidents shall be mitigated immediately upon notification or discovery. • Repair damage within 30 days of notification or discovery. • All other quality requirements to be met within 90 days from notification or discovery.	2	2
B	Roadside	Slopes	Stable, no erosion.	Quality Requirements •≤8" deep erosion. •No pattern of erosion that endangers the stability of the slope. •≤105 continuous feet or 20% cumulative length greater than 2" lower than paved shoulder within 0.1 mile. Timeliness Requirements •Any safety hazard that results from a sink hole, slide, high slope, or low slope areas shall be mitigated immediately. •Repairs to erosion, sink holes, or slides shall be completed within seven days of notification or discovery. •High and /or low slope areas and slides and sink holes shall be repaired within 60 days of notification or discovery.	3	3
	DRAINAGE	DRAINAGE				
C	Drainage	Culverts and structures	Free of debris, vegetation, and sediment. Joints intact, functional, free of damage.	Quality Requirements •No damage to structure •Free of debris •No more than 25% diameter closed or blocked or with the potential to cause flooding / asset damage Timeliness Requirements •Culverts or structures having more than 25% diameter closed shall have a planned action for permanent resolution submitted for approval within 14 days of discovery and be cleaned and opened within 30 days of notification or discovery. •Culverts/structures near collapse as determined by KYTC shall be mitigated immediately. • Immediate mitigation upon notification / discovery of blockages causing or with potential to cause flooding, present a safety hazard, damage structures or affect adjacent property (applies to those assets which can be mitigated within the right-of-way).	2	2

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Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
C	Drainage	Curb & Gutter, Curbing Raised, Concrete Median	Draining as intended, structurally sound.	Quality Requirements •No obstruction that impedes the flow of water that may impact the travel way. •⩽25% of surface area spalling. •No damaged or missing section. •No separation > 1/2" from roadway surface. •⩽ 10% joints or joint material missing. •Free of vegetation and debris Timeliness Requirements •Mitigate / open complete blockages and abate significant erosion immediately upon discovery or notification. •Clean debris or remove vegetation impeding flow to clear flow lines within 30 days from notification or discovery. •Damage shall be repaired within 90 days of notification or discovery.	4	4
C	Drainage	Ditches, Paved	Structurally sound. Open and drains free of debris, vegetation, and sediment. Joints intact. Functional, free of damage.	Quality Requirements •⩽ 2 inches of settlement and joints intact. •No undermining or undercutting (no erosion ≥ 3" deep). •For each continuous ditch, no obstructions impeding the flow of water. •⩽ 25% spalling of surface area. •⩽ 10% surface area cracking > 0.5 inch wide. •No damaged or missing sections (includes energy dissipaters). Timeliness Requirements •Immediate mitigation upon notification / discovery of blockages causing or with potential to cause flooding, present a safety hazard, damage structures or affect adjacent property (applies to those assets which can be mitigated within the right-of-way). •Clean debris or remove vegetation impeding flow to clear flow lines within 30 days from notification or discovery. •Damage to paved ditches shall be repaired within 30 days on notification or discovery.	2	2
C	Drainage	Ditches, Unpaved	Open and drains. Minimal erosion.	Quality Requirements •No water ponding. •No erosion > 3" deep. •For each continuous ditch, no obstructions impeding the flow of water. Timeliness Requirements • Immediate mitigation upon notification / discovery of blockages causing or with potential to cause flooding, present a safety hazard, damage structures or affect adjacent property (applies to those assets which can be mitigated within the right-of-way). •Clean debris or remove vegetation impeding flow within 30 days from notification or discovery.	2	2

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
C	Drainage	Large Pipes & Box Culverts (>36 sq. ft.)	Structurally sound. Open and drains.	Quality Requirements •Culverts are clear and allow free flow of stream. •Structure and bridge inspection reports shall be utilized and followed for other routine maintenance, repair, and replacement needs as noted by the Contract Administrator. •Culvert and large pipe barrels are free of debris, logs, branches, and other obstructions. •No more than 10% diameter closed. •No separated joints •No missing joint material. •≤ 1' deep erosion at ends. •Free of vegetation. •End walls and end sections intact or free of damage (includes load carrying grates). Timeliness Requirements •Immediate mitigation upon notification / discovery of blockages causing or with potential to cause flooding.• •14 days to remove debris and vegetation •30 days repair for permanent structural repairs	2	2
C	Drainage	Roadway Sweeping	Roadway free of debris and road kill.	Quality Requirements •No debris visible after an area is swept. •No road kill or litter present. Timeliness Requirement •Respond and remove spot sweepable debris (sand, dirt, gravel, litter etc.) within 24 hours of notification or discovery. •Roadway paved shoulders, adjacent concrete barriers, retaining walls, curb and gutter, raised curbing, concrete median, drop inlet throats, and drainage grates shall be swept free of all debris and vegetation within 14 days of initiating sweeping cycle.	2	2
C	Drainage	Small Pipes & Box Culverts (< 36 sq. ft.)	Structurally sound. Open and drains. Joints intact. Functional. Free of damage.	Quality Requirements •≤ 10% diameter closed. •No open joints. •No missing joint material. •≤ 1' deep erosion at ends. •Free of vegetation •End walls and end section intact or free of damage (includes load carrying grates). Timeliness Requirements •Immediate mitigation upon notification / discovery of blockages to culverts or structures causing or with potential to cause flooding, present a safety hazard, damage structures or affect adjacent property (applies to those assets which can be mitigated within the right-of-way). •Culverts or structures > 50% diameter closed shall be cleaned and opened within 7 days of notification or discovery. •Culverts or structures > 25% diameter closed shall be cleaned and opened within 30 days of notification or discovery. •Culverts/structures near collapse as determined by KYTC shall be mitigated immediately.	2	2

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Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
C	Drainage	Storm Drains & Drop Inlets	Structurally sound, functional.	Quality Requirements •No damage or missing parts (includes steps, grate, cover and throat). •No obstructions > 10% of opening (includes top, throat and drop inlet). •No vegetation. Timeliness Requirements •Immediate mitigation upon notification / discovery of blockages to culverts or structures causing or with potential to cause flooding, present a safety hazard, damage structures or affect adjacent property (applies to those assets which can be mitigated within the right-of-way). •Storm drains and drop inlets that are greater than 25% closed shall be cleaned and opened within 14 days. •Storm drains and drop inlets beyond 50% diameter closed shall be cleaned and opened within 7 days.	2	2
C	Drainage	StormWater Management Facilities	Safe. Structurally Sound. Functional.	Quality Requirements •No damage to stem pipes, weirs, grates, drainage tubing, or debris racks. •Free of debris (stem pipes, weirs, grates, drainage tubing, and debris racks). •No vegetation that affects the function (mowed, sprayed). •No grass or vegetation greater than 10 inches •Conduct inspections at least every 6 months. Timeliness Requirements •Inspection after every significant storm event • Inspect in case of accidental spills or discharge of fire suppression system •All deficiencies reported or discovered shall be corrected within 45 days. •Safety issues shall be mitigated immediately upon notification / discovery.	5	5
C	Drainage	Under Drains & Edge Drains	Structurally Sound. Functional.	Quality Requirements •No damage or deterioration to outlet pipe. •≤10% blockage of pipe or end protection. •Water flow unimpeded Timeliness Requirements •Safety issues mitigated upon notification or discovery. •Conduct repairs within 30 days from notification or discovery.	1	1
	AESTHETICS	AESTHETICS				

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
D	Aesthetics	Brush and Trees	No hazardous trees. Unobstructed sight distance. Vertical clearance. Structure inspection and repairs unobstructed.	Quality Requirements •No shrub, trees or brush within 30' of ditch line affecting sight distance or clear zone of KYTC property. •Vertical clearance of 20’ over roadway (includes shoulders). •Vertical clearance of 7’ over sidewalks. •No live, leaning, or dead trees that present a hazard. •Horizontal clearance of 15’ on each side of bridges and ancillary structures (including light, sign and camera poles and gantries) for its entire length. •No shrub, trees, or brush under bridges or other structures. •No brush or trees that affect utility company meter reading or inspection •No brush or trees on or around ITS structures or tech shelters that impede access or affect operability •Any dead or damaged landscape area tree or shrub must be replaced with the same size and type tree or shrub Timeliness Requirement •Safety issues shall be mitigated immediately upon notification or discovery. •Shrub/trees/brush affecting sight distance to regulatory or warning signs or creating safety hazard shall be removed within 48 hours of notification or discovery. •Shrub/trees/brush affecting site distance to all other signs or clear zones shall be removed within 7 days of notification or discovery. •Shrub/trees/brush affecting vertical clearance over roadways or over sidewalks shall be removed within 14 days of notification or discovery. •Trees/brush affecting horizontal or vertical clearance or utility inspection on each side or under the entire structure shall be removed within 14 days of notification or discovery. •Tree and shrub replacement shall be complete within 60 days of notification or discovery Note: A “hazardous tree” is a tree with structural defects likely to cause failure of all or part of the tree, which could strike a roadway, paved shoulder, bridge, or overhead sign structure, or any situation or condition that causes, or has the ability to cause, an unsafe condition to the traveling public or presents the possibility to cause damage to a public and/or private property.	2	2
D	Aesthetics	Concrete Barriers	Safe. Structurally sound.	Quality Requirements •Free of vegetation and debris. •No damage exceeding 25% of joint. •≤ 10% joint material damaged or missing. •No damage exceeding 25% of the barrier face. •Weep holes > 90% free of obstruction. Timeliness Requirements •Damaged or misaligned barriers due to accidents/ incidents shall be mitigated immediately upon notification or discovery or before accident scene is cleared. •Repairs to barriers within 10 days of notification or discovery.	2	2
D	Aesthetics	Graffiti Removal	None present.	Quality Requirements •No graffiti within the Project Limits. Timeliness Requirements •Vulgar or offensive graffiti shall be removed within 4 hours of notification or discovery. •Other graffiti to be removed within 2 days from notification or discovery.	1	1

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
D	Aesthetics	Mowing	Grass cut to specification. Litter free.	Quality Requirements •Ensure the height of grass is 10" or less. •Trash / litter picked up prior to mowing cycle. Timeliness Requirements •Within 1 week of designated cycles (six per year) •No later than 3 weeks from designated cycle / timeline	2	2
D	Aesthetics	Vegetation	Healthy Growing Neat Appearance Acceptable Coverage Proper Sight Distance	Quality Requirements •≤ 10% of mowable area per 0.1 mile section to exceed 12” in height (unless otherwise noted). •All sight distances are clear. •Neat/trimmed around guardrail, headwalls, paved ditches, concrete barriers, curb and gutters, rock or median areas, signs, and other fixed objects. •≤ 10% of bare ground per 0.1 mile section. •No cut less than 4” in height. •No invasive species in mowable areas (Canadian Thistle, Kudzu Vine, Johnson Grass, Japanese Knotweed). •Litter pickup shall occur in advance of each mowing cycle. •Prevent the growth of unwanted weeds, grass, brush, and trees. Timeliness Requirements • Overhanging vegetation that presents an imminent safety hazard shall be mitigated upon notification / discovery • Vegetation-affecting sight distance presenting a safety hazard shall be removed within 24 hours of notification of discovery. • All other vegetation deficient areas shall be corrected within 4 days of notification or discovery.	3	3
D	Aesthetics	Debris & Road Kill	Roadway free of debris and road kill. No dump sites.	Quality Requirements •Owner of household pets to be notified if identification is available. •No dump sites on right-of-way. •Debris and road kill shall be removed from the right-of-way and properly disposed. Timeliness Requirement •If road kill or debris is on pavement surface, remove debris within 2 hours •Road kill or debris not on pavement surface shall be removed from the right-of-way and properly disposed within 24 hours of notification or discovery. •Dump sites removed within 30 days of discovery	3	3
D	Aesthetics	Illegal Signs/Structures	Right-of-way free of illegal signs or structures	Quality Requirements •No illegal signs on the right-of-way. •No illegal structures on the right-of-way. Timeliness Requirements •Signs presenting a hazard to be removed within 2 hrs of notification or discovery. •Remove illegal signs/structures within 3 days of notification or discovery.	1	1
	TRAFFIC	TRAFFIC				

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
E	Traffic	Guardrail (includes terminal end and fixed object attachments)	Safe & Functional	Quality Requirements •Meets current KYTC Road and Bridge Specifications and Standards. •No damage or rust that affects the structural integrity. •No missing or damaged post. •No damage of any rail beam that is torn, separated, or rusted through. •No damaged rail beam that is pushed more than 6". •No cables loose or improperly secured. •No loose or missing parts. Timeliness Requirements •Damaged guardrail shall be mitigated within 30 minutes of notification or discovery. •Non-functional guardrail defined as function 1 in FHWA-SA-08-002/W- Beam Guardrail Repair shall be repaired or replaced permanently within 7 days of notification or discovery. •Damaged functional guardrail (defined as function 2 within the above FHWA referenced documents) shall be repaired or replaced within 14 days of notification or discovery.	5	5
E	Traffic	Impact Attenuators	Safe & Functional	Quality Requirements •No damaged or missing parts. •Properly maintained/aligned, with no foreign material present that impacts its functionality. Timeliness Requirements •Damaged attenuators shall be mitigated and area protected immediately upon notification or discovery. •Damaged attenuators shall be repaired within 7 days, and replaced within 30 days of notification or discovery.	5	5
E	Traffic	Junction Boxes	Safe & Functional	Quality Requirements •All junction box lids shall be free from damage. All replaced lids shall be traffic rated lids. •No exposed wires or electrical safety hazards. Timeliness Requirement •All broken junction box and or pull box covers shall be replaced within 24 hours of notification or discovery. •Coordinate with relevant 3rd parties for electrical repairs within 7 days	1	1
E	Traffic	Lighting – Roadway	Operational & Structurally sound	Quality Requirements •Conventional lighting (single or double lamp structure): Working at all times. •High mast lighting: > 75% of lamps per structure working at all times during functional conditions. •Structure kept free of dirt and debris. •No damaged or missing parts. •Warning, conventional, or high mast lighting: No damaged or missing parts. Timeliness Requirements •Damaged or non-functional lighting structures shall be mitigated immediately to eliminate any hazardous condition and repaired or replaced within 7 days of notification or discovery. •If more than 2 consecutive conventional lighting lamps or photocells are inoperable, lamps or photocells shall be replaced or repaired to be operational within 7 days of notification or discovery. •Daytime burning lamps and circuits shall be repaired immediately upon notification or discovery.	3	3

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
E	Traffic	Lighting – Sign	Operational & Structurally sound	Quality Requirements •Ancillary structure inspection reports shall be used for other maintenance needs. No damaged, loose, or missing parts. 90% of lamps shall be functioning properly at all times, per structure. •No two consecutive lights inoperable. Timeliness Requirement •Daytime burning lamps and circuits shall be repaired immediately upon notification or discovery. •Damaged or non-functional lamps/structures or photocells shall be repaired or replaced within 7 days of notification or discovery.	3	3
E	Traffic	Object Markers & Delineators (Includes culvert headwalls, underdrains, cross drains, crossovers, guardrail, and other fixed objects)	Present Reflective Functional	Quality Requirements •≤ 10% missing or damaged parts. •Posts shall vertical within +/- 5 degrees •Post mounted delineator height shall be 4.5' to achieve uniform appearance. •Mileage markers are at least 60” high to achieve uniform appearance. •Meets reflectivity standards (visible at 120'). Timeliness Requirement •Damaged or missing object markers and delineators at guardrail ends, bridge abutments, delineated curves, and ramps shall be repaired or replaced within 7 days of notification or discovery.	2	
E	Traffic	Pavement Markers (Raised & Recessed)	Present and reflective	Quality Requirements •No two consecutive missing or damaged. •Meets reflectivity standards (visible at 120'). •Missing pavement marker lenses shall be repaired or replaced. Timeliness Requirements •Pavement markers that present a hazard shall be removed immediately upon notification or discovery. •Missing or damaged pavement markers or lenses in excess of the above tolerance and criteria shall be repaired or replaced within 30 days.	2	2
E	Traffic	Pavement Markings	Present and reflective	Quality Requirements •Reapplication of skip line markings if two consecutive skips are missing. •Reapplication of all other markings are required should the missing or damaged footage exceed 70 continuous feet. •≤ 10% damaged or missing due to incidents or patching operations. •≤ 10% covered by debris. •All markings to be KYTC approved durable, high-quality materials per specifications. Timeliness Requirements •Gore and transition areas shall have unmarked pavement signs with temporary markings placed within 24 hours and permanent markings placed within 5 days •Damaged or missing markings less than 70 feet (2 skips) shall have permanent markings placed within 60 days. •Damaged or missing markings 70 feet or greater shall have permanent markings placed within 5 Business Days except as noted below. •Unmarked pavement signs shall be in place within 24 hours and remain in place until permanent markings are in place. •Exceptions to the above timeliness criteria for permanent markings will be granted based on validated Contractor documentation of weather conditions that fall outside of the material manufacturer’s specifications.	2	2

EXHIBIT B: O&M PERFORMANCE REQUIREMENTS

Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
E	Traffic	Pavement Messages	Present and reflective	Quality Requirements •≤ 10% of each message missing or damaged. •≤ 10% of each message covered by debris. •Meets reflectivity standards (visible at 120 feet). Timeliness Requirement •Missing/damaged pavement messages shall be repaired within 30 days.	1	
E	Traffic	Small Roadside Signs	Structurally sound. Meets reflectivity standards. Free of damage.	Quality Requirements •Meets current reflectivity standards (Type VIII sheeting or better), as updated for replacements only. •Reflective at 120 feet day or night. •Ancillary structure inspection report shall be used for other maintenance needs. •Surface clean and legible. •≤ 10% damage to surface of sign (scratches, dents, bullet holes, etc.). •No damage or missing parts. •Structure and support areas kept free of dirt and debris. Timeliness Requirements •Damaged sign structures shall be mitigated immediately upon notification or discovery. •Damaged sign structures shall be repaired within 60 days of notification or discovery. •Damaged regulatory/warning/exit signs shall be mitigated immediately upon notification or discovery. •Damaged regulatory/warning/exit signs shall be repaired or replaced within 2 days of notification or discovery. •Damaged lane use informational signs shall be repaired or replaced within 10 days of notification or discovery. •All other damaged signs shall be repaired or replaced within 30 days of notification or discovery.	3	3
E	Traffic	Signs (static) – Post Mounted	Meets reflectivity standards. Clean and clear. Free of damage.	Quality Requirements •Meets current reflectivity standards (Type VIII sheeting or better), as updated for replacements only. Reflective at 120 feet day or night. •Surface clean and legible. •No missing signs •≤ 10% damage to surface of sign (scratches, dents, bullet holes, etc.). •Posts shall vertical within +/- 5 degrees •The bottom of post mounted (only) mile marker signs shall be a minimum of 48 inches above the ground surface. Timeliness Requirements •Downed regulatory/warning signs shall be temporarily erected and visible to the traveling public immediately upon notification or discovery. •Damaged regulatory/warning/exit signs shall be repaired or replaced within 2 days of notification or discovery. •Damaged lane use informational signs shall be repaired or replaced within 10 days of notification or discovery. •All other damaged signs shall be repaired or replaced within 30 days of notification or discovery.	2	2
	TUNNEL	TUNNEL				

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Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Control Room Operations	Functioning and fully operational at all times.	Quality Requirements •Peak hour monitoring of cameras and SCADA system •Perform inspections and testing in accordance with the Maintenance Schedule •Ensure all control room equipment and facilities functional at all times •Co-ordinate with third party service providers at all times Timeliness Requirements •Respond to system issues within 30 minutes of notification or discovery. •Restore functionality / operability within 24 hours of notification or discovery.	3	3
F	Tunnel	Access Control Equipment & Systems	Ensure fully operational at all times	Quality Requirements •Ensure 24/7 facility Access to authorized personnel •Monitoring and respond to system alerts •Prompt response to equipment and system issues Timeliness Requirements •Initiate response / diagnostics and troubleshooting for maintenance within 1 hr of notification or discovery of a fault •Conduct repairs and resolve access issues within 24 hrs	2	2
F	Tunnel	Telephone System	Functioning and fully operational at all times	Quality Requirements •No damaged or faulty parts. •≥ 90% of tunnel telephone units functional at all times. •Function as intended. Timeliness Requirements •Diagnostics and troubleshooting shall begin within 1 hour of notification or discovery. •Permanent repair within 48 hours of notification / discovery.	2	2
F	Tunnel	Telephone System Wizard - IVR	Functioning and fully operational at all times	Quality Requirements •Functioning without interruption to normal service / operations. •No limitation to internal, external, or customer notifications or communication or notable degradation in functionality. Timeliness Requirements •Diagnostics and troubleshooting shall begin within 1 hour of notification or discovery. •Repairs or replacements completed within 48 hours of notification or discovery.	2	2
F	Tunnel	Public Address System	Functioning and fully operational at all times.	Quality Requirements • Public address system functioning as required. • No apparent loss of functionality or degradation of service. Timeliness Requirements • Diagnostics within 1 hour of fault detection. • Repairs within 48 hours of fault detection.	2	2

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Radio Broadcast System	Functioning and fully operational at all times.	Quality Requirements • 24/7 monitoring within SCADA. • Radio broadcast system functioning as required. • No apparent loss of functionality or degradation of service. Timeliness Requirements • Diagnostics within 1 hour of fault detection. • Repairs within 48 hours of fault detection.	3	3
F	Tunnel	SCADA Control & Monitoring system	Functioning and fully operational at all times.	Quality Requirements •24/7 monitoring of the system and timely reporting of system faults. •No limitation to system operation or notable degradation in performance or functionality. •All sub-systems visible populating and displaying data. •Manage software updates, software releases and other upgrades to ensure continued functionality as required. •Manage day-to-day working relationships with SCADA representatives Timeliness Requirements •Diagnostics and troubleshooting of functionality issues of the SCADA system shall begin within 30 minutes of notification or discovery. •Restore functionality / operability within 24 hours of notification or discovery.	3	3
F	Tunnel	Carbon Monoxide & visibility monitoring Systems	Functioning and fully operational at all times	Quality Requirements •Fully functioning without warning / trouble alarms •No emergency alarms left unattended •≥90% of CO & infrared visibility sensors functional at all times •Maintained in accordance with the Manufacturers O&M Manual Timeliness Requirements •Diagnostics and troubleshooting shall begin within 1 hour of notification or discovery. •Repairs or replacements completed within 24 hours of notification or discovery.	5	5
F	Tunnel	Heat Trace system	Functioning and fully operational at all times	Quality Requirements •Functioning without interruption to normal service / operations. •No emergency alarms left unattended •≥90% of heat sensors operational at all times •Maintained in accordance with the Manufacturers O&M Manual Timeliness Requirements •Diagnostics and troubleshooting shall begin within 1 hour of notification or discovery. •Repairs or replacements completed within 24 hours of notification or discovery.	3	3

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Fire Detection and Alarm System	Functioning and fully operational at all times	Quality Requirements •24/7 monitoring of SIMPLEX 4100ES Fire Alarm System & SCADA system for fault detection. •≥90% of pull stations operational at all times. •≥90% heat sensors operational at all times. Timeliness Requirements •Respond within 30 minutes of notification or discovery. •Replacement of consumable parts within 8 hours. •Permanent repairs within 48 hours of notification or discovery.	3	3
F	Tunnel	Fire Suppression System & subsystems	Functioning and fully operational at all times.	Quality Requirements •Deluge valves, fire hydrants, foam system, fire pumps, pipes, sprinkler systems, foam pumps, and jockey pump operational at all times. •No obvious signs of damage or excessive wear and tear. Timeliness Requirements •Respond within 30 minutes of notification or discovery. •Spares / consumables replaced within 8 hours. •Permanent repair within 48 hours of notification or discovery.	3	3
F	Tunnel	Portable Fire extinguishers	Functioning and fully operational at all times.	Quality Requirements •No damaged, loose, or missing parts. •No visible signs of use / discharge. •Location and mounting easily accessible and well placed next to tunnel egress points. •Full compliance with NFPA 10 standards. Timeliness Requirements •Damaged or non-functional fire extinguishers shall be removed from service within 1 hour of identification. •Replacement fire extinguishers shall be installed within 24 hours. •Extinguishers checked in accordance with maintenance schedules	5	5
F	Tunnel	Freeze Suppression System & subsystems	Functioning and fully operational at all times.	Quality Requirements •Drain the protection system (see Maintenance Schedule) •If needed, clean the exterior of the equipment with a non-solvent cleaning agent •Monitor for system alarms •No obvious signs of damage or excessive wear and tear. Timeliness Requirements •Respond within 30 minutes of notification or discovery. •Minor repairs within 8 hours. •Permanent repair within 48 hours of notification or discovery.	3	3

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Portals	Free from cracks and settlement, function as intended	Quality Requirements •No visible cracks > 0.5" in width. •No cracks greater than 6" in length. •No signs of settlement, creep, or other deformation. •No visible signs of wetness to portal facing. •No visible signs of water seeping through cracks. •Free from spalling. •No snow or debris buildup at entrance to the service area adjacent to the Portal Timeliness Requirements •Remove debris within 1 hour of notification / detection. •Minor repairs within 7 days of detection / notification of a fault. •Permanent repair within 3 weeks of notification / discover.	2	2
F	Tunnel	Liner & Portal Beams	No cracks, signs of water damage	Quality Requirements •Free of spalling, staining, cracking leakage or settlement •No safety hazards Timeliness Requirements •Mitigate any safety issues immediately upon notification / discovery •Repairs to be completed within 10 days of notification or discovery.	4	4
F	Tunnel	Joints	Clean, debris free, no loose or missing parts.	Quality Requirements • No broken, exposed, or lose joint elements that represent a hazard or could lead to further deterioration. • No individual joint failures. • No missing parts. Timeliness Requirements • Any hazards shall be mitigated within 1 hour of notification or discovery. • Repairs within 10 days of notification. • Joints cleaned on quarterly basis / as required.	3	3
F	Tunnel	Signage	Clear, legible and damage free	Quality Requirements •No damage •Clean and graffiti free. •Clear and reflective Timeliness Requirements •Mitigate any safety issues upon notification / discovery •Graffiti removed within 24 hours. •Signs replaced withing 48 hours.	2	2

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Tiles	No cracks, missing pieces, or loss of reflectivity.	Quality Requirements •Free of debris. •Clean and graffiti free. •No visible damage or cracking to tile or sealant •No signs of water damage or intrusion Timeliness Requirements •Mitigate any safety issues upon notification / discovery •Graffiti removed within 24 hours. •Localized damage or cracked tile replaced within 24 hours •Sectional repairs to be completed within 10 days of notification or discovery.	2	2
F	Tunnel	Pedestrian Railing	Clean, functional, paint intact and free from corrosion.	Quality Requirements •⩽ 10% railing damaged or missing. •Clean and functional. •No corrosion present. Timeliness Requirements •Damaged or misaligned railings due to accidents / incidents shall be mitigated within 4 hours of notification or discovery. •Repairs to railing shall be completed within 30 days of notification or discovery.	1	1
F	Tunnel	Traffic Barrier	Clean, graffiti free, free of structural damage	Quality Requirements •Free of debris. •No damage exceeding 25% of joint. •⩽ 10% joint material damaged or missing. •No damage exceeding 25% of the barrier face. Timeliness Requirements •Damaged or misaligned barriers due to accidents/ incidents shall be mitigated within 2 hours of notification or discovery. •Repairs to barriers shall be completed within 10 days of notification or discovery.	2	2
F	Tunnel	Pedestrian Walkway	Clean, free of structural damage	Quality Requirements •Walkway & steps free of debris. •No damage that could permit water intrusion to service covers •Free of trip / other hazards Timeliness Requirements •Damage or debris that could represent a hazard to be mitigated within 2 hours of notification or discovery. •Repairs to be completed within 10 days of notification or discovery.	2	2

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Cross passage doors	Operational and defect free, NFPA compliant.	Quality Requirements •Free of debris. •Doors fully operational at all times. •No damage that may prevent access / egress or represent additional safety hazard. Timeliness Requirements •Initial response within 1 hour upon notification or discovery of defect. •Damaged or misaligned doors shall be mitigated within 4 hours of notification or discovery. •Permanent repairs / replacements within 48 hours.	4	4
F	Tunnel	Cross Passageways	Free from damage, debris & obstructions	Quality Requirements •Free of debris. •No damage that may prevent access / egress or represent additional safety hazard. Timeliness Requirements •Initial response / inspection within 1 hr of notification / discovery •Repaired within 24 hours of notification or discovery	2	2
F	Tunnel	Drainage & Pumping System (scuppers, drainage pipes and boxes, trench drains, sluice gate, containment vault and exhaust fans.	Functioning and fully operational at all times	Quality Requirements •No damage or missing parts. •No obstructions > 10% of opening (includes scuppers, pipes, openings). •Components free from debris. •Function as intended . Timeliness Requirements •Blockages causing flooding or that could cause flooding or have a safety impact shall be mitigated within 30 minutes of discovery or notification. •Greater than 25% diameter closed shall be cleaned and opened within 24 hours. •Beyond 50% diameter closed shall be cleaned and opened within 48 hours.	2	2
F	Tunnel	Drainage Vault Exhaust fans	Clean, functional.	Quality Requirements •Defect Free. •Debris free. •Fully functional at all times. Timeliness Requirements •Diagnostics and troubleshooting shall begin within 30 minutes of notification or discovery. •Repairs or replacements completed within 48 hours of notification or discovery.	2	2

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Emergency Power - Generator	Fully operational	Quality Requirements •Fully functional at all times •Fault & defect free •Fuel levels maintained to sustain an emergency event. •Maintained and inspected by qualified personnel Timeliness Requirements •Diagnosis to begin within 30 minutes of a detected fault. •Minor repairs / parts replacements within 24 hours. •Major repairs or parts replacements within 7 days	4	4
F	Tunnel	EMS EGS - Uninterrupted Power Supply	Fully operational	Quality Requirements •Ensure units & system functional without alarms and trouble warnings •Monitor UPS via SCADA and respond accordingly if alerts present Timeliness Requirements •Initial diagnostics to begin within 30 minutes of a detected fault. •Minor repairs / parts replacements within 24 hours. •Major repairs or replacements within 7 days.	4	4
F	Tunnel	Jet Fans	Functional at all times.	Quality Requirements •24/7 monitoring via SCADA. •No faulty or malfunctioning parts. •Dampers, fan drives, motors, and sound attenuators free from excessive wear and tear. •Supports, braces and mounting free from damage •Functioning at all times. Timeliness Requirements •Maintenance response within 1 hour of notification or discovery. •Minor Repairs / replacements within 24 hours. •Major replacements / repairs within 30 days.	3	3
F	Tunnel	General Electrical	Functional and defect free.	Quality Requirements •Ensure transfer switches, switch gears, circuit breakers, motor control centers, panel boards, and all the facilities electrical circuits and equipment are fully operational •All electrical equipment & components free from defects and signs of excessive wear and tear. Timeliness Requirements •Diagnostics and troubleshooting shall begin within 1 hour of notification or discovery. •Permanent repairs or replacements completed within 48 hours of notification or discovery.	3	3

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Septic System	Functioning and fully operational at all times.	Quality Requirements •Monitor for alerts and alarms •No limitation to system operation or notable degradation in performance or functionality. •Visual checks of exterior displays to confirm automated alarm Timeliness Requirements •Arrange for next day removal by competent local service provider •Repairs within 72 hrs of notification / discovery	1	1
F	Tunnel	Climate Control / HVAC	Operational & defect free	Quality requirements HVAC • Ensure fully functioning at all times • Maintenance conducted by qualified personnel • Ensure sufficient refrigerant such as R-22 • Ensure expansion valve, evaporator coil, condensing coils and compressors functional • Ensure wiring connections for exposed or frayed wires and pipes and tubing for leaks or corrosion • Ensure all duct work is free from damage or obstruction Timeliness Requirements •Initial response and diagnostics within 2 hrs of notification / discovery •Permanent repairs within 72 hrs	2	2
F	Tunnel	Plumbing	Operational & defect free	Quality Requirements • Lines and pipes free of leaks and functional • Shut-off valve of the main water supply free of defects and damage. • Ensure back-flow preventors operational • System free of leaks • Conduct water pressure tests if applicable • Ensure sewer and drainage lines fully operation, no damage, corrosion, or major clogs are present. • Examine fixtures, supply lines, and drains Timeliness Requirements •Initial response / mitigation within 2 hrs of notification / discovery •Permanent repairs within 24 hrs of notification / discovery	2	2
F	Tunnel	Tunnel Lighting	Operational and defect free.	Quality Requirements •No damaged, loose, or missing parts. •90% of tunnel lamps shall be functioning properly at all times •No two consecutive lights inoperable Timeliness Requirement •Hazards shall be mitigated immediately •Faulty lamps and circuit repair shall commence within 7 days of notification or discovery. •Damaged or non-functional lamps/structures shall be repaired or replaced within 7 days of notification or discovery.	4	4

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
F	Tunnel	Ventilation systems (Fans, sound attenuators, dampers and carbon monoxide sensors)	Functioning and fully operational at all times	Quality Requirements •24/7 monitoring via SCADA to ensure functionality. •Fully functional at all times. •Generate positive airflow at all times in accordance with NFPA 502. •No damage to sound attenuators, dampers, or other system components. Timeliness Requirements •Initiate maintenance response within 1 hour of discovery or notification of a fault. •Consumable spare parts replaced within 8 hours. •Larger system wide repairs within 48 hours.	4	4
	BRIDGE	BRIDGE				
G	BRIDGE	Deck (including railing system, parapet walls, joints, safety/sidewalks, fence, and drainage system)	Safe. Structurally sound. Surface water drains as designed. Free of debris.	Quality Requirements •Maintain the deck expansion joints for cleanliness. •Maintain the driving surface of the deck to keep it free from spalls and potholes. •Bridge drains shall be open, functional, and free of dirt, debris, and vegetation. •Bridge rails, parapets, and barriers are maintained in good operating condition. •Perform all sweeping, washing, and cleaning. •Structure and bridge inspection reports shall be utilized and followed for other routine maintenance, repair, and replacement needs as noted by the Contract Administrator. Repaired areas shall have bridge maintenance completion reports submitted back to the Contract Administrator within 30 days. •Permanent spot patch repairs to be implemented by work order. •No distresses/failures. •No temporary patches or distresses ≥ 0.5” higher or lower than surrounding concrete deck surface. •No damaged or missing bridge railings. Railings are intact and connections are tight. •The deck is free of foreign material (sand, grass, stones, limbs, trash, etc.). •Joints and joint material are clean and free of buildup of debris. Joint material is present, intact, functioning as designed and not leaking. •Drainage system (drains, scuppers, trough, etc.) is free of debris, clean and functioning as designed. Timeliness Requirements •Emergency issues shall be mitigated within 2 hours of notification or discovery. •Permanent repairs shall be made within 30 days of notification / discovery	3	3
G	BRIDGE	Slope Protection	Safe Structurally sound Minimal erosion	Quality Requirements •No trend or pattern of erosion ≥ 2" deep. •No undermining or undercutting (≥ 2" deep). •No settlement greater than 2". •Free of vegetation and debris. Timeliness Requirements •Emergency issues shall be mitigated within 2 hours of notification or discovery. •Slope protection not meeting one or more of the above requirements shall be repaired within 30 days of notification or discovery.	2	2

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Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
G	BRIDGE	Substructure (Includes bearing seats, abutments, backwalls, pier, columns, caps)	Safe Structurally sound Free of debris	Quality Requirements •Wash and clear debris for all Substructure components. •Structure and bridge inspection reports (NBIS) shall be referenced for potential routine maintenance, and repair •Seats and piers clean and free of debris. •No spalls >1" deep. Timeliness Requirements •Mitigate any safety issues upon notification / discovery •Spalls shall be repaired within 120 days of notification or discovery. •Clean and wash every 2 years	3	3
G	BRIDGE	Weep Holes	Functional	Quality Requirement •≥90% of diameter open. Timeliness Requirement •Repair within 30 days of notification or discovery.	N/A	1
G	BRIDGE	Superstructure (Includes beams/girders, bearings, diaphragms, cross frames, stiffeners, and connection plates)	Safe Structurally sound Free of debris	Quality Requirements •Clear all obstructions from beam ends and diaphragms including washing and vegetation removal. •No spalling > 1" deep. •Structure and bridge inspection reports shall be referenced for other potential routine maintenance, and repair, as directed by the Contract Administrator. •All structural steel and bearing assemblies clean and free of debris. •No damaged or missing parts. •Bridge components are free of damaging vegetation. Timeliness Requirements •Emergency issues shall be inspected / mitigated within 4 hours of notification or discovery. •Permanent Repairs within 60 days •Clean and wash structural steel and bearing assemblies every 5 years	4	4
	SERVICES	SERVICES				
H	Services	Customer Response	Timely, efficient, effective, productive.	Quality Requirements •All customer concerns / requests shall be resolved to the customer's satisfaction. •All communications, courteous, professional and timely Timeliness Requirements •Safety issues / initial response to individual performance criteria. •Contact the customer within 24 hours following the initial customer inquiry with repair timeline / status.	N/A	1

EXHIBIT B: O&M PERFORMANCE REQUIREMENTS

Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
H	Services	Incident & Emergency Response	Timely, efficient, effective, productive.	Quality Requirements •Provide incident response <u>support</u> services to traffic and tunnel incidents (support role). •Provide traffic control (TMAs, signs, cones barrels) for tunnel closures/ lane closures in support of EMS operational response. •Support EMS incident command as required and operate at their direction. Timeliness Requirements: •All emergency incidents responded to within timeframes noted in each asset; maximum of 2 hours for any other emergency. There is not "final repair" for an emergency, therefore the initial response is the only response time Extended Work Zone Traffic Safety – All work within the travel lanes in the tunnel shall require lane closures compliant with MUTCD requirements and KYTC Standard Specification Section 112 – Maintenance and Control of Traffic during Construction.	5	0
	ITS	ITS				
I	ITS	Tunnel CCTV	Clear images with no degradation in quality or performance.	Quality Requirements •Routine cleaning, adjustment, minor repairs, replacement and networking to ensure CCTV Functionality •No more than 1 camera non-functioning at any time in each direction of travel •Notify KYTC of inoperable cameras •Liaise with KYTC ITS service provider for integration into broader ITS system (if applicable) •Liaise with KYTC on any software changes (if applicable) Timeliness Requirements •Initial response within 1 hr of notification / discovery •Replace camera hardware within 48 hours of failure The Contractor is responsible for networking, managing devices under warranty, managing inventory and the repair and replacement process.	3	3
I	ITS	Lane Use Signals	Functional and clear	Quality Requirements •Messaging clearly displayed. •90%> lane use signals operational all time. •Clean and visible. •Maintain sufficient inventory of spares to meet replacement timeliness Timeliness Requirements •Diagnostics and troubleshooting shall begin within 30 minutes of notification or discovery. •Repairs completed within 8 hours of notification or discovery. •Replacement within 24 hours.	4	4
I	ITS	Traffic Control Signals	Functional at all times	Quality Requirements •24/7 monitoring via SCADA. •Clean and Visible with no missing or damaged parts. •Lamps / LEDS functioning •Functioning at all times. •Maintain sufficient inventory of spares to meet replacement timelines Timeliness Requirements •Maintenance response within 30 minutes of notification or discovery. •Permanent replacement / repairs within 24 hours.	4	4
	COMPLIANCE	COMPLIANCE				

EXHIBIT B: O&M PERFORMANCE REQUIREMENTS

Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2)		Assessment of a non-conforming event and associated deductions will be assessed monthly based on: (1) Initial response/mitigation or temporary repair and (2) Final repairs. The term Mitigate is used in this performance table to define the initial response and repair timeline: For Example: the time taken to make the situation safe and alert drivers with cones or drums and to remove any object that may present a safety hazard, and conduct initial repairs, if any. Tunnel assets requiring routine testing and inspection are detailed in the attached weekly, monthly, quarterly, bi-annual and annual Maintenance Schedules.			**Non-Conforming Event Deduction Points**	
Type	**Group**	**Asset Type**	**General Standard**	**Quality & Timeliness**	**INITIAL RESPONSE**	**FINAL REPAIR**
J	COMPLIANCE	Accomplishment Reports	Timely and accurate	Quality Requirements •Monthly, quarterly and annual reports will be delivered in accordance with specified deadline •Details of prior periods NCEs and actions taken to resolve •Additional content or reports as may be required by the Cabinet Timeliness Requirements • No later than 5:00 PM on 5th business day of each month • No later than 3 business days from the 5th business day of each month	2	2
J	COMPLIANCE	Inspections & Testing	Timely and accurate	Quality Requirements •Accurate, thorough and in compliance with testing and inspection requirements of the Exhibit 5 Maintenance Schedule Timeliness Requirements •No later than 5:00 PM on 5th business day of each month • No later than 3 business days from the 5th business day of each month	2	2
Notes:						
1		1	When failures of control room or tunnel technical assets are due to a systemic problem or multiple system issues, timeliness requirements may be waived by the Cabinet.			
2	Quality	2	Quality requirements for long linear assets will be based on a 1/10th mile section: For example, a failed asset will be understood to pass if there are no other instances of the same asset failure within 264 feet in both directions.			
3		3	Emergency Response: For clarity, any tunnel-related system that affects the safety of the public shall be considered an emergency and has a response time of 30 minutes, 24 hours a day, 365 days per year.			

ATTACHMENT B-2: LIST OF REQUIRED PLANS			
THE FOLLOWING PLANS MUST BE SUBMITTED AS DETAILED IN EXHIBIT B		Section Ref from ExB:	Due Date
1	Mobilization Plan	1.2	-60 days prior to NTP
2	Operations and Maintenance Plan (with detail and sections addressing topics noted in Ex.B 1.4)	1.4	Draft 30 days prior to NTP; Final 30 days after NTP
3	Renewal Work Asset Management Plan	1.4	Two months after NTP

ATTACHMENT B-3 ASSET LISTING

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
A	PVMT	ASPHALT PATCHING	MAINLINE	MECHANICAL	YES	SY
A	PVMT	ASPHALT PATCHING	MAINLINE	MANUAL	YES	SY
A	PVMT	ASPHALT PATCHING	SHOULDER	MECHANICAL	YES	SY
A	PVMT	ASPHALT PATCHING	SHOULDER	MANUAL	YES	SY
A	PVMT	ASPHALT PATCHING	RAMPS	MECHANICAL	YES	SY
A	PVMT	ASPHALT PATCHING	RAMPS	MANUAL	YES	SY
A	PVMT	ASPHALT CRACK SEALING	ALL	N/A	YES	LF
A	PVMT	ASPHALT PATCHING	BASE	N/A	YES	SY
A	PVMT	CONCRETE PATCHING	MAINLINE	N/A	YES	SY
A	PVMT	CONCRETE PATCHING	SHOULDER	N/A	YES	SY
A	PVMT	CONCRETE PATCHING	RAMPS	N/A	YES	SY
A	PVMT	CONCRETE	ALL	JOINT	YES	LF
B	ROADSIDE	MOTOR GRADER	SHOULDER	REPAIR	YES	SY
B	ROADSIDE	DITCH REPAIR	SHOULDER	REPAIR	YES	SY
B	ROADSIDE	DITCH REPAIR	SLOPE	REPAIR	YES	SY
B	ROADSIDE	DITCH REPAIR	DITCH	REPAIR	YES	SY
B	ROADSIDE	SHOULDER	REPAIR	UNPAVED	YES	SY
B	ROADSIDE	SLOPE	REPAIR	REPAIR	AES	EA
B	ROADSIDE	CONCRETE	SIDEWALK	REPAIR	YES	SY
B	ROADSIDE	FENCE REPAIR	CHAIN LINK	REPAIR	YES	LF
B	ROADSIDE	FENCE REPAIR	WIRE	REPAIR	YES	LF
B	ROADSIDE	FENCE REPAIR	SPECIAL	REPAIR	YES	LF
C	DRNGE	UNDERDRAIN	ALL	REPAIR	YES	LF
C	DRNGE	UD/ENDWALL	ALL	REPAIR	YES	EA
C	DRNGE	STORM DRAIN PIPE	ALL	15" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	24" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	30" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	36" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	42" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	48" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	60" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	72" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	84" OR LESS	YES	LF
C	DRNGE	STORM DRAIN PIPE	ALL	96" OR LESS	YES	LF
C	DRNGE	FLARED END SECTION	ALL	15" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	24" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	30" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	36" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	42" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	48" OR LESS	YES	EA

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
C	DRNGE	FLARED END SECTION	ALL	60" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	72" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	84" OR LESS	YES	EA
C	DRNGE	FLARED END SECTION	ALL	96" OR LESS	YES	EA
C	DRNGE	MANHOLE, STORM	ALL	REPAIR	YES	EA
C	DRNGE	MANHOLE, STORM	ALL	REPLACE	YES	EA
C	DRNGE	DROP INLET/CATCH BASIN	ALL	0-10FT	YES	EA
C	DRNGE	DROP INLET/CATCH BASIN	ALL	10-20FT	YES	EA
C	DRNGE	INLET GRATES	ALL	0-10FT	YES	EA
C	DRNGE	INLET GRATES	ALL	10-20FT	YES	EA
C	DRNGE	DETENTION POND	ALL	SURFACE	YES	AC
C	DRNGE	DETENTION POND	ALL	SUBSURFACE	YES	CY
C	DRNGE	CURB & GUTTER	ALL	CONCRETE	YES	LF
C	DRNGE	BOX CULVERT	ALL	N/A	YES	LF
C	DRNGE	BARRIER WALL	NONBRIDGE	CONCRETE	YES	LF
C	DRNGE	OUTFALL DITCHES	ALL	ALL	YES	LF
C	DRNGE	DITCH	ALL	UNPAVED	AES	LF
C	DRNGE	PAVED DITCH	ALL	ALL	YES	SY
C	DRNGE	ROAD SWEEPING	ALL	MECHANICAL	YES	LM
D	VEG. MGMT	SEEDING	ALL	GRASS	YES	AC
D	VEG. MGMT	FERTILIZING	ALL	GRASS	YES	AC
D	VEG. MGMT	HERBICIDE	ALL	GRASS	YES	AC
D	VEG. MGMT	SEEDING	ALL	LANDSCAPE	YES	AC
D	VEG. MGMT	FERTILIZING	ALL	LANDSCAPE	YES	AC
D	VEG. MGMT	HERBICIDE	ALL	LANDSCAPE	YES	AC
D	VEG. MGMT	MULCHING	ALL	LANDSCAPE	YES	AC
D	VEG. MGMT	Small Machine Mowing	ALL	GRASS	YES	AC
D	VEG. MGMT	Large Machine Mowing	ALL	GRASS	YES	AC
D	VEG. MGMT	IRRIGATION	ALL	LANDSCAPE	YES	SY
D	VEG. MGMT	TREE PLANTING	ALL	LANDSCAPE	YES	EA
D	VEG. MGMT	TREE TRIMMING	ROADSIDE	LARGE	YES	LF
D	VEG. MGMT	TREE TRIMMING	ROADSIDE	SITE DIST	YES	LF
D	VEG. MGMT	SHRUB PLANTING	ALL	LANDSCAPE	YES	EA
D	VEG. MGMT	HERBICIDE	ALL	LANDSCAPE	YES	AC
D	VEG. MGMT	GRAFFITI REMOVAL	ALL	N/A	YES	SY
D	VEG. MGMT	LITTER REMOVAL	ALL	N/A	YES	AC
D	VEG. MGMT	DEBRIS/ROADKILL	LANES	HAZARD	YES	EA
D	VEG. MGMT	DEBRIS/ROADKILL	SHOULDER	NONHAZARD	YES	EA
E	TRAFFIC	REFLECTOR	SHOULDER	BARRIER	YES	EA
E	TRAFFIC	REFLECTOR	SHOULDER	BARRIER	YES	EA
E	TRAFFIC	REFLECTOR	SHOULDER	POST MOUNT	YES	EA

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
E	TRAFFIC	SIGN PANEL	SHOULDER	SMALL	YES	EA
E	TRAFFIC	SIGN POST	SHOULDER	SMALL	YES	EA
E	TRAFFIC	SIGN STRUCTURE	SHOULDER	CANT	YES	EA
E	TRAFFIC	SIGN STRUCTURE	SHOULDER	SPAN	YES	EA
E	TRAFFIC	SIGN STRUCTURE	SHOULDER	STEEL 1 POST	YES	EA
E	TRAFFIC	SIGN STRUCTURE	SHOULDER	STEEL 2 POST	YES	EA
E	TRAFFIC	SIGN PANEL	SHOULDER	OH	YES	SF
E	TRAFFIC	GUARDRAIL	SHOULDER	STEEL	YES	LF
E	TRAFFIC	GUARDRAIL	SHOULDER	CABLE	YES	LF
E	TRAFFIC	IMPACT ATTENUATOR	SHOULDER	BARREL	YES	EA
E	TRAFFIC	IMPACT ATTENUATOR	SHOULDER	STEEL	YES	EA
E	TRAFFIC	PAVEMENT MARKINGS	LANES	YELLOW	YES	LF
E	TRAFFIC	PAVEMENT MARKINGS	LANES	WHITE	YES	LF
E	TRAFFIC	PAVEMENT MARKINGS	LANES	SKIPS	YES	LF
E	TRAFFIC	PAVEMENT MARKINGS	LANES	MINISKIPS	YES	LF
E	TRAFFIC	PAVEMENT MARKINGS	LANES	GORE	YES	LF
E	TRAFFIC	PAVEMENT SYMBOLS	LANES	ALL	YES	EA
E	TRAFFIC	GLARE SCREEN	MEDIAN	N/A	YES	LF
E	TRAFFIC	FLEXIBLE BOLLARDS	MEDIAN	N/A	YES	EA
E	TRAFFIC	PAVEMENT MARKERS	ALL	RAISED	YES	EA
E	TRAFFIC	LIGHTING	ALL	UTIL SVC	YES	KWH
E	TRAFFIC	LIGHTING	ALL	STD POLE	YES	EA
E	TRAFFIC	LIGHTING	ALL	METER	YES	EA
E	TRAFFIC	LIGHTING	ALL	STD BULB	YES	EA
E	TRAFFIC	LIGHTING	ALL	HIGH MAST	YES	EA
E	TRAFFIC	LIGHTING	ALL	HM BULB	YES	EA
E	TRAFFIC	LIGHTING	ALL	HANDHOLE		
E	TRAFFIC	NOISE WALL	SHOULDER	CONCRETE	YES	SY
E	TRAFFIC	NOISE WALL	SHOULDER	STEEL	YES	SY
G	BRIDGE	LIGHTING	ALL	INSPECTION	YES	EA
G	BRIDGE	APPROACH SLAB	DECK	CONCRETE	YES	SY
G	BRIDGE	DECK	DECK	CONCRETE	YES	SY
G	BRIDGE	JOINTS	DECK	RUBBER	YES	SY
G	BRIDGE	JOINTS	DECK	FINGER	YES	SY
G	BRIDGE	JOINTS	DECK	POURED	YES	SY
G	BRIDGE	SUBSTRUCTURE	SUBSTR	REPAIR	YES	SY
G	BRIDGE	SUPERSTRUCTURE	SUPRSTR	CONCRETE	YES	SF
G	BRIDGE	SUPERSTRUCTURE	SUPRSTR	STEEL	YES	SF
G	BRIDGE	BARRIER WALL	SHOULDER	N/A	YES	LF
G	BRIDGE	CHANNEL MAINTENANCE	SUBSTR	SCOUR	YES	SY
G	BRIDGE	ELECTRICAL	ALL	MISC	YES	EA

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
G	BRIDGE	BEARINGS	SUPRSTR	NEOPRENE	YES	EA
G	BRIDGE	BEARINGS	SUPRSTR	BRASS/STEEL	YES	EA
G	BRIDGE	BEARINGS	SUPRSTR	OTHER	YES	EA
H	ITS	TRAFFIC SIGNALS	ALL		NO	EA
H	ITS	ELECTRICAL CABINETS	ALL		NO	EA
H	ITS	TRAFFIC CAMERAS	ALL		NO	EA
H	ITS	CAMERA POLES	ALL		NO	EA
H	ITS	TOLL GANTRY	ALL		NO	EA
H	ITS	LANE CONTROL SIGNS	ALL		NO	EA
H	ITS	VEHICLE DETECTION SYSTEM	ALL		NO	EA
H	ITS	VARIABLE MESSAGE SIGN	ALL	LARGE	NO	EA
H	ITS	VARIABLE MESSAGE SIGN	ALL	SMALL	NO	EA
H	ITS	VARIABLE SPEED LIMIT	ALL		NO	EA
H	ITS	GENERATOR	ALL		NO	EA
H	ITS	LANE CONTROL SIGNS	ALL	CONTROLLER	NO	EA
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	PARTITIONS	YES	SF
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	MILLWORK	YES	EA
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	HOLLOW METAL FRAME	YES	EA
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	CEILING TILE	YES	SF
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	FINISHES	YES	SF
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	DOORS	YES	EA
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	FURNISHINGS	YES	EA
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	FLOORING	YES	SF
F	TUNNEL	CTRL ROOM	ARCHITECTURAL	LOCKWORK	YES	EA
F	TUNNEL	CTRL ROOM	CCTV	CONTROL SYSTEM	YES	EA
F	TUNNEL	TUBE	CCTV	CAMERA	YES	EA
F	TUNNEL	TUBE	CCTV	DATA WIRING	YES	LF
F	TUNNEL	TUBE	CCTV	ELECTRIC SERVICE	YES	EA
F	TUNNEL	TUBE	CERAMIC TILE	CEILING/WALL	YES	SF
F	TUNNEL	CTRL ROOM	COMMUNICATIONS	WIFI	YES	EA
F	TUNNEL	CTRL ROOM	COMMUNICATIONS	INTERNET	YES	EA
F	TUNNEL	CTRL ROOM	COMMUNICATIONS	ANTENNA SYSTEM	YES	EA
F	TUNNEL	CTRL ROOM	COMMUNICATIONS	CONTROL SYSTEM	YES	EA
F	TUNNEL	CTRL ROOM	COMMUNICATIONS	PHONE	YES	EA
F	TUNNEL	TUBE	DAMPERS	CONTROLLER	YES	EA
F	TUNNEL	TUBE	DAMPERS	DOOR	YES	EA
F	TUNNEL	TUBE	DRAINAGE	SCUPPERS	YES	EA
F	TUNNEL	TUBE	DRAINAGE	PIPES	YES	LF
F	TUNNEL	TUBE	DRAINAGE	INLET	YES	EA
F	TUNNEL	TUBE	DRAINAGE	TRENCH DRAIN	YES	LF
F	TUNNEL	TUBE	DRAINAGE	SLUICE GATE	YES	EA

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
F	TUNNEL	TUBE	DRAINAGE	VAULT	YES	EA
F	TUNNEL	CTRL ROOM	ELECTRIC	GENERATOR- MAIN	YES	EA
F	TUNNEL	CTRL ROOM	ELECTRIC	GENERATOR - BACKUP	YES	EA
F	TUNNEL	CTRL ROOM	ELECTRIC	OUTLETS	YES	EA
F	TUNNEL	CTRL ROOM	ELECTRIC	BREAKERS	YES	EA
F	TUNNEL	CTRL ROOM	ELECTRIC	PANEL BOX	YES	EA
F	TUNNEL	CTRL ROOM	ELECTRIC	LIGHTING	YES	EA
F	TUNNEL	TUBE	ELECTRIC	CONDUITS	YES	LF
F	TUNNEL	TUBE	ELECTRIC	OUTLETS	YES	EA
F	TUNNEL	TUBE	ELECTRIC	PANEL BOX	YES	EA
F	TUNNEL	TUBE	ELECTRIC	PULL BOX	YES	EA
F	TUNNEL	TUBE	ELECTRIC	MOTOR CONTROL CENTERS	YES	EA
F	TUNNEL	TUBE	ELECTRIC	PANELBOARDS	YES	EA
F	TUNNEL	TUBE	ELECTRIC	LIGHTING	YES	EA
F	TUNNEL	TUBE	ELECTRIC	SWITCHBOARD	YES	EA
F	TUNNEL	TUBE	ELECTRIC	TRANSFORMERS- DRY	YES	EA
F	TUNNEL	TUBE	ELECTRIC	TRANSFORMERS - LIQUID	YES	EA
F	TUNNEL	TUBE	EMERG. COMM.	P/A SYSTEM	YES	EA
F	TUNNEL	TUBE	EMERG. COMM.	RADIO SYSTEM	YES	EA
F	TUNNEL	CTRL ROOM	SIGNAGE	EXIT SIGN	YES	EA
F	TUNNEL	TUBE	SIGNAGE	EXIT SIGN	YES	EA
F	TUNNEL	CIVIL	FANS	DRAINAGE VAULT	YES	EA
F	TUNNEL	CTRL ROOM	FIRE	CO SYSTEM	YES	EA
F	TUNNEL	CTRL ROOM	FIRE	EXTINGUISHER	YES	EA
F	TUNNEL	TUBE	FIRE	EXTINGUISHER	YES	EA
F	TUNNEL	TUBE	FIRE	HEAT DETECTOR SYSTEM	YES	EA
F	TUNNEL	TUBE	FIRE	SMOKE DETECTOR	YES	EA
F	TUNNEL	TUBE	FIRE	ALARM	YES	EA
F	TUNNEL	TUBE	FIRE	VALVES	YES	EA
F	TUNNEL	TUBE	FIRE	PUMP	YES	EA
F	TUNNEL	TUBE	FIRE	DETECTOR	YES	EA
F	TUNNEL	TUBE	FIRE	ALARM	YES	EA
F	TUNNEL	TUBE	FIRE	VALVES	YES	EA
F	TUNNEL	TUBE	FIRE	HYDRANTS	YES	EA
F	TUNNEL	TUBE	FIRE	FDC/STANDPIPE	YES	EA
F	TUNNEL	TUBE	FIRE	FIRE PUMP	YES	EA
F	TUNNEL	TUBE	FIRE	FOAM PUMP	YES	EA
F	TUNNEL	TUBE	FIRE	JOCKEY PUMP	YES	EA
F	TUNNEL	TUBE	FIRE	FOAM SYSTEM	YES	EA
F	TUNNEL	CTRL ROOM	FIRE	SMOKE DETECTOR	YES	EA
F	TUNNEL	CTRL ROOM	FIRE	CO DETECTOR	YES	EA

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
F	TUNNEL	TUBE	FIRE	BOXES	YES	EA
F	TUNNEL	TUBE	FIRE	PUMP	YES	EA
F	TUNNEL	TUBE	FIRE	HEAT TRACE SYSTEM	YES	EA
F	TUNNEL	TUBE	FLEXIBLE BOLLARDS	ALL	YES	EA
F	TUNNEL	TUBE	GLARE SCREEN	ALL	YES	EA
F	TUNNEL	TUBE	GUARDRAIL	STEEL	YES	LF
F	TUNNEL	CTRL ROOM	HVAC	THERMOSTAT	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	AIR HANDLER	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	A/C COMPRESSOR	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	A/C COIL	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	FILTERS	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	DAMPER	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	PLENUM/DUCTWORK	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	GRATES INLET	YES	EA
F	TUNNEL	CTRL ROOM	HVAC	GRATES RETURN	YES	EA
F	TUNNEL	TUBE	HVAC	CO MONITOR	YES	EA
F	TUNNEL	TUBE	HVAC	JET FAN	YES	EA
F	TUNNEL	TUBE	IMPACT ATTENUATOR	BARREL	YES	EA
F	TUNNEL	TUBE	IMPACT ATTENUATOR	STEEL	YES	EA
F	TUNNEL	CIVIL	JOINTS	PVMT JOINTS	YES	EA
F	TUNNEL	TUBE	LINER	CONCRETE SPRAY ON	YES	EA
F	TUNNEL	TUBE	PASSAGE	DOORS	YES	EA
F	TUNNEL	TUBE	PASSAGE	FANS	YES	EA
F	TUNNEL	CIVIL	PAVEMENT	CONCRETE	YES	SY
F	TUNNEL	TUBE	PAVEMENT MARKERS	RAISED	YES	EA
F	TUNNEL	TUBE	PAVEMENT MARKINGS	YELLOW	YES	LF
F	TUNNEL	TUBE	PAVEMENT MARKINGS	WHITE	YES	LF
F	TUNNEL	TUBE	PAVEMENT MARKINGS	SKIPS	YES	LF
F	TUNNEL	TUBE	PAVEMENT MARKINGS	MINISKIPS	YES	LF
F	TUNNEL	TUBE	PAVEMENT MARKINGS	GORE	YES	LF
F	TUNNEL	TUBE	PAVEMENT SYMBOLS	ALL	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	FITTINGS (FAUCETS)	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	FIXTURE (SINK)	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	FIXTURE (TOILET)	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	VENTS	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	SANITARY PIPE	YES	LF
F	TUNNEL	CTRL ROOM	PLUMBING	DOMESTIC WATER PIPE	YES	LF
F	TUNNEL	CTRL ROOM	PLUMBING	WELL PUMP	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	GAUGES	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	CHEMICAL INJECTOR	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	WATER HEATER	YES	EA

CATEGORY	MAJOR CAT	ASSET	LOCATION	SUB-TYPE	OM Scope Limits: YES, NO, THIRD PARTY	UNIT OF MEASURE
F	TUNNEL	CTRL ROOM	PLUMBING	WELL HEATER	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	SEPTIC TANK	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	SERVICE METER	YES	EA
F	TUNNEL	CTRL ROOM	PLUMBING	DRAINS	YES	EA
F	TUNNEL	TUBE	PLUMBING	SUPPLY PIPING	YES	EA
F	TUNNEL	TUBE	PORTAL	CAST IN PLACE CONCRETE	YES	EA
F	TUNNEL	TUBE	PORTAL	SEALANTS	YES	EA
F	TUNNEL	CIVIL	RAILING	PEDESTRIAN	YES	EA
F	TUNNEL	CIVIL	SEPTIC	PUMP	YES	EA
F	TUNNEL	CIVIL	SEPTIC	PIPES	YES	EA
F	TUNNEL	CIVIL	SEPTIC	FILTER	YES	EA
F	TUNNEL	CIVIL	SEPTIC	MACERATOR	YES	EA
F	TUNNEL	CIVIL	SEPTIC	DRAINAGE PUMP	YES	EA
F	TUNNEL	CIVIL	SEPTIC	FILTERS	YES	EA
F	TUNNEL	TUBE	SIDEWALK	EMERGENCY EGRESS	YES	EA
F	TUNNEL	TUBE	SOUND ATTENUATORS	N/A	YES	SF
F	TUNNEL	CTRL ROOM	TRAFFIC CONTROL SYSTEM	SYSTEM	YES	EA
F	TUNNEL	CIVIL	TRAFFIC SIGNALS	ELECTRIC SERVICE	YES	EA
F	TUNNEL	CIVIL	TRAFFIC SIGNALS	CABINETS	YES	EA
F	TUNNEL	CIVIL	TRAFFIC SIGNALS	SIGNAL LIGHTS	YES	EA
F	TUNNEL	TUBE	BARRIER WALL	CONCRETE	YES	LF

S4-A1-1A
STA. 19+38.18, (20.08' RT.) (KY841SB)
DROP BOX INLET TYPE 5E

CURVE "KY841SB"-1 DATA
PI STA = 19+58.81
N = 100,184.7636
E = 57,008.9655
Δ = 17° 04' 22.39" (LT)
D = 1° 21' 31.58"
R = 4,740.00'
L = 1,412.42'
T = 711.48'
E = 53.10'
e = MATCH EXISTING
D.S. = N/A

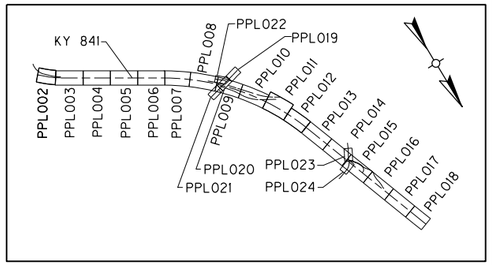
CURVE "DC841S71"-1 DATA
PI STA = 12+49.67
N = 100,228.7307
E = 56,520.0721
Δ = 14° 13' 52.22" (RT)
D = 2° 51' 53.24"
R = 2,000.00'
L = 496.76'
T = 249.67'
E = 15.52'
e = MATCH EXISTING
D.S. = 45 MPH

CURVE "DC841S71"-2 DATA
PI STA = 21+42.83
N = 99,870.4698
E = 57,341.0400
Δ = 58° 32' 15.36" (RT)
D = 8° 42' 27.23"
R = 658.00'
L = 672.26'
T = 368.78'
E = 96.30'
e = MATCH EXISTING
D.S. = N/A

0' 50' 100'

ITS CAMERA
STA. 13+67.40
END END TREATMENT TYPE 2A
BEGIN GUARDRAIL
END TREATMENT TYPE 2A
CURVE "DC841S71"-2
EXIST. 30" RCP
EXIST. KY 841 RAMP TO I-71
20+00
END CONSTRUCTION RAMP DC841S71
STA. 15+58.11
END 1 1/4" OVERLAY
15+00
EXIST. R/W
LINE "DC841S71"
PI 17+74.05
STA 16+22.87
END GUARDRAIL TIE-IN TO EXIST
Start of O&M at start of noise wall
END TREATMENT TYPE 1
O&M Area, excludes tower.
STA. 14+98.66
BEGIN END TREATMENT TYPE 1
END GUARDRAIL
GUARDRAIL
SLOPE LIMITS
STA. 17+00.00, 36' LT
END 50:1 TAPER
STA. 18+41.91, 36' LT
BEGIN 30:1 TAPER
S 66° 25' 26.78" E
EXIST. 15" RCP
PI 14+96.76
+30.11 END TAPER
+80.11 BEGIN TAPER
NOISE BARRIER WALL
CURVE "DC841S71"-1
50:1 TAPER
30:1 TAPER
KY 841 SOUTHBOUND
MATCH LINE STA. 13+00
MATCH LINE STA. 24+50
CURVE "KY841SB"-1
LINE "KY841SB"
S4-A1-1A
STA. 22+01.90, 48' LT
END 30:1 TAPER
KY 841 NORTHBOUND
STA. 23+87.17
BEGIN 50' BARRIER
STA. 24+47.44
BEGIN 30:1 BARRIER TAPER
GIBRALTAR CABLE BARRIER SYSTEM
RC
Start of O&M at start of ramp concrete pavement
EXIST I-71 RAMP TO KY 841
EXIST. R/W

RECORD DRAWING
The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4
EECT PROJECT LIMITS

SHEET 01 of 14

FILE NAME: ...\Plan & Profile\R4PPL002.DGN
USER: GlleTE
DATE PLOTTED: 4/3/2017
Plot Driver: KYTC_COL.pltcfg
Pen Table: KYTC_COL-Half.tbl
MicroStation v8.11.9.459

S4-A1-1
STA. 25+66.33, (18.16' RT.) (KY841SB)
DROP BOX INLET TYPE 5B

S4-A1-2
STA. 11+40.00, (1.00' LT.) (KY841)
CMBBI TYPE 14A1

(RDB-240-01)

S4-A1-3
STA. 11+40.00, (84.92' LT.) (KY841)
METAL END SECTION TYPE 3

S4-A1-4
STA. 12+00.00, (1.00' RT.) (KY841)
CMBBI TYPE 14A1

(RDB-240-01)

25+00 15+00 20+00

END CONSTRUCTION
KY 841 SOUTHBOUND
STA. 26+87.44
END WIDENING

BEGIN PAVED DITCH TYPE 1
STA. 25+35.30
(KY841SB)

BEGIN PAVED DITCH TYPE 1
STA. 25+39.00
(KY841SB)

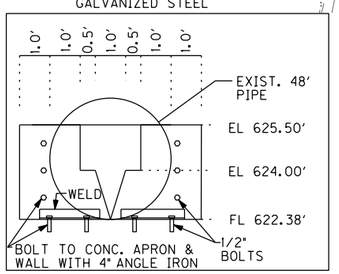
LINE "DC841S71"
CURVE "DC841S71"-1
INSTALL WEIR OVER EXISTING PIPE (SEE DETAIL BELOW)
EX-A1-1
EXIST. 48" CMP
Start of O&M at start of concrete pavement
30:1 BARRIER TAPER N 80° 39' 19.00" W
DITCH 1A
STORM
18" PIPE
S4-A1-1
EXIST. 48" CMP
STA. 25+87.44
END GIBRALTAR CABLE BARRIER SYSTEM
RC
EX-A1-2
STA. 26+58.94
TIE TO EXIST GUARDRAIL
GUARDRAIL
HIGH TENSION POST AND CABLE BARRIER
STA. 26+71.42
END GUARDRAIL
BEGIN END TREATMENT TYPE 2A
END TREATMENT TYPE 2A

END PAVED DITCH TYPE 1
STA. 26+87.44 (KY841SB)
STA. 10+00 RAMP LINE "DC841S71" =
STA. 11+20.64, 49.33 LT. LINE "KY841"
CONST. CLASS IV CHANNEL LINING
CONST. 4" OVERLAY
STA. 11+35.60 (KY841) RC
SLOPE LIMITS
EXIST. R/W
DITCH 1-L
S4-A1-3
NOISE BARRIER N5
GUARDRAIL
SPRINGDALE RD
TEMP. EASEMENT FOR SLOPE CONST.
KY 841 SOUTHBOUND
N 80° 39' 19.00" W
LINE "KY841"
50" MEDIAN BARRIER TYPE 14A OR 14B (RBM-050)
18" PIPE
S4-A1-4
70:1 TAPER
KY 841 NORTHBOUND
STA. 12+95.36, 26.33' RT
BEGIN 70:1 TAPER
DITCH 1-R
STA. 26+87.44, 12.00' RT
END 30:1 BARRIER TAPER
TEMP. EASEMENT FOR DITCH AND SLOPE CONST.
EXIST. R/W
SLOPE LIMITS

MATCH LINE STA. 24+50
MATCH LINE STA. 21+00

BEGIN CONSTRUCTION
KY 841
STA. 11+20.60

PROPOSED 1/2" WEIR
PLATE A-36 HOT DIPPED
GALVANIZED STEEL

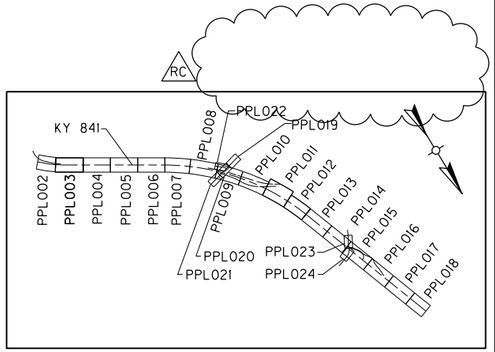


CURVE "DC841S71"-1 DATA
PI STA = 12+49.67
N = 100,228.7307
E = 56,520.0721
Δ = 14° 13' 52.22" (RT)
D = 2° 51' 53.24"
R = 2,000.00'
L = 496.76'
T = 249.67'
E = 15.52'
e = MATCH EXISTING
D.S. = 45 MPH

CURVE "KY841SB"-1 DATA
PI STA = 19+58.81
N = 100,184.7636
E = 57,008.9655
Δ = 17° 04' 22.39" (LT)
D = 1° 21' 31.58"
R = 4,740.00'
L = 1,412.42'
T = 711.48'
E = 53.10'
e = MATCH EXISTING
D.S. = N/A

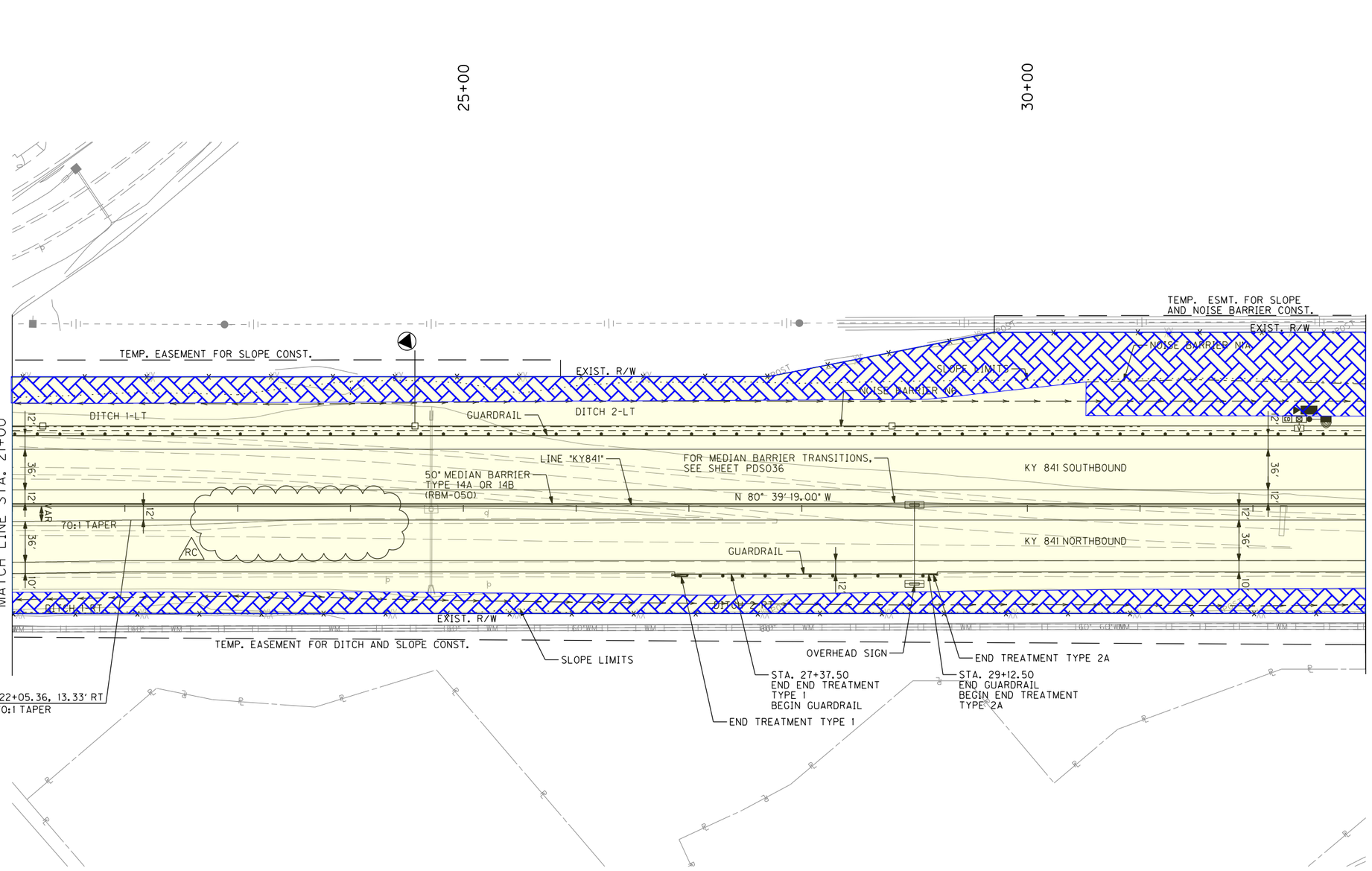
NOTES:
1. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS
2. BARRIER OVER S4-A1-4 HAS REDUCED REBAR COVER OF 1.3" CLR.
RC

RECORD DRAWING
The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4
EECT PROJECT LIMITS



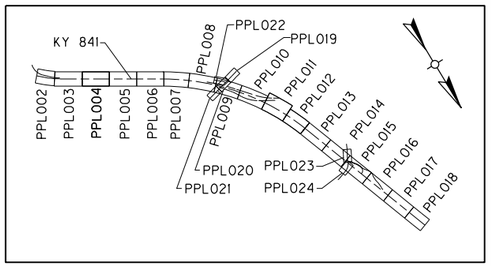
0' 50' 100'

NOTES:

1. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.

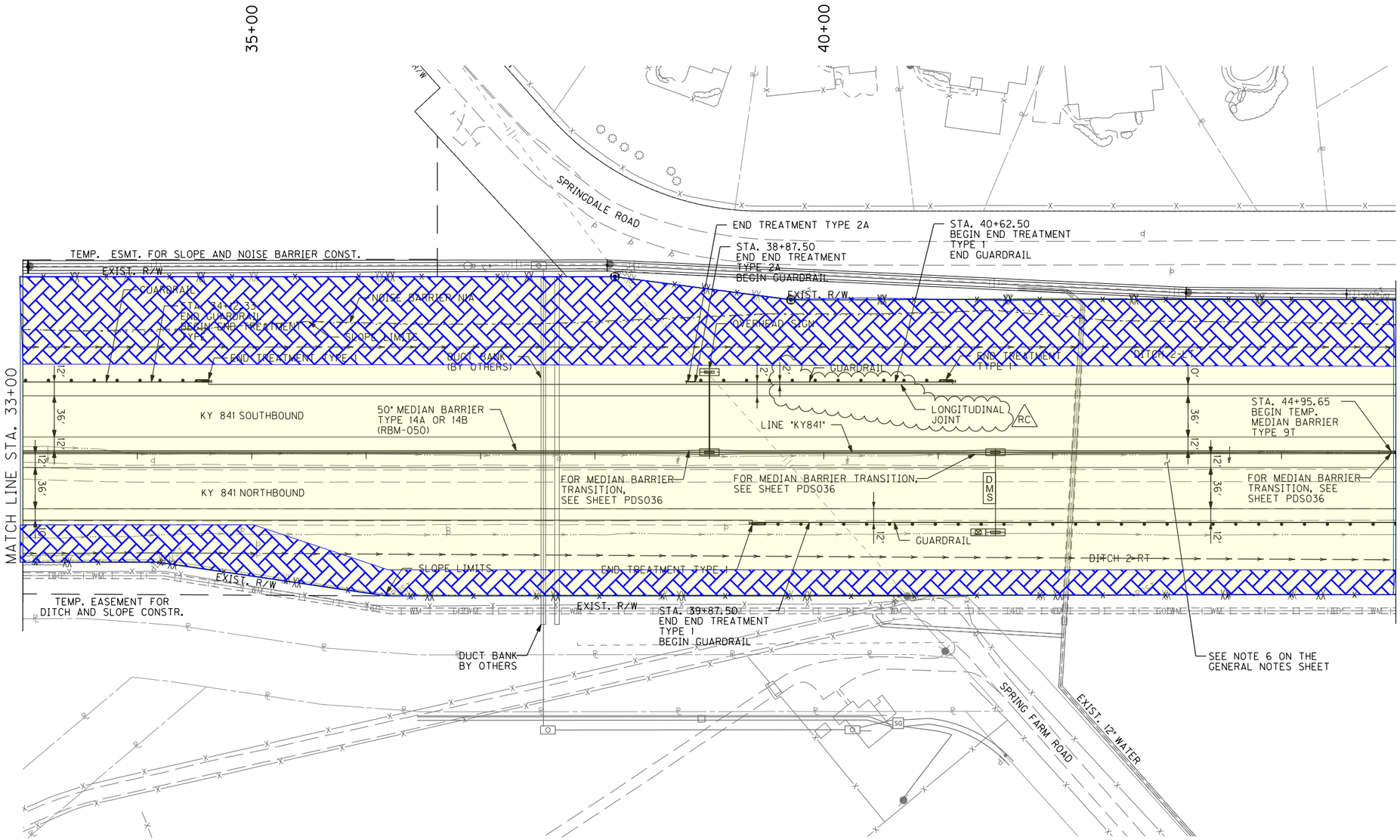


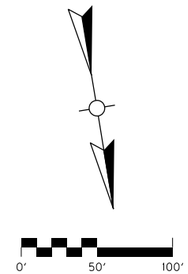
O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS

FILE NAME: ..\Plan & Profile\R4PPL004.DGN
USER: GileTE
DATE PLOTTED: 4/3/2017
Plot Driver: KYTC_COL.pltcfg
Pen Table: KYTC_COL-Half.tbl
MicroStation v8.11.9.459



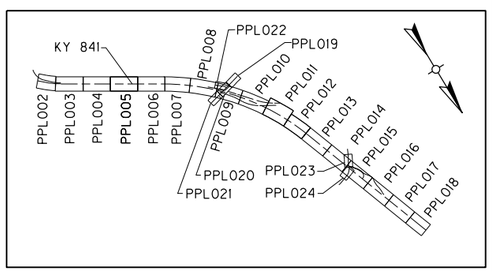


NOTES:

1. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



- O&M Limits (General)
- O&M Limits (Bridge Only)
- O&M Limits (Tunnel Only)
- Long cut/low maintenance grass
- Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS

S4-A1-9
STA. 48+70.77, (107.00' LT.) (KY841)
30" CONC. HEADWALL 0° SKEW

S4-A1-5
STA. 55+00.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(RDB-240-01)

S4-A1-6
STA. 55+00.00, (94.37' LT.) (KY841)
METAL END SECTION TYPE 3

S4-A1-5A
STA. 55+70.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(RDB-240-01)

S4-A1-5B
STA. 55+70.00, (91.92' LT.) (KY841)
METAL END SECTION TYPE 3

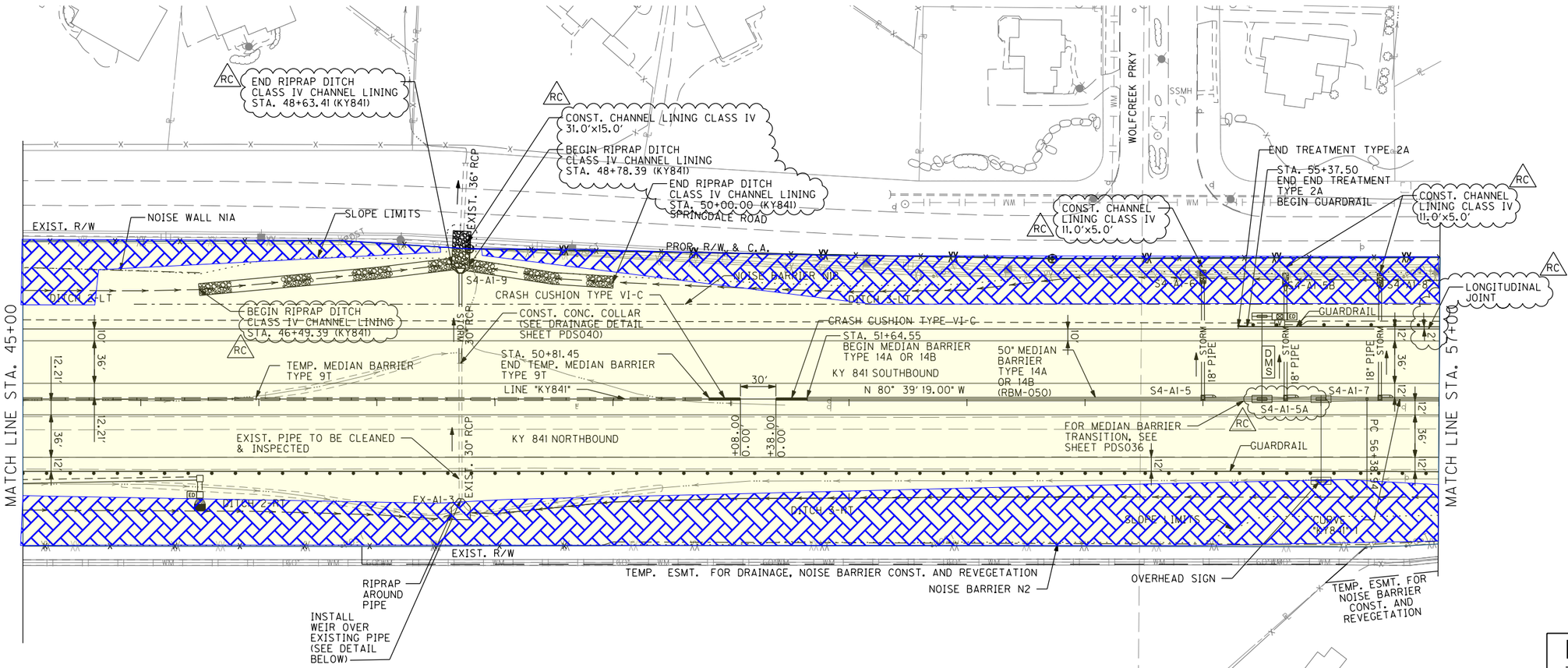
S4-A1-7
STA. 56+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(RDB-240-01)

S4-A1-8
STA. 56+50.00, (91.67' LT.) (KY841)
METAL END SECTION TYPE 3

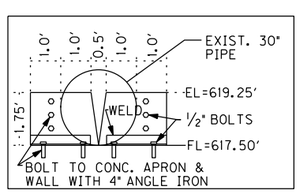
50+00

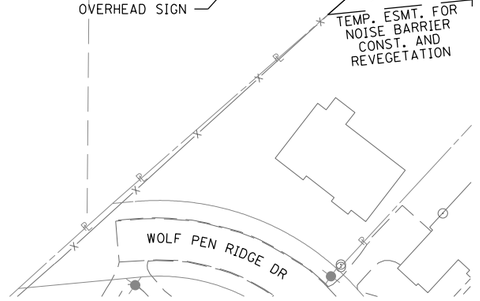
55+00

0' 50' 100'



PROPOSED ½" WEIR PLATE
A-36 HOT DIPPED
GALVANIZED STEEL





CURVE "KY841"-1 DATA

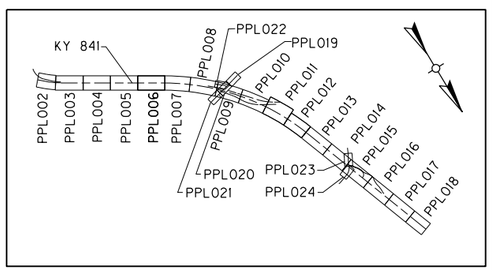
PI STA	= 80+12.13
N	= 101,436.9480
E	= 49,481.6934
Δ	= 26° 11' 43.48" (RT)
D	= 0° 33' 42.20"
R	= 10,200.00'
L	= 4,663.40'
T	= 2,373.18'
E	= 272.44'
e	= 2.20%
D.S.	= 70 MPH

NOTES:

1. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS

RECORD DRAWING

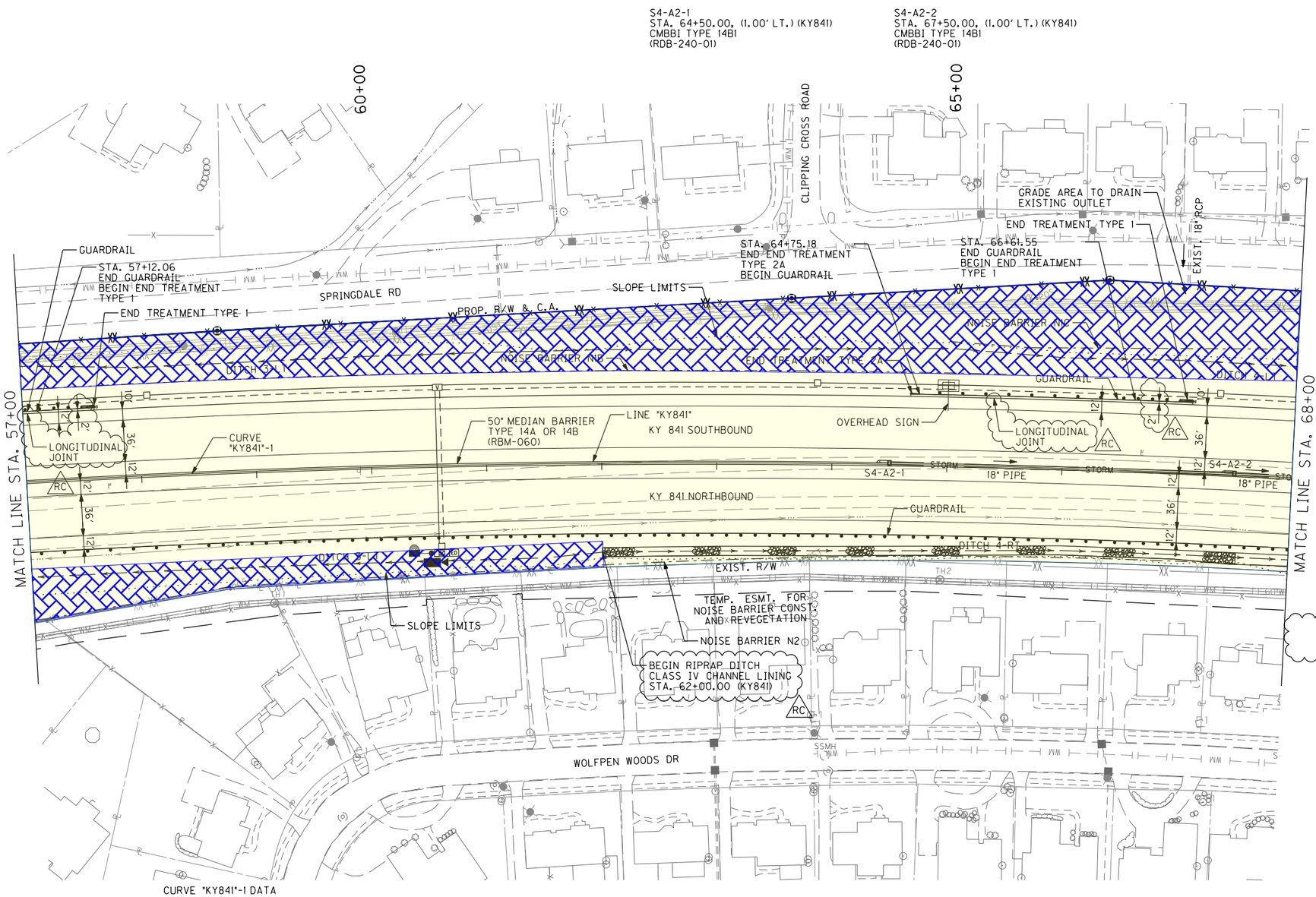
The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS



CURVE "KY841"-1 DATA
PI STA = 80+12.13
N = 101,436.9480
E = 49,481.6934
Δ = 26° 11' 43.48" (RT)
D = 0° 33' 42.20"
R = 10,200.00'
L = 4,663.40'
T = 2,373.18'
E = 272.44'
e = 2.20%
D.S. = 70 MPH

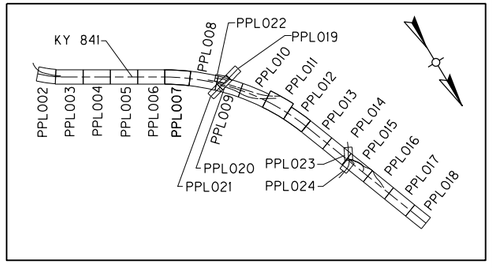
0' 50' 100'

NOTES:

1. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



Long cut/low maintenance grass
Short cut/high maintenance grass
O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)

03.4_Attachment_B-4

EECT PROJECT LIMITS

S4-A2-3
STA. 70+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(PDS054)

S4-A2-4
STA. 70+50.00, (72.24' RT.) (KY841)
DROP BOX INLET TYPE 1

S4-A2-5
STA. 73+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(PDS054)

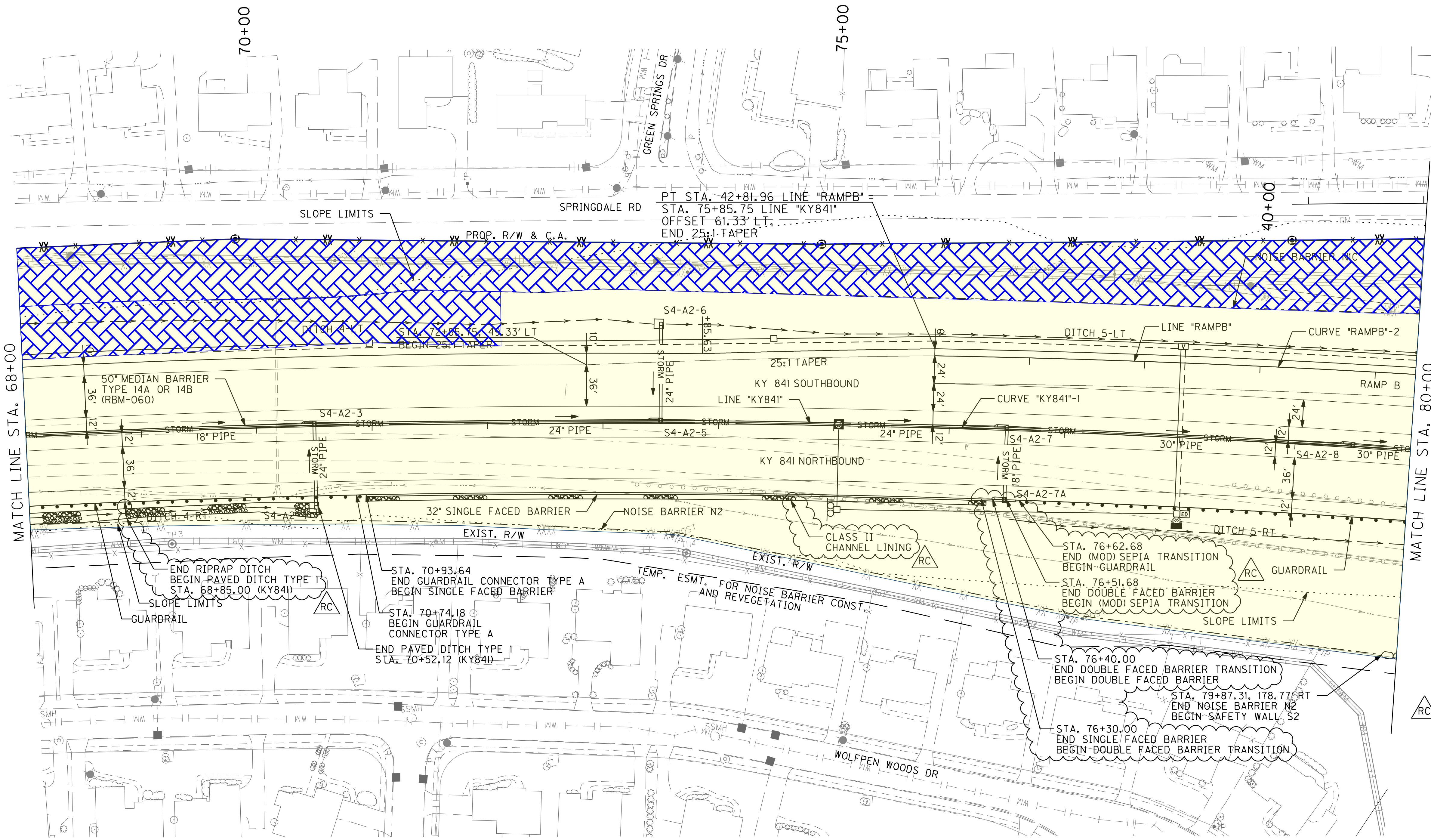
S4-A2-6
STA. 73+50.00, (85.09' LT.) (KY841)
DROP BOX INLET TYPE 1

S4-A2-7
STA. 76+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(RDB-240-01)

S4-A2-7A
STA. 76+50.00, (61.46' RT.) (KY841)
CMBBI TYPE 9B1
(RDB-230-08)

S4-A2-8
STA. 79+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1
(RDB-240-01)

0' 50' 100'



RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.

NOTES:

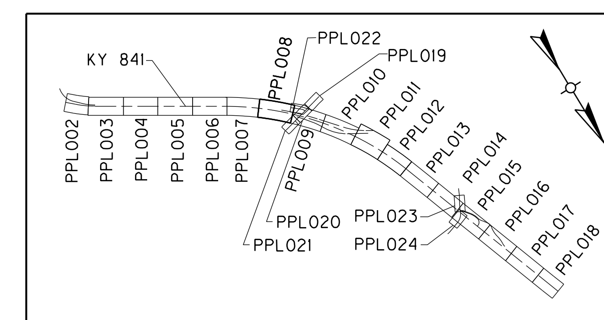
1. SEE PDS035 FOR TRANSITION DETAILS FROM SINGLE-FACED BARRIER TO CMBBI
2. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS
3. SEE PDS037 FOR (MOD) SEPIA TRANSITION DETAILS. (RC)

CURVE "KY841"-1 DATA

PI STA	= 80+12.13
N	= 101,436.9480
E	= 49,481.6934
Δ	= 26° 11' 43.48" (RT)
D	= 0° 33' 42.20"
R	= 10,200.00'
L	= 4,663.40'
T	= 2,373.18'
E	= 272.44'
e	= 2.20%
D.S.	= 70 MPH

CURVE "RAMPB-2" DATA

PI STA	= 36+09.64
N	= 101,718.4604
E	= 49,288.1386
Δ	= 7° 30' 39.36" (LT)
D	= 0° 33' 28.03"
R	= 10,272.00'
L	= 1,346.56'
T	= 674.25'
E	= 22.10'
e	= 2.20%
D.S	= 50 MPH



▭	O&M Limits (General)
▨	O&M Limits (Bridge Only)
▨	O&M Limits (Tunnel Only)
▨	Long cut/low maintenance grass
▨	Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS

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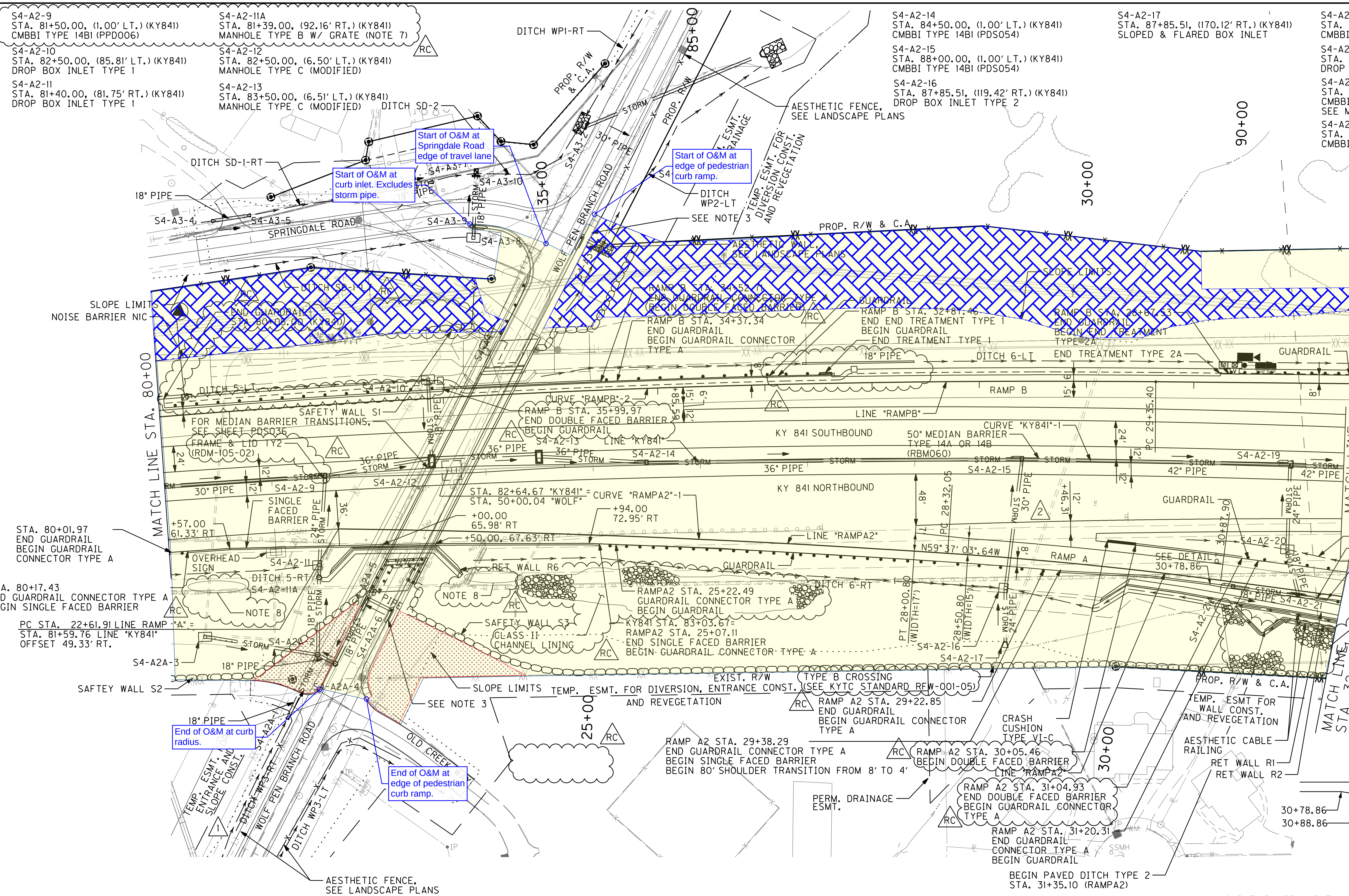
Plot Driver: KYTC_COL.pltcfg
Pen Table: KYTC_COL-Half.tbl
MicroStation v8.11.9.459

FILE NAME: ...\Plan & Profile\R4PPL009.DGN

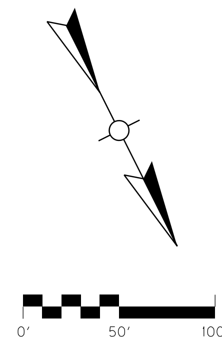
USER: GileTE
DATE PLOTTED: 4/3/2017

Plot Driver: KYTC_COL.pltcfg
Pen Table: KYTC_COL-Half.tbl

MicroStation v8.11.9.459



S4-A2-9
STA. 81+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1 (PPD006)
S4-A2-10
STA. 82+50.00, (85.81' LT.) (KY841)
DROP BOX INLET TYPE 1
S4-A2-11
STA. 81+40.00, (81.75' RT.) (KY841)
DROP BOX INLET TYPE 1
S4-A2-11A
STA. 81+39.00, (92.16' RT.) (KY841)
MANHOLE TYPE B W/ GRATE (NOTE 7)
S4-A2-12
STA. 82+50.00, (6.50' LT.) (KY841)
MANHOLE TYPE C (MODIFIED)
S4-A2-13
STA. 83+50.00, (6.51' LT.) (KY841)
MANHOLE TYPE C (MODIFIED)
S4-A2-14
STA. 84+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1 (PDS054)
S4-A2-15
STA. 88+00.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1 (PDS054)
S4-A2-16
STA. 87+85.51, (119.42' RT.) (KY841)
DROP BOX INLET TYPE 2
S4-A2-17
STA. 87+85.51, (170.12' RT.) (KY841)
SLOPED & FLARED BOX INLET
S4-A2-19
STA. 90+50.00, (1.00' LT.) (KY841)
CMBBI TYPE 14B1 (PDS054)
S4-A2-20
STA. 90+50.00, (78.21' RT.) (KY841)
DROP BOX INLET TYPE 1
S4-A2-21
STA. 31+60.95, (4.00' RT.) (RAMP A2)
CMBBI TYPE 9A1 (NOTE 5)
SEE MODIFIED OCRDB-230-08
S4-A2-21A
STA. 31+00.00, (4.00' RT.) (RAMP A2)
CMBBI TYPE 9B1 (NOTE 5)
Start of O&M at Springdale Road edge of travel lane
Start of O&M at curb inlet. Excludes storm pipe.
Start of O&M at edge of pedestrian curb ramp.
End of O&M at curb radius.
End of O&M at edge of pedestrian curb ramp.
DITCH WP1-RT
DITCH SD-2
DITCH SD-1-RT
18" PIPE
SPRINGDALE ROAD
WOLF PEN BRANCH ROAD
PROP. R/W & C.A.
AESTHETIC FENCE, SEE LANDSCAPE PLANS
AESTHETIC WALL, SEE LANDSCAPE PLANS
DITCH WP2-LT
SEE NOTE 3
TEMP. ESMT. FOR DIVERSION CONST. AND REVEGETATION
SLOPE LIMITS
NOISE BARRIER NIC
END GUARDRAIL STA. 80+05.00 (KY841)
MATCH LINE STA. 80+00
STA. 80+01.97 END GUARDRAIL BEGIN GUARDRAIL CONNECTOR TYPE A
STA. 80+17.43 END GUARDRAIL CONNECTOR TYPE A BEGIN SINGLE FACED BARRIER
PC STA. 22+61.91 LINE RAMP "A" = STA. 81+59.76 LINE "KY841" OFFSET 49.33' RT.
SAFTEY WALL S2
SAFETY WALL S1
SAFETY WALL S3
FOR MEDIAN BARRIER TRANSITIONS, SEE SHEET PDS036
FRAME & LID TY2 (RDM-105-02)
RAMP B STA. 34+52.71 END GUARDRAIL CONNECTOR TYPE A BEGIN DOUBLE FACED BARRIER
RAMP B STA. 34+37.34 END GUARDRAIL BEGIN GUARDRAIL CONNECTOR TYPE A
RAMP B STA. 32+87.46 END END TREATMENT TYPE 1 BEGIN GUARDRAIL
END TREATMENT TYPE 1
RAMP B STA. 28+67.53 END GUARDRAIL BEGIN END TREATMENT TYPE 2A
END TREATMENT TYPE 2A
RAMP B STA. 35+99.97 END DOUBLE FACED BARRIER BEGIN GUARDRAIL
CURVE "RAMPB"-2
LINE "RAMPB"
LINE "KY841"
KY 841 SOUTHBOUND
KY 841 NORTHBOUND
50" MEDIAN BARRIER TYPE 14A OR 14B (RBM060)
CURVE "KY841"-1
STA. 82+64.67 "KY841" = STA. 50+00.04 "WOLF"
CURVE "RAMPA2"-1
LINE "RAMPA2"
N59° 37' 03".64W
RAMPA2 STA. 25+22.49 GUARDRAIL CONNECTOR TYPE A BEGIN GUARDRAIL
KY841 STA. 83+03.67= RAMPA2 STA. 25+07.11 END SINGLE FACED BARRIER BEGIN GUARDRAIL CONNECTOR TYPE A
CLASS II CHANNEL LINING
RET WALL R6
NOTE 8
OVERHEAD SIGN
DITCH 5-LT
DITCH 5-RT
DITCH 6-LT
DITCH 6-RT
DITCH RA1-LT
GUARDRAIL
SEE DETAIL 30+78.86
SEE DETAIL 31+78.78
RAMP A2 STA 31+88.78 END SING FACE BARRIER BEG GUARD RAIL CONN TYPE A
MATCH LINE STA. 27+50 "RAMP B"
MATCH LINE STA. 91+00
MATCH LINE STA. 32+00 "RAMP A2"
EXIST. R/W
TEMP. ESMT. FOR DIVERSION, ENTRANCE CONST. AND REVEGETATION
TYPE B CROSSING (SEE KYTC STANDARD RFW-001-05)
RAMP A2 STA. 29+22.85 END GUARDRAIL BEGIN GUARDRAIL CONNECTOR TYPE A
RAMP A2 STA. 29+38.29 END GUARDRAIL CONNECTOR TYPE A BEGIN SINGLE FACED BARRIER BEGIN 80' SHOULDER TRANSITION FROM 8' TO 4'
CRASH CUSHION TYPE VI-C
RAMP A2 STA. 30+05.46 BEGIN DOUBLE FACED BARRIER
RAMP A2 STA. 31+04.93 END DOUBLE FACED BARRIER BEGIN GUARDRAIL CONNECTOR TYPE A
RAMP A2 STA. 31+20.31 END GUARDRAIL CONNECTOR TYPE A BEGIN GUARDRAIL
BEGIN PAVED DITCH TYPE 2 STA. 31+35.10 (RAMPA2)
PERM. DRAINAGE ESMT.
PROP. R/W & C.A.
TEMP. ESMT FOR WALL CONST. AND REVEGETATION
AESTHETIC CABLE RAILING
RET WALL R1
RET WALL R2
OLD CREEK WAY
DITCH WP3-RT
DITCH WP3-LT
TEMP. ESMT. ENTRANCE AND SLOPE CONST.
AESTHETIC FENCE, SEE LANDSCAPE PLANS
35+00
85+00
30+00
90+00
25+00
RC



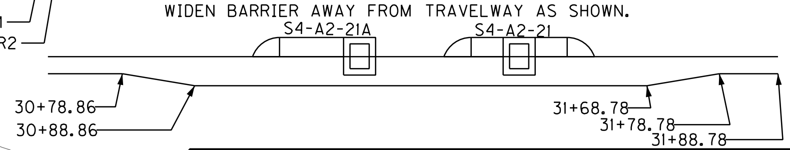
RECORD DRAWING

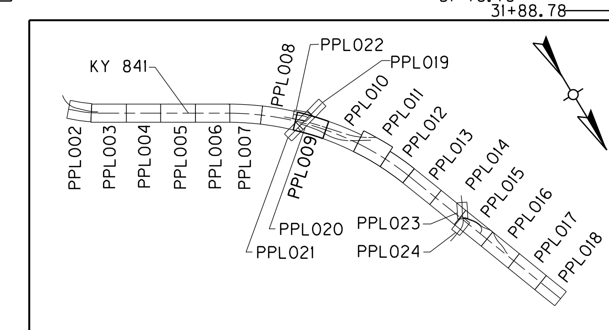
The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.

NOTE:

1. THE BARRIER SECTIONS BETWEEN THESE FOUR POINTS:
   STA. 80+57.00 61.33' RT
   STA. 82+00.00 65.98' RT
   STA. 82+50.00 67.63' RT
   STA. 83+94.00 72.95' RT
   ARE TO BE CAST AS TANGENT PIECES.
2. FOR RETAINING WALL LAYOUT, SEE STRUCTURE SHEETS.
3. SEE SHEETS PL019, PL020, PL021 & PL022 FOR WOLF PEN ROAD AND SPRINGDALE ROAD DRAINAGE.
4. SEE SHEET PDS005 FOR TAPER INFORMATION.
5. SEE PDS035 FOR TRANSITION DETAILS FROM SINGLE-FACED BARRIER TO CMBBI
6. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS.
7. SEE SHEET PDS060 FOR ROCK REPLACEMENT DETAILS.
8. SEE SHEET PDS052A FOR HORIZONTAL ROCK SEAM REPLACEMENT DETAILS.

TRANSITION FROM SINGLE TO DOUBLE FACED BARRIER IN 10'. WIDEN BARRIER AWAY FROM TRAVELWAY AS SHOWN.





CURVE "RAMPA2"-1 DATA

PI STA	= 25+32.21
N	= 101,931.19
E	= 49,192.54
Δ	= 3° 03' 00.93" (RT)
D	= 0° 34' 03.68"
R	= 10,092.80'
L	= 537.25'
T	= 268.72'
E	= 3.58'
e	= 2.20%
D.S.	= 70 MPH

CURVE "RAMPA2"-2 DATA

PI STA	= 29+60.02
N	= 102,147.63
E	= 48,823.37
Δ	= 3° 50' 15.31" (RT)
D	= 1° 29' 59.60"
R	= 3,820.00'
L	= 255.86'
T	= 127.98'
E	= 2.14'
e	= 3.00%
D.S.	= 50 MPH

CURVE "KY841"-1 DATA

PI STA	= 80+12.13
N	= 101,436.9480
E	= 49,481.6934
Δ	= 26° 11' 43.48" (RT)
D	= 0° 33' 42.20"
R	= 10,200.00'
L	= 4,663.40'
T	= 2,373.18'
E	= 272.44'
e	= 2.20%
D.S.	= 70 MPH

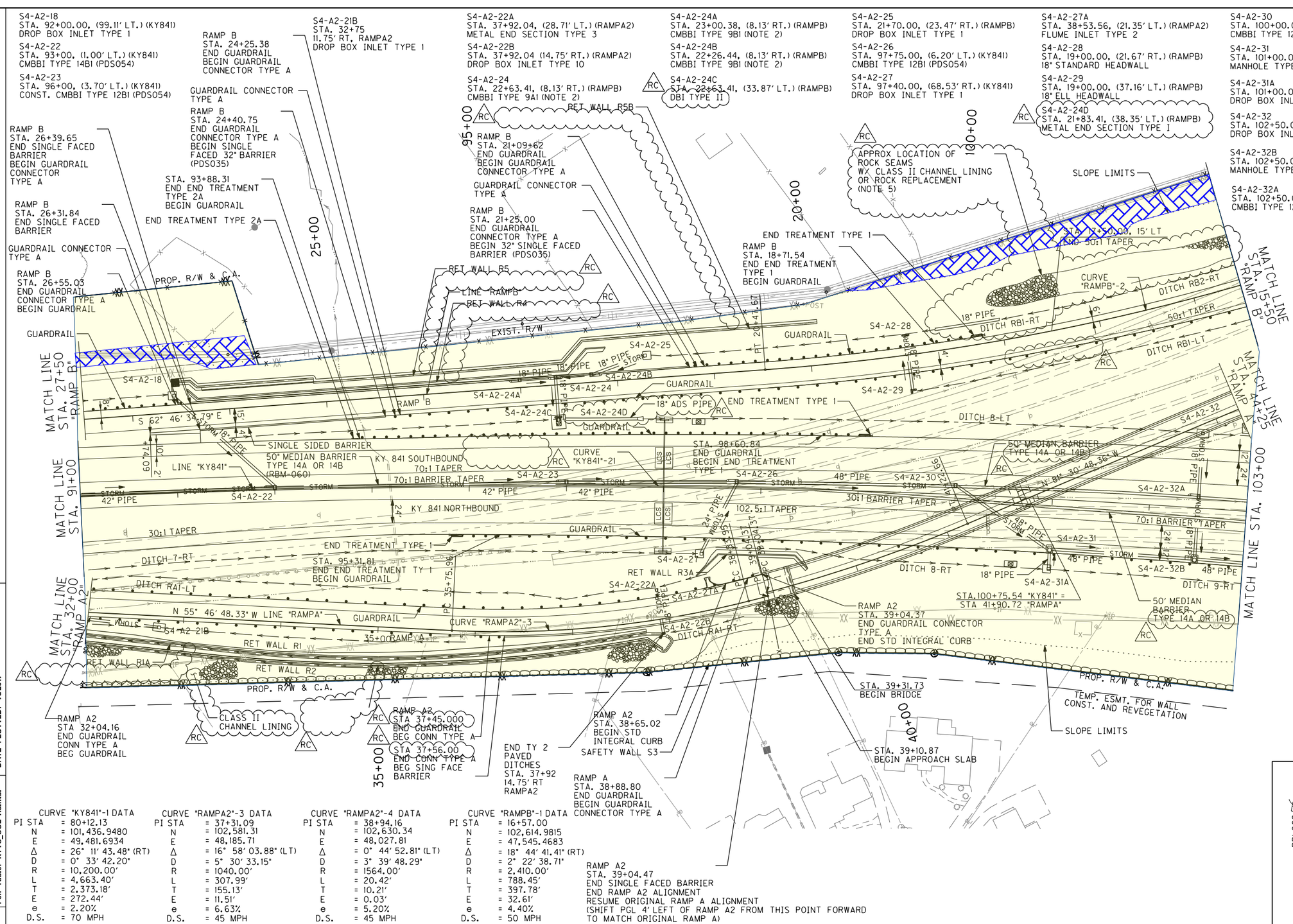
CURVE "RAMPB-2" DATA

PI STA	= 36+09.64
N	= 101,718.4604
E	= 49,288.1386
Δ	= 7° 30' 39.36" (LT)
D	= 0° 33' 28.03"
R	= 10,272.00'
L	= 1,346.56'
T	= 674.25'
E	= 22.10'
e	= 2.20%
D.S	= 50 MPH

▭	O&M Limits (General)
▨	O&M Limits (Bridge Only)
▨	O&M Limits (Tunnel Only)
▩	Long cut/low maintenance grass
▦	Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS

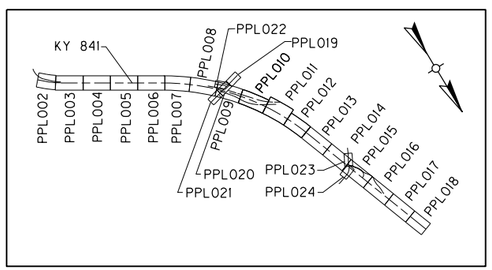


NOTE:

1. SEE SHEETS PDS06 THROUGH DS018 FOR ADDITIONAL TAPER INFORMATION.
2. SEE PDS035 FOR TRANSITION DETAILS FROM SINGLE FACED BARRIER TO CMBBI
3. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS
4. SEE PDS006 FOR BARRIER TRANSITION DETAILS
5. SEE SHEET PDS052A FOR HORIZONTAL ROCK SEAM REPLACEMENT DETAILS

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



CURVE "KY841"-1 DATA		CURVE "RAMPA2"-3 DATA		CURVE "RAMPA2"-4 DATA		CURVE "RAMPB"-1 DATA	
PI STA	= 80+12.13	PI STA	= 37+31.09	PI STA	= 38+94.16	PI STA	= 16+57.00
N	= 101,436.9480	N	= 102,581.31	N	= 102,630.34	N	= 102,614.9815
E	= 49,481.6934	E	= 48,185.71	E	= 48,027.81	E	= 47,545.4683
Δ	= 26° 11' 43.48" (RT)	Δ	= 16° 58' 03.88" (LT)	Δ	= 0° 44' 52.81" (LT)	Δ	= 18° 44' 41.41" (RT)
D	= 0° 33' 42.20"	D	= 5° 30' 33.15"	D	= 3° 39' 48.29"	D	= 2° 22' 38.71"
R	= 10,200.00'	R	= 1040.00'	R	= 1564.00'	R	= 2,410.00'
L	= 4,663.40'	L	= 307.99'	L	= 20.42'	L	= 788.45'
T	= 2,373.18'	T	= 155.13'	T	= 10.21'	T	= 397.78'
E	= 272.44'	E	= 11.51'	E	= 0.03'	E	= 32.61'
e	= 2.20%	e	= 6.63%	e	= 5.20%	e	= 4.40%
D.S.	= 70 MPH	D.S.	= 45 MPH	D.S.	= 45 MPH	D.S.	= 50 MPH

O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS

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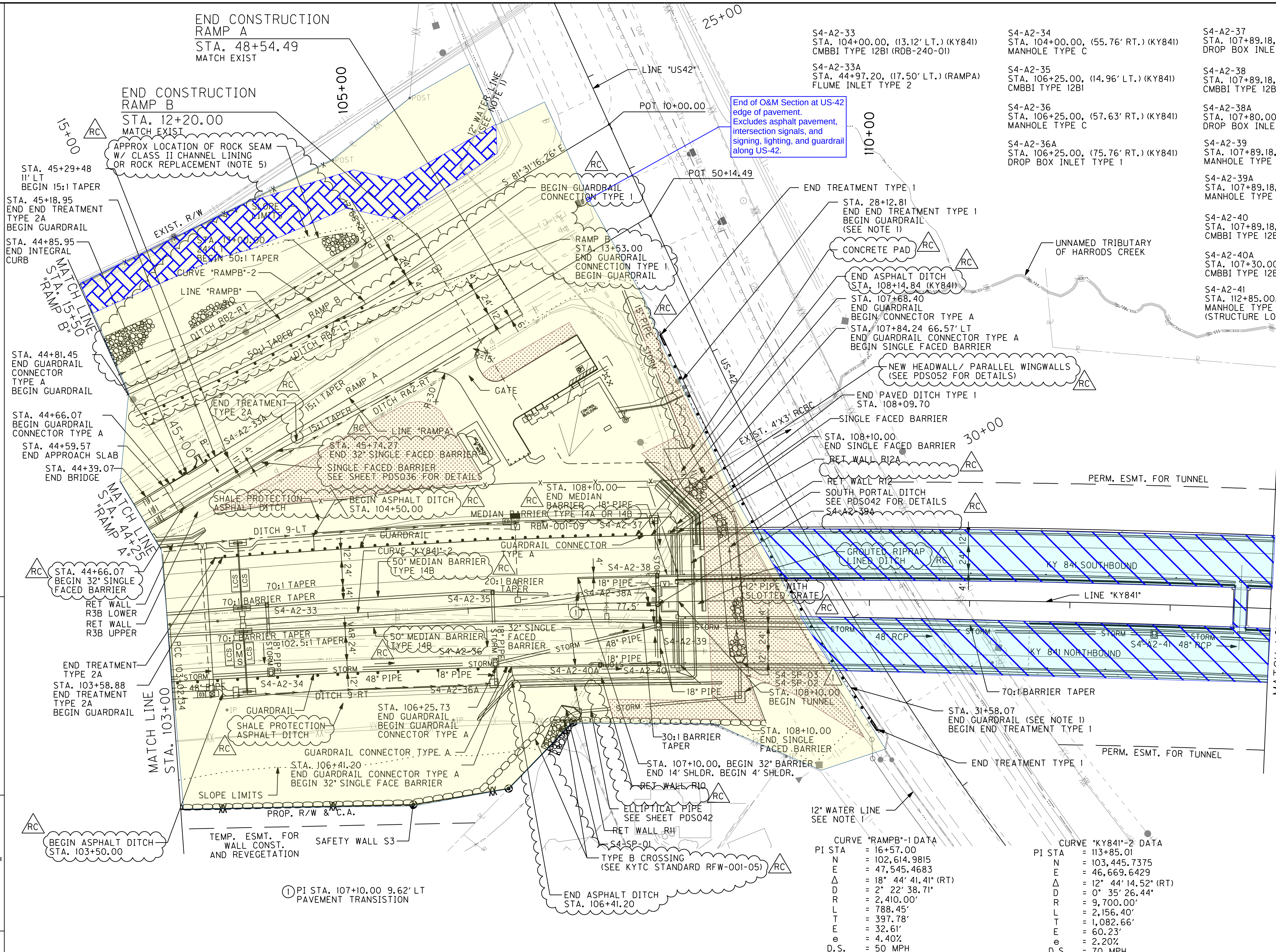


END CONSTRUCTION RAMP A
STA. 48+54.49
MATCH EXIST
END CONSTRUCTION RAMP B
STA. 12+20.00
MATCH EXIST
APPROX LOCATION OF ROCK SEAM W/ CLASS II CHANNEL LINING OR ROCK REPLACEMENT (NOTE 5)
STA. 45+29+48 11' LT BEGIN 15:1 TAPER
STA. 45+18.95 END END TREATMENT TYPE 2A BEGIN GUARDRAIL
STA. 44+85.95 END INTEGRAL CURB
MATCH LINE STA. 15+50 "RAMP B"
STA. 44+81.45 END GUARDRAIL CONNECTOR TYPE A BEGIN GUARDRAIL
STA. 44+66.07 BEGIN GUARDRAIL CONNECTOR TYPE A
STA. 44+59.57 END APPROACH SLAB
STA. 44+39.07 END BRIDGE
MATCH LINE STA. 44+25 "RAMP A"
STA. 44+66.07 BEGIN 32" SINGLE FACED BARRIER
RET WALL R3B LOWER
RET WALL R3B UPPER
END TREATMENT TYPE 2A
STA. 103+58.88 END TREATMENT TYPE 2A BEGIN GUARDRAIL
MATCH LINE STA. 103+00
BEGIN ASPHALT DITCH STA. 103+50.00
LINE "US42"
POT 10+00.00
End of O&M Section at US-42 edge of pavement. Excludes asphalt pavement, intersection signals, and signing, lighting, and guardrail along US-42.
POT 50+14.49
12" WATER LINE (SEE NOTE 1)
EXIST. R/W
BEGIN GUARDRAIL CONNECTION TYPE I
RAMP B STA. 13+53.00 END GUARDRAIL CONNECTION TYPE I BEGIN GUARDRAIL
BEGIN 50:1 TAPER
CURVE "RAMPB"-2
LINE "RAMPB"
DITCH RB2-RT
DITCH RB2-LT
50:1 TAPER
15:1 TAPER RAMP A
DITCH RA2-RT
END TREATMENT TYPE 2A
LINE "RAMPA"
STA. 45+74.27 END 32" SINGLE FACED BARRIER
SINGLE FACED BARRIER SEE SHEET PDS036 FOR DETAILS
GATE
SHALE PROTECTION ASPHALT DITCH
BEGIN ASPHALT DITCH STA. 104+50.00
STA. 108+10.00 END MEDIAN BARRIER
MEDIAN BARRIER TYPE 14A OR 14B
RBM-001-09
DITCH 9-LT
GUARDRAIL
CURVE "KY841"-2
GUARDRAIL CONNECTOR TYPE A
50" MEDIAN BARRIER TYPE 14B
20:1 BARRIER TAPER
70:1 TAPER
70:1 BARRIER TAPER
102.5:1 TAPER
32" SINGLE FACED BARRIER
DITCH 9-RT
STA. 106+25.73 END GUARDRAIL BEGIN GUARDRAIL CONNECTOR TYPE A
GUARDRAIL CONNECTOR TYPE A
STA. 106+41.20 END GUARDRAIL CONNECTOR TYPE A BEGIN 32" SINGLE FACE BARRIER
SLOPE LIMITS
PROP. R/W & C.A.
TEMP. ESMT. FOR WALL CONST. AND REVEGETATION
SAFETY WALL S3
1 PI STA. 107+10.00 9.62' LT PAVEMENT TRANSISTION
END TREATMENT TYPE 1
STA. 28+12.81 END END TREATMENT TYPE 1 BEGIN GUARDRAIL (SEE NOTE 1)
CONCRETE PAD
END ASPHALT DITCH STA. 108+14.84 (KY841)
STA. 107+68.40 END GUARDRAIL BEGIN CONNECTOR TYPE A
STA. 107+84.24 66.57' LT END GUARDRAIL CONNECTOR TYPE A BEGIN SINGLE FACED BARRIER
NEW HEADWALL/ PARALLEL WINGWALLS (SEE PDS052 FOR DETAILS)
END PAVED DITCH TYPE 1 STA. 108+09.70
SINGLE FACED BARRIER
STA. 108+10.00 END SINGLE FACED BARRIER
RET WALL R12A
RET WALL R12
SOUTH PORTAL DITCH SEE PDS042 FOR DETAILS
UNNAMED TRIBUTARY OF HARRODS CREEK
EXIST. 4'X3' RCBC
PERM. ESMT. FOR TUNNEL
GROUTED RIPRAP LINED DITCH
KY 841 SOUTHBOUND
LINE "KY841"
12" PIPE WITH SLOTTED GRATE
48" RCP
KY 841 NORTHBOUND
70:1 BARRIER TAPER
STA. 108+10.00 BEGIN TUNNEL
STA. 31+58.07 END GUARDRAIL (SEE NOTE 1) BEGIN END TREATMENT TYPE 1
30:1 BARRIER TAPER
STA. 108+10.00 END SINGLE FACED BARRIER
STA. 107+10.00, BEGIN 32" BARRIER END 14' SHLDR. BEGIN 4' SHLDR.
RET WALL R10
ELLIPTICAL PIPE SEE SHEET PDS042
RET WALL R11
S4-SP-01
TYPE B CROSSING (SEE KYTC STANDARD RFW-001-05)
END ASPHALT DITCH STA. 106+41.20
12" WATER LINE SEE NOTE 1
END TREATMENT TYPE 1
MATCH LINE STA. 114+00

S4-A2-33	STA. 104+00.00, (13.12' LT.) (KY841) CMBBI TYPE 12B1 (RDB-240-01)
S4-A2-33A	STA. 44+97.20, (17.50' LT.) (RAMPA) FLUME INLET TYPE 2
S4-A2-34	STA. 104+00.00, (55.76' RT.) (KY841) MANHOLE TYPE C
S4-A2-35	STA. 106+25.00, (14.96' LT.) (KY841) CMBBI TYPE 12B1
S4-A2-36	STA. 106+25.00, (57.63' RT.) (KY841) MANHOLE TYPE C
S4-A2-36A	STA. 106+25.00, (75.76' RT.) (KY841) DROP BOX INLET TYPE 1
S4-A2-37	STA. 107+89.18, (82.60' LT.) (KY841) DROP BOX INLET TYPE 1
S4-A2-38	STA. 107+89.18, (26.44' LT.) (KY841) CMBBI TYPE 12B1 (RDB-240-01)
S4-A2-38A	STA. 107+80.00, (2.30' RT.) (KY841) DROP BOX INLET TYPE 11
S4-A2-39	STA. 107+89.18, (23.00' RT.) (KY841) MANHOLE TYPE C
S4-A2-39A	STA. 107+89.18, (2.30' RT.) (KY841) MANHOLE TYPE A
S4-A2-40	STA. 107+89.18, (61.73' RT.) (KY841) CMBBI TYPE 12B1 (NOTE 3)
S4-A2-40A	STA. 107+30.00, (61.23' RT.) (KY841) CMBBI TYPE 12B1
S4-A2-41	STA. 112+85.00, (28.50' RT.) (KY841) MANHOLE TYPE C (STRUCTURE LOCATED INSIDE TUNNEL)
S4-SP-01	STA 107+10.00, (107.00' RT.) (KY841) HDWL 42" NON-CIRCULAR SKEW 45°
S4-SP-02	STA 108+70.00, (96.00' RT.) (KY841) DROP BOX INLET TYPE 7 4.5' x 4.5'
S4-SP-03	STA 108+70.00, (61.00' RT.) (KY841) HDWL 42" NON-CIRCULAR

0' 50' 100'

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.

NOTE:

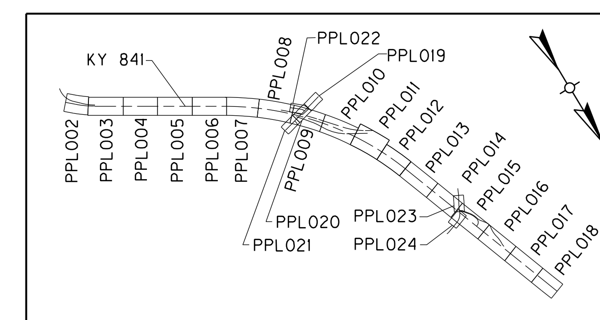
1. RELOCATED 12" WATER LINE CUTS ACROSS PROPOSED US 42 GUARDRAIL. CENTER RELOCATED WATERLINE BETWEEN TWO GUARDRAIL POSTS. ADJUST GUARDRAIL BEGIN / END LOCATIONS AS REQUIRED TO MISS THE WATERLINE. THE SHIFT SHALL BE LESS THAN 12.5'.
2. SEE SHEETS PDS007 FOR ADDITIONAL TAPER INFORMATION.
3. SEE PDS036 FOR TRANSITION DETAILS FROM SINGLE FACED BARRIER TO CMBBI
4. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS
5. SEE SHEET PDS052A FOR HORIZONTAL ROCK REPLACEMENT DETAILS.

CURVE "RAMPB"-1 DATA

PI STA	= 16+57.00
N	= 102,614.9815
E	= 47,545.4683
Δ	= 18° 44' 41.41" (RT)
D	= 2° 22' 38.71"
R	= 2,410.00'
L	= 788.45'
T	= 397.78'
E	= 32.61'
e	= 4.40%
D.S.	= 50 MPH

CURVE "KY841"-2 DATA

PI STA	= 113+85.01
N	= 103,445.7375
E	= 46,669.6429
Δ	= 12° 44' 14.52" (RT)
D	= 0° 35' 26.44"
R	= 9,700.00'
L	= 2,156.40'
T	= 1,082.66'
E	= 60.23'
e	= 2.20%
D.S.	= 70 MPH



O&M Limits (General)	Long cut/low maintenance grass
O&M Limits (Bridge Only)	Short cut/high maintenance grass
O&M Limits (Tunnel Only)	

03.4_Attachment_B-4

EECT PROJECT LIMITS

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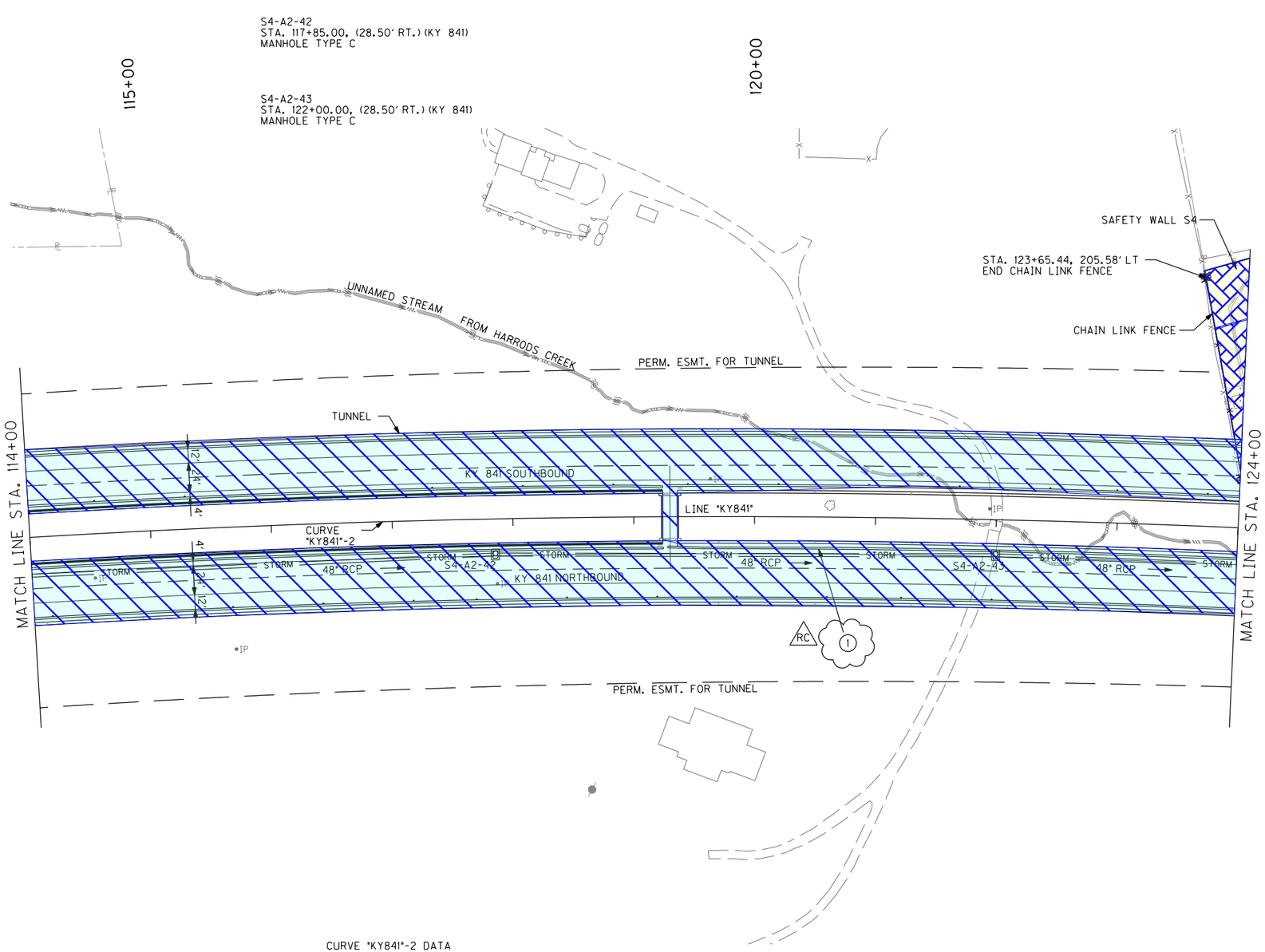


0' 50' 100'

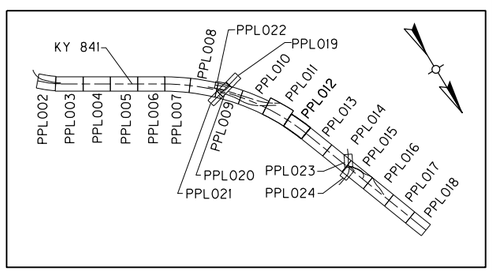
RC 1. 6" PERFORATED PIPE LOCATED BEHIND TRENCH CAP FROM STATION 119+34 TO 123+95. PIPE TO TIE TO CLOSEST FULL WIDTH TUNNEL CROSS DRAIN.

CURVE "KY841"-2 DATA

PI STA	= 113+85.01
N	= 103,445.7375
E	= 46,669.6429
Δ	= 12° 44' 14.52" (RT)
D	= 0° 35' 26.44"
R	= 9,700.00'
L	= 2,156.40'
T	= 1,082.66'
E	= 60.23'
e	= 2.20%
D.S.	= 70 MPH

RECORD DRAWING

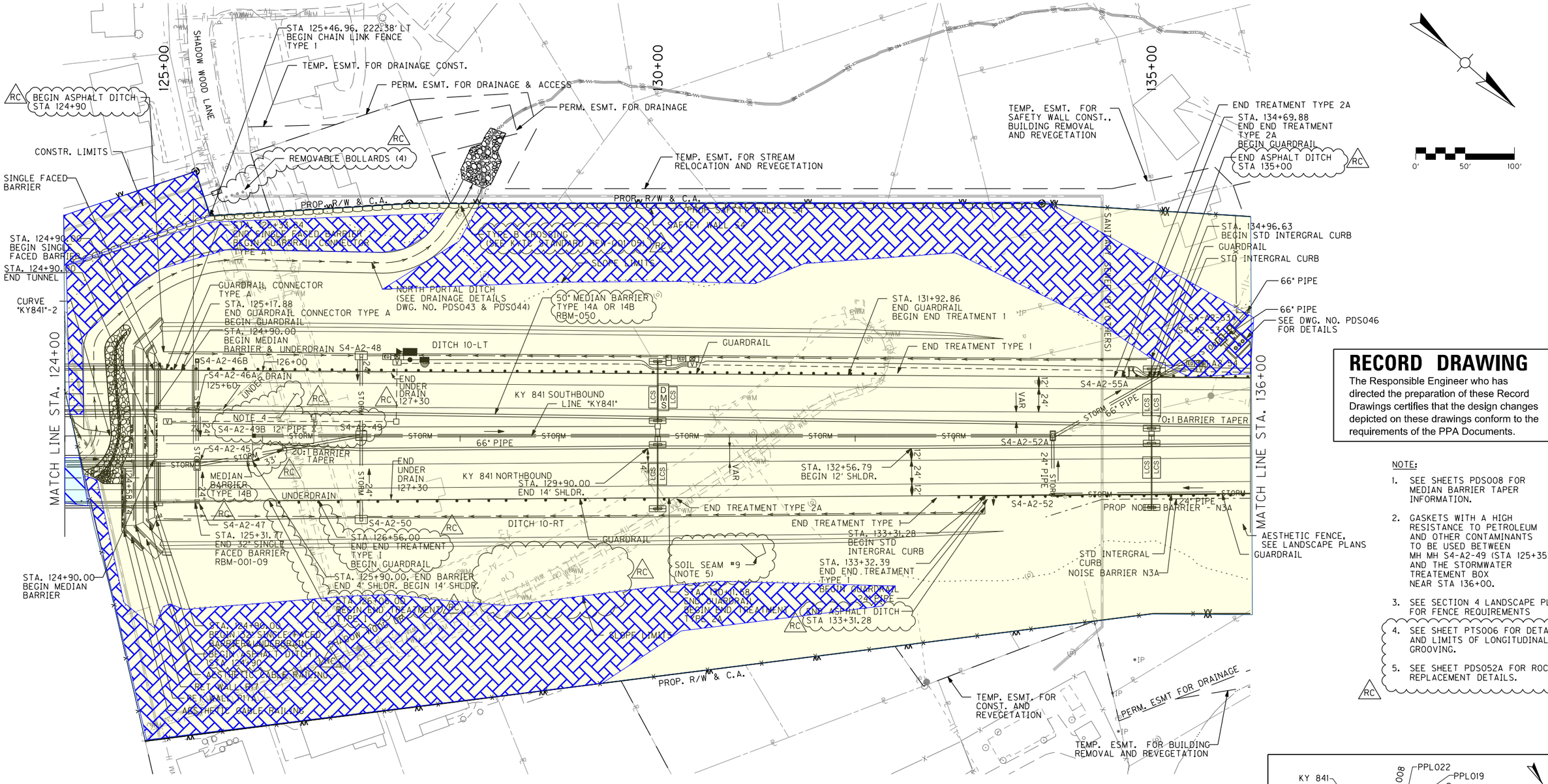
The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS



RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.

NOTE:

1. SEE SHEETS PDS008 FOR MEDIAN BARRIER TAPER INFORMATION.
2. GASKETS WITH A HIGH RESISTANCE TO PETROLEUM AND OTHER CONTAMINANTS TO BE USED BETWEEN MH MH S4-A2-49 (STA 125+35) AND THE STORMWATER TREATEMENT BOX NEAR STA 136+00.
3. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS
4. SEE SHEET PTS006 FOR DETAILS AND LIMITS OF LONGITUDINAL GROOVING.
5. SEE SHEET PDS052A FOR ROCK REPLACEMENT DETAILS.

RC

CURVE "KY841"-2 DATA
PI STA = 113+85.01
N = 103,445.7375
E = 46,669.6429
Δ = 12° 44' 14.52" (RT)
D = 0° 35' 26.44"
R = 9,700.00'
L = 2,156.40'
T = 1,082.66'
E = 60.23'
e = 2.20%
D.S. = 70 MPH

S4-A2-45
STA. 125+33.84, (28.48' RT.) (KY841)
MANHOLE TYPE C

S4-A2-46A
STA. 125+33.84, (26.15' LT.) (KY841)
CMBBI TYPE 12B1 (RDB 240-01)

S4-A2-47
TUNNEL DRAINAGE INLET
(SEE PDS064 & TUNNEL
MECHANICAL DRAWING)

S4-A2-48
STA. 127+00.00, (81.25' LT.) (KY841)
DROP BOX INLET TYPE I

S4-A2-49
STA. 127+00.00, (0.00' LT.) (KY841)
DROP BOX INLET TYPE 7 (MODIFIED)

S4-A2-50
STA. 127+00.00, (81.25' RT.) (KY841)
DROP BOX INLET TYPE I

S4-A2-52
STA. 134+00.00, (59.43' RT.) (KY841)
CURB INLET TYPE B

S4-A2-52A
STA. 134+00.00, (0.00' RT.) (KY841)
MANHOLE TYPE C

S4-A2-53
STA. 135+70.20, (97.08' LT.) (KY841)
SPECIAL MANHOLE (BYPASS STRUCTURE)

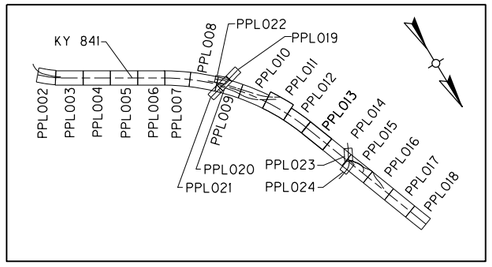
S4-A2-53A
STA. 135+80.65, (108.19' LT.) (KY841)
SPECIAL MANHOLE (MOTORIZED VALVE)

S4-A2-46B
STA. 125+33.84, (76.00' LT.) (KY841)
JUNCTION BOX TYPE B 2.5'x2.5'x3.0'

S4-A2-54
STORMWATER TREATMENT SYSTEM & SPILL
CONTAINMENT SYSTEM (VORTECHS PCI421 OR
APPROVED EQUAL BY THE ENGINEER OF RECORD.)
(SEE DRAINAGE DETAILS PDS046 FOR ADDITIONAL
INFORMATION)

S4-A2-55A
STA. 134+85.37, (57.71' LT.) (KY841)
FLUME INLET TYPE 2

S4-A2-49B
STA. 125+91.18, (0.00' LT.) (KY841)
DROP BOX INLET TYPE 15



O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4
EECT PROJECT LIMITS

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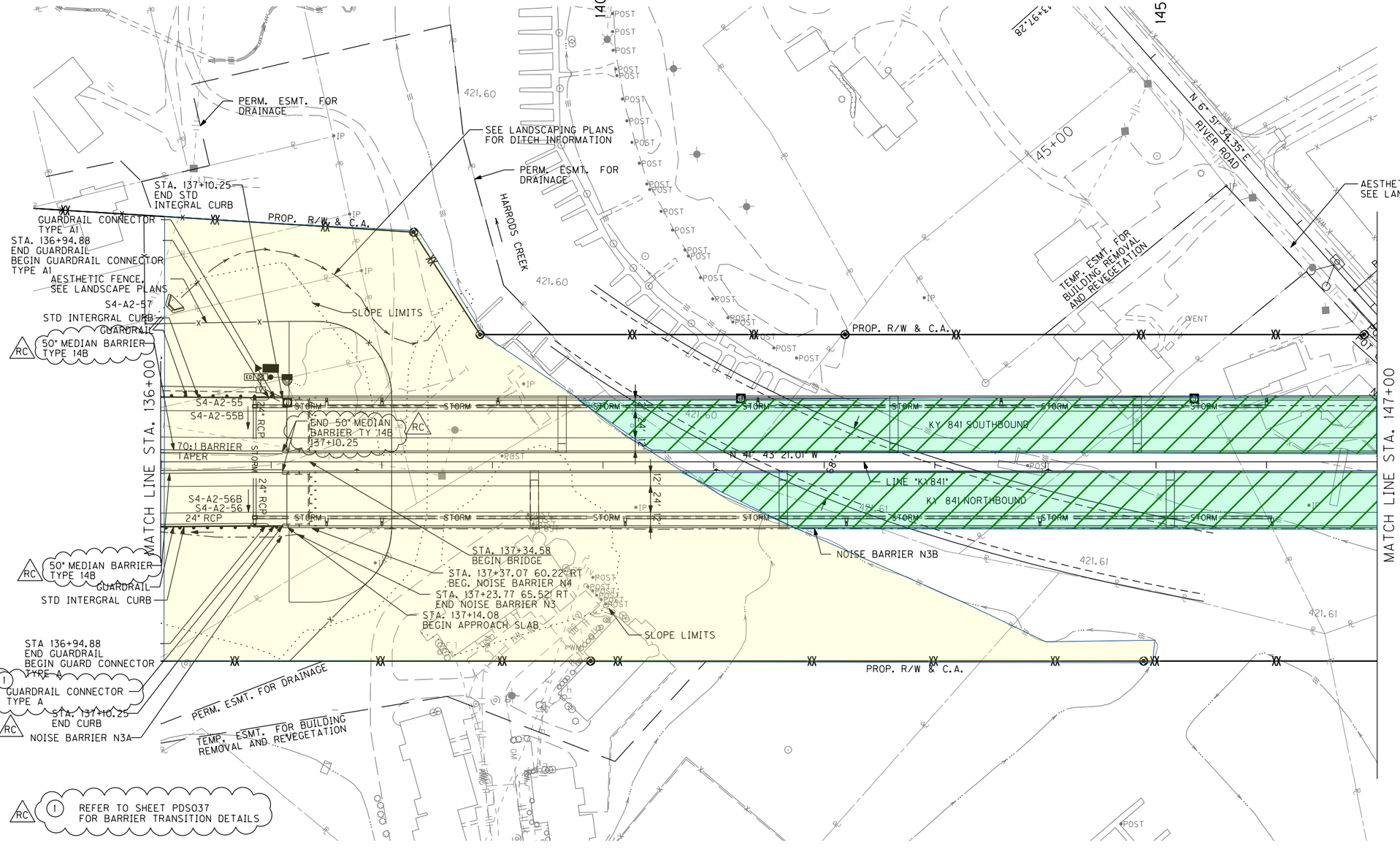
USER: GileTE
DATE PLOTTED: 4/4/2017
Plot Driver: KYTC_COL.pltcfg
Pen Table: KYTC_COL-Half.tbl
MicroStation v8.11.9.459



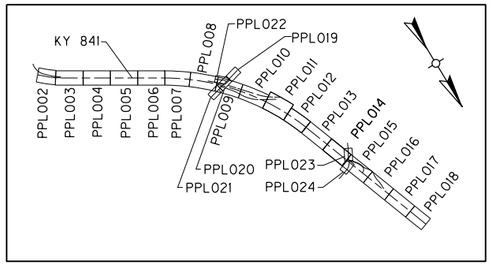
0' 50' 100'

NOTE:

1. SEE SHEETS DS009 FOR MEDIAN BARRIER TAPER INFORMATION.
2. SEE HARRODS CREEK BRIDGE PACKAGE FOR BRIDGE SCUPPER LOCATIONS.
3. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



S4-A2-53B
STA. 137+00.00, (143.72' RT.) (KY841)
MANHOLE TYPE C

S4-A2-55
STA. 136+85.00, (57.33' LT.) (KY841)
CURB BOX INLET TYPE B

S4-A2-55B
STA. 136+85.00, (50.25' LT.) (KY841)
JUNCTION BOX

S4-A2-56
STA. 136+85.00, (57.33' RT.) (KY841)
CURB BOX INLET TYPE B

S4-A2-56B
STA. 136+85.00, (50.25' RT.) (KY841)
JUNCTION BOX

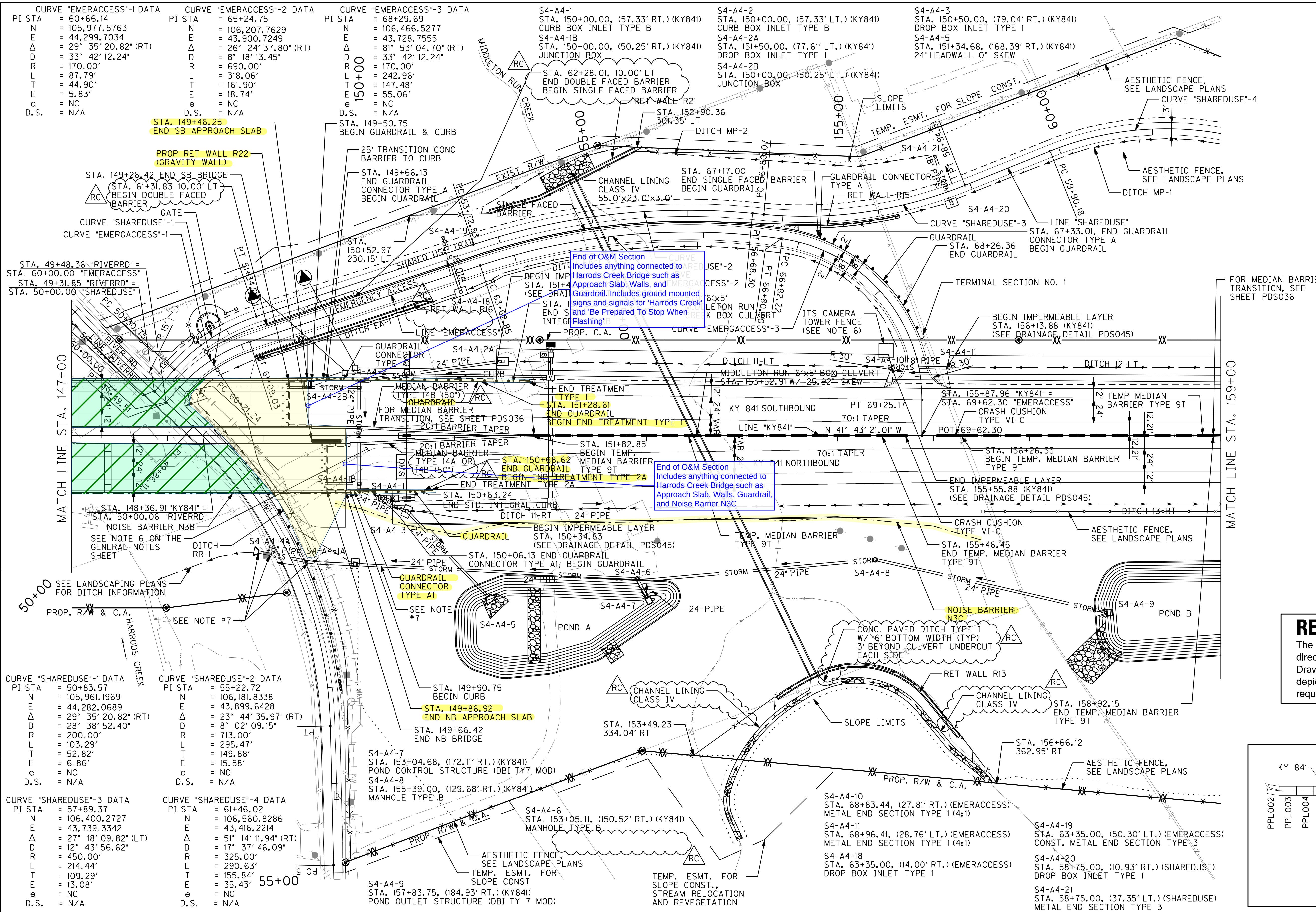
S4-A2-57
STA. 136+10.00, (140.00' LT.) (KY841)
66" HEADWALL 0° SKEW

O&M Limits (General)
O&M Limits (Bridge Only)
O&M Limits (Tunnel Only)
Long cut/low maintenance grass
Short cut/high maintenance grass

03.4_Attachment_B-4

EECT PROJECT LIMITS

FILE NAME: ...\Plan & Profile\R4PPL014.DGN
USER: GlleTE
DATE PLOTTED: 4/3/2017
Plot Driver: KYTC_COL.pltcfg
Pen Table: KYTC_COL-Half.tbl
MicroStation v8.11.9.459

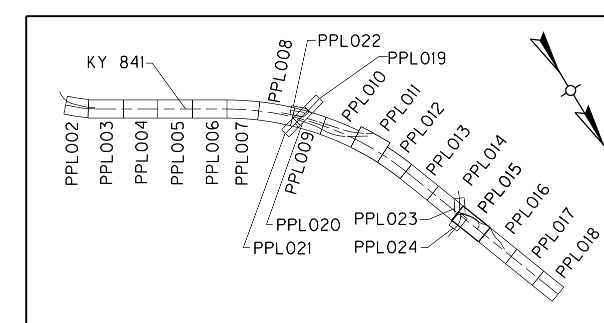


NOTES:

1. TEMPORARY BARRIER IS TO BE PLACED THROUGH THE STATION RANGE SHOWN ON THE PLANS. UP TO ONE ADDITIONAL 20′ SECTION MAY BE PLACED TO MEET THE MINIMUM REQUIREMENT.
2. TO INSURE THAT TEMPORARY BARRIER CLOSES THE GAP BETWEEN PERMANENT BARRIER PRECISELY, AT ONE END OF THE PERMANENT BARRIER RUN, DO NOT CAST THE FINAL 25′ OF PERMANENT BARRIER OR THE 50:1 TRANSITION UNTIL ATTENUATORS AND ALL TEMPORARY BARRIER IS PLACED.
3. THE FIRST SECTION OF TEMPORARY BARRIER SHALL BE PINNED TO THE PAVEMENT AT BOTH ENDS. PINS SHALL BE REMOVEABLE.
4. AT THE END OF BOTH PERMANENT TRANSITIONS, CAST THE CONNECTION DETAIL SHOWN IN RBM-115-08 INTO THE PERMANENT BARRIER TO CONNECT IT TO THE TEMPORARY BARRIER.
5. SEE SHEET PDS010 FOR ADDITIONAL TAPER INFORMATION.
6. SEE ITS PLANS FOR DETAILS.
7. SEE SHEET PPL023 FOR RIVER ROAD DRAINAGE.
8. KYTC STANDARD RBM-115-09 FOR TEMPORARY MEDIAN BARRIER
9. SEE SECTION 4 LANDSCAPE PLANS FOR FENCE REQUIREMENTS

RECORD DRAWING

The Responsible Engineer who has directed the preparation of these Record Drawings certifies that the design changes depicted on these drawings conform to the requirements of the PPA Documents.



O&M Limits (General)	Long cut/low maintenance grass
O&M Limits (Bridge Only)	Short cut/high maintenance grass
O&M Limits (Tunnel Only)	

03.4_Attachment_B-4

EECT PROJECT LIMITS

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Building & Room HVAC												
Building & Room HVAC	Portal Vaults	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*		X								8.3.4
Building & Room HVAC	Tunnel Control Building	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*		X								8.3.4
Building & Room HVAC	Portal Vaults	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality.			X							8.3.4
Building & Room HVAC	Tunnel Control Building	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality.			X							8.3.4
Building & Room HVAC	Portal Vaults	Schedule a full inspection and service with an HVAC technician					X					8.3.4
Building & Room HVAC	Tunnel Control Building	Schedule a full inspection and service with an HVAC technician					X					8.3.4
Building & Room HVAC		Perform a complete visual inspection and functional test of facility heating systems in preparation for freezing temperatures.									X	8.3.4
Drainage												
Drainage	Sluice Gate	1. The Sluice Gate, seals, stem, and motor should be thoroughly inspected for corrosion, damage, or tampering. 2. Exercise the gate in at least one full cycle 3. When open, the seal should be inspected for damage or wear. 4. When closed, the seal should be inspected to ensure full closure with no obstructions				X						8.3.3
Drainage	Hydrocarbon Detection	BI-ANNUAL SERVICE: • Open the system panel, check for any signs of damage, excessive moisture, or loose connections • Clean the panel interior with a lint free rag				X						8.3.3.1
Drainage	Vortechs Basin	INSPECTION Use a stadia rod or similar tool to measure the following: 1. The water depth to the top of sediment in the swirl chamber 2. The floatable layer thickness against the baffle wall Measurements #1 and #2 should be recorded. The technical documents for Section 8.3.3.4 in APPENDIX A include a useful maintenance record sheet for this purpose.				X						8.3.3.4
Drainage	Exhaust Fans	ANNUAL INSPECTION • Inspect exhaust fans for any damage or signs of wear • Tighten connections as needed					X					8.3.3.2
Drainage	Hydrocarbon Detection	Recalibrate hydrocarbon detection system					X					8.3.3.1
Drainage	Hydrocarbon Detection	Replace the hydrocarbon detection system sensors as needed					X					8.3.3.1
Emergency Communication												
Emergency Communication	Radio Rebroadcast	QUARTERLY FILTER CHECK: 1. Clean the air filters at the equipment racks.			X							7.3.1
Emergency Communication	PA System	LOCAL BI-ANNUAL TEST 1. Review all pre-recorded messages saved in the system software. Verify for accuracy. 2. “Poll” and “Silent Test” all RTUs and confirm success. 3. Check all RTUs for damage or loose connections. Address as necessary.				X						7.3.4
Emergency Communication	PA System	OFFSITE BI-ANNUAL TEST (at TRIMARC) 1. Review all pre-recorded messages saved in the system software. Verify for accuracy. 2. Ping or “Query” all other offsite CCUs to confirm they are up and				X						7.3.4

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Emergency Communication	Radio Rebroadcast	BI-ANNUAL TESTING AND SERVICE: 1. Clean the air filters at the equipment racks. 2. Check the function of the cooling fans at the equipment racks. If the cooling fans are not working properly, the subsystem should be shut down until they are repaired. 3. Visually inspect the exterior and interior of the equipment racks. Check the physical condition of the enclosures and their components. Address any dust accumulation inside the enclosure. Check for and address any loose connections, damaged cables, or damaged power supply units. 4. Review and address any active alarms. 5. Make backups of all network and software files				X						7.3.1 & 7.3.2 Items 5 through 8 can be performed remotely by Canam technicians. In order to do this, the TCB workstation must be temporarily connected to the internet to allow for remote assistance. Consult TRIMARC Network Engineers before scheduling a remote service inspection with Canam.
Emergency Communication	Telephone System	BI-ANNUAL EMERGENCY CALL BOX TESTING AND SERVICE: 1. Inspect each box for damage. 2. Inspect call box gaskets for damage or leakage. 3. Wipe each box down with a damp rag and cleaning solution. 4. Check each phone, verify dial tone. 5. Use the emergency call button on each phone, verify that it auto-dials				X						7.3.3.2
Emergency Communication	WIZARD Broadcast	BI-ANNUAL TEST: Initiate a live message and any pre-recorded messages from the TCB unit, verify transmission from the Tunnel.				X						9.3.7
Emergency Power												
Emergency Power	Generator	WEEKLY STARTUP TEST • Can be pre-programmed to run remotely, Controller will send signals to offsite workstations of any alarms or malfunctions. • Can also be done locally at the Generator. Switch master switch to RUN, run for 30 minutes, then switch to OFF/RESET. Confirm that there are no	X									5.2.2.2
Emergency Power	Generator	WEEKLY INSPECTION • Inspect the Fuel System day tank level, main supply tank level, flexible lines and connections • Inspect and test fuel level switch • Inspect and test solenoid valve and transfer pump operation • Check for water in the fuel system, remove if needed • Check oil level in lubrication system • Check the Cooling System air cleaner, block heater operation, coolant levels,flexible hoses & connectors, water pump • Drain the condensate trap in the Exhaust System; Check for any leakage • Inspect the AC Electrical System, and test the Controller lamp • Inspect the Engine and its mounting supports	X									5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations
Emergency Power	Generator	MONTHLY INSPECTION AND SERVICE • Drain water from the fuel tank and water separator • Check the fan and alternator belts, replace as necessary • Inspect the battery charger operation, electrolyte level, and charge rate. • Test the battery SG and charge state; check its recharge after Engine Start • Remove battery corrosion, clean and dry the batteyr and rack • Inspect, clean, and test the circuit breakers and fuses, replace as needed		X								5.2.2.2
Emergency Power	Uninterruptible Power Sup	Check the dust filters on all UPS equipment - wash or replace as needed		X								5.2.2.3
Emergency Power	Generator	QUARTERLY INSPECTION: • Visually inspect the Generator nameplates, anchorage, and grounding. • Inspect for loose or contaminated connections and address as needed. • Check for chips or deterioration in the winding coating and recoat as needed. • Ensure that all warning and caution labels are intact and legible.			X							5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Emergency Power	Generator	QUARTERLY CLEANING & SERVICE: • Clean the Generator, removing all dust and debris. • Ensure that the air intake and exhaust are all clear. • Change the oil, coolant, water separator element & filters. • Replace any damaged or oil-soaked insulation. • Relubricate the bearings. • Adjust belt tension.			X							5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations
Emergency Power	Generator	QUARTERLY TEST: • Perform insulation resistance checks, phase rotation tests, & a vibration baseline tests. • Functionally test the engine shutdown. • Check alarms for low oil pressure, overtemperature, overspeed			X							5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations
Emergency Power	Generator	BI-ANNUAL SERVICE: • Check fuel supply, change if needed • Test the coolant temperature level • Inspect the flexible connectors of the Exhaust System • Check for and tighten any loose DC electrical connections • Test safety and alarm operations				X						5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations
Emergency Power	Generator	ANNUAL SERVICE • Inspect fuel piping; check the tank and vent lines for obstructions • Inspect and clean the Cooling System; including air ducts, louvers, heat exchangers, radiators • Test the Cooling System louver controls • Change the coolant • Check the water supply to the heat exchanger • Test for excessive back pressure in the Exhaust System • Visually inspect all hangers and supports • Tighten control and power wiring connections • Inspect and clean the main contacts at the transfer switch • Test all relays and voltage-sensing devices • Test the Engine injector pump and flow rate, pressure, and spray pattern • Inspect and clean all Engine ignition components					X					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations
Emergency Power	Generator	3 YEAR SERVICE • Check all valve clearances • Check all bolted connections; test bolt torque • Test wires and cables for insulation breakdown							X			5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations
Emergency Power	Automatic Transfer Switche	3 YEAR SERVICE 1. Completely de-energize the ATS. 2. Clean all contact surfaces. 3. Apply anti-ox grease where required. 4. Measure & record contact resistance. 5. Lubricate bearings, links, pins, and cams.							X			5.2.1.3
Fire Detection												
Fire Detection	Fire Alarm Control Panel	WEEKLY ALARM CHECK: Access the FACP either remotely through the TrueSite software [Section 6.7] or locally inside the TCB Control Room. Address any unresolved troubles or supervisories and reset the panel. The FACP must be completely cleared of	X									11.1.1
Fire Detection	Fire Alarm Control Panel	MONTHLY FACP INSPECTION: Access the FACP locally at the TCB Control Room. Inspect the panel for any signs of damage or tampering. Open the panel and check for any loose connections or other damage. Pull a pull station in the Tunnel and confirm that all visual and audible signals from both the FACP and SCADA initiate properly. Check the Event Printer in the Control Room for paper jams, low		X								11.1.1
Fire Detection	Sensors & Detectors	QUARTERLY DETECTOR INSPECTION: Inspect the smoke detectors in the TCB for any signs of damage or tampering. The Linear Heat Detection System consists of cabling, and does not have any detectors to inspect, however the heat detection panels should			X							11.1

Preventive Maintenance Schedule			Frequency									Notes & Reference
System	Sub-System		Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Fire Detection	Sensors & Detectors	BI-ANNUAL CALL BOX & PULL STATION TEST: Open each emergency call box, one at a time. Confirm that the alarms in both the FACP and SCADA initiate when the door was open. Hit the emergency call button, and confirm that the box dials directly to TRIMARC as programmed. Activate each pull station, one at a time. Confirm that the				X						11.1
Fire Detection	Sensors & Detectors	ANNUAL INSPECTION OF ALL EQUIPMENT AND PANELS: Walk down all equipment listed in Section 11.1. Open all detection panels and inspect for damage, corrosion, loose connections, or dust. Address as needed. Inspect every detector, sensor, pull station, and call box for					X					11.1
Fire Suppression												
Fire Suppression	Deluge Valves & Boxes	WEEKLY INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Verify that the valve and trim are adequately heated and protected. 3. Address any uncovered issues immediately.	X									11.2.2.2
Fire Suppression	TCB Fire Suppression Equipment	WEEKLY INSPECTION 1. Inspect the TCB Suppression riser. Verify that the Main Water Supply control valve is open and that all other valves are in their normal operating positions and appropriately secured. 2. Check the riser for any signs of mechanical damage, leakage, or corrosion. Perform maintenance as required. 3. Verify that the valves and trim are properly heated. Verify that the Tunnel	X									11.3.4
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	MONTHLY INSPECTION AND SERVICE 1. Verify the temperature inside the Fire Suppression Equipment room is well above freezing, and that the Freeze Protection System is running if the ambient temperature is below 50^{o}F. 2. Visually inspect the pumps for any signs of corrosion, damage, or tampering. 3. Visually inspect all gauges for any signs of damage or tampering. During the test, observe the gauges to confirm functionality. 4. Test the automatic start of the fire pumps by opening a test line to reduce the system pressure. 5. Start the pumps and check the pump suction, discharge, and bypass valves to ensure that they are open and piping is free of leaks. Record the observed pressures. Allow the pumps to run for at least 10 minutes. 6. Check the temperature and tightness of the shaft seal packing. Alight leakage is normal and indicates that water lubrication and cooling is adequate. 7. Check the pump bearings for overheating or signs of vibration. Check the bearing temperatures. 8. Check the lubrication of all moving parts, re-lubricate as needed. 9. Verify that the pump startups initiated the appropriate alarms at the offsite workstations. 10. Check the pump controller for alarm conditions, and confirm that the controller is back in AUTO before ending the inspection.		X								11.2.5.4
Fire Suppression	Fire Extinguishers	MONTHLY INSPECTION: 1. Take the extinguisher out of the cabinet. Invert it, and give it a gentle shake. This will prevent caking over time. 2. Make sure the hose and horn are unobstructed. 3. The gauge pressure must be in the “operable” range identified on the		X								11.8

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Fire Suppression	Foam System	QUARTERLY INSPECTION: 1. Inspect the equipment for any damage or wear. 2. Inspect the tanks, inlets, and outlets for any leakage. 3. Test the tank level indicators 4. Check the foam level trends. Outside of any suppression events, they should be holding steady. A gradual decrease in levels could indicate a leak in the tank, and a gradual increase in levels could indicate that water is infiltrating the system			X							11.2.6.3
Fire Suppression	TCB Fire Suppression Equipment	QUARTERLY INSPECTION 1. Perform the WEEKLY INSPECTION as usual. 2. Notify the AHJ, and then perform the "Water Flow Alarm Test." This test is detailed step by step in Chapter 6 of the document "11.3.2 Pre-Action Riser" of APPENDIX A.			X							11.3.4
Fire Suppression	Deluge Valves & Boxes	BI-ANNUAL INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Remove the Deluge System from service. Notify the AHJ before undertaking this step. It may be advisable to do this in sections, to avoid leaving the entire Tunnel unprotected at one time. 3. Exercise all valves, confirm proper clearance and movement. 4. Verify that the valve and trim are adequately heated and protected.				X						11.2.2.2
Fire Suppression	Clean Agent System	BI-ANNUAL MAINTENANCE 1. Inspect the equipment for any signs of damage or tampering. 2. Check the quantity and pressure of the clean agent containers.				X						11.6.1
Fire Suppression	Fire Hydrants	BI-ANNUAL INSPECTION - Conduct a routine inspection of hydrants, covering all points identified in AWWA M17 - Open the hydrants completely and flush for several minutes - Open and close valves to ensure proper operation - Remove caps and verify proper draining - Remove all people near to clear rust, corrosion, and debris				X						11.7
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	BI-ANNUAL INSPECTION AND SERVICE 1. Perform all the steps indicated in the "Monthly Inspection and Service" 2. Inspect the bearing packings and replace as necessary. 3. Take vibration readings on the bearing housings and compare these to previous readings.				X						11.2.5.4
Fire Suppression	TCB Fire Suppression Equipment	BI-ANNUAL SERVICE 1. Perform the WEEKLY INSPECTION and QUARTERLY INSPECTION as usual. 2. Put the system out of service. 3. Close the Main Water Supply control valve and the Priming Valve. Open the Auxiliary Drain Valve. Relieve the pressure in the chamber by opening the Emergency Release Valve. 4. Inspect all trim for signs of corrosion or blockage. Clean or replace as				X						11.3.4
Fire Suppression	Fire Extinguishers	ANNUAL INSPECTION: All fire extinguishers should be inspected and tagged by a qualified inspector annually					X					11.8
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	ANNUAL INSPECTION AND SERVICE 1. Perform all the steps indicated in the "Monthly Inspection and Service" and the "Bi-Annual Inspection and Service" 2. Remove the upper half of the pump casings - Inspect the pumps thoroughly for wear and replace parts as needed. 3. Check the wear ring clearances and replace as needed. 4. Remove any deposits or scaling. 5. Clean out the stuffing box piping. 6. Record the water flow measurements, suction readings, and discharge					X					AC Fire Pump O&M

Preventive Maintenance Schedule			Frequency									Notes & Reference
System	Sub-System		Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Fire Suppression	TCB Fire Suppression Equipment	ANNUAL INSPECTION 1. Perform the WEEKLY INSPECTION, QUARTERLY INSPECTION, and BI-ANNUAL SERVICE as usual. 2. Notify the AHJ, and then perform the "Annual Test." This test is detailed					X					11.3.4
Fire Suppression	Clean Agent System	ANNUAL MAINTENANCE This should be performed by a qualified technician. Contact Vulcan Fire Systems of Louisville, KY or a similarly qualified vendor for service. 1. Thoroughly inspect the system for any signs of damage or tampering. Examine the hoses closely for damage. 2. Check the quantity and pressure of the clean agent containers.					X					11.6.1
Fire Suppression	Backflow Preventer	Bring a certified contractor onsite to test the Plumbing and Fire Suppression Backflow Preventers.					X					11.10.1 Required by Louisville Water. WVC performed latest test on 2/1/2017
Fire Suppression	All Systems	In addition to the prescribed annual inspections of the equipment identified in the previous sub-sections, a full visual inspection should be performed on all: - Hangers and Supports - Bracing - Piping and Fittings - Sprinklers - Spare Parts - Signage The suppression systems should be flushed, and all automatic valves should be inspected for obstructions.					X					11.10.2
Fire Suppression	All Systems	Sprinklers should be tested every 10-20 years. Consult with KYTC supervision and the AHJ to determine the required frequency and method for sprinkler								X		11.10.3
Freeze Protection												
Freeze Protection	Freeze Protection System	MONTHLY SERVICE - Verify there are no system alarms - Drain the protection system regulator monthly. - If needed, clean the exterior of the equipment with a non-solvent cleaning		X								
Freeze Protection	Freeze Protection System	ANNUALLY 1. Calibrate the enclosure pressure indicator to 0". Then fully open the enclosure pressure control regulator to blow out any deposits around the tip of the valve and to ensure the vent is operating properly. 2. De-energize the system. 3. Check the stem packing nut, replace or tighten as required. 4. Carefully clean the flapper valve and vent body seats with warm soap and water, being careful not to extend the vent valve beyond its normal opening point or to exert any stress on the valve hinge.					X					11.4.3
General Electrical												
General Electrical	Motor Control Centers	Visual inspection of all associated equipment; Inspect bus & connections via infrared scanning					X					5.2.1.4
General Electrical	Panelboards	Conduct annual panelboard inspection per O&M instructions (APP A, Chapter 5.2.1.2.2): 1. Check for any accumulation of dust or dirt. Clean out the Panelboard using a brush, vacuum, or lint-free rag. Do not use a blower or compressed air. 2. Inspect all visible electrical joints and terminals in the bus and wiring system. 3. Inspect all conductors and connections to ensure they are clean and					X					5.2.1.2.2

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
General Electrical	Circuit Breakers	3 YEAR CIRCUIT BREAKER CHECK: 1. Clean each circuit breaker and its contact surfaces. 2. Lubricate & verify operation of all circuit breaker mechanisms. 3. Apply anti-ox grease to the main contacts. 4. Apply a current equal to 90-110% of the breaker's trip setting to verify proper pick-up of the tripping mechanism. 5. Record the breaker trip times; measure the contact resistance; and perform insulation resistance tests. 6. Address any issues that may be uncovered during testing.							X			5.4
General Electrical	Motor Control Centers	1. Completely de-energize the MCCs. 2. Clean the entire controller interior. 3. Check the bus connections for tightness. 4. Check the bus insulators for cracks and chips. 5. Clean, lubricate, and verify operation of all switches, relays, & devices. 6. Perform an insulation resistance test and PI test on the bus and motor feeder with the motor connected.							X			
Lighting												
Lighting		QUARTERLY LIGHTING TEST AND INSPECTION: 1. Switch the LED lighting through all 8 levels (Levels #1-#5 in Table, plus #1-#3 again in Contraflow configuration). Confirm that there are no burnt out or malfunctioning fixtures. 2. Test all non-automated fixtures, which should include the facility lighting and emergency exit fixtures. Confirm that there are no burnt out or malfunctioning fixtures. 3. Inspect all fixture anchors and supports. Identify and address any loose, damaged, or missing components. Identify and address any rust or other corrosion.			X							5.2.3.2
Lighting		Inspect and Clean the Luminance Sensors - The front window should be clear and free of dust, debris, or smears.			X							5.2.3.2
Lighting		Clean the light fixtures - Wipe off exterior dirt and debris with a soft, clean cloth. A mild detergent and water may be used if necessary.				X						5.2.3.2
Network & Controls												
Network & Controls		QUARTERLY INSPECTION: 1. Observe all network equipment, check for any local alarms or error messages. 2. Open cabinets to check for any damage, tampering, or loose connections.			X							6.10 Reference APPENDIX E SPARE PARTS - Section 6.10 The WVC-provided filters are all re-usable
Normal Power												
Normal Power	Switchboard	ANNUAL INSPECTION: Inspect the switchboard bus and connections with an infrared scan					X					5.2.1.2.1
Normal Power	Medium Voltage Switchgea	1. Wipe away any dust or dirt that may have accumulated inside each switchgear vertical section. Pay close attention to the insulators and insulating material. 2. De-energize all primary circuits, then remove circuit enclosure parts. 3. Before cleaning, take Megger readings between any live parts and ground. 4. Inspect for any signs of overheating or weakened insulation. 5. Remove dust from conductors, live parts, insulators, and surfaces. Wipe clean with isopropyl alcohol or distilled water. Wipe dry with a lint-free cloth.					X					5.2.1.2.3

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Normal Power	Transformers - All	TESTING: 1. Inspect the transformer connections with infrared scanning 2. Perform ultrasonic inspection of bus supports, insulators, and barriers 3. Test circuit breakers					X					SECTION 5.2.1.1.1 and 5.2.1.1.2
Normal Power	Transformers - Dry	VISUAL INSPECTION: 1. Check for the accumulation of dust or dirt on the terminations or vents. If necessary, clean by vacuuming, brushing, or blowing dry air. 2. Inspect insulators, terminals, and terminal boards. Check for tracking, breaks, cracks, or burns. Clean or repair as necessary. 3. Inspect ground connections and ground contact surfaces. Tighten or					X					SECTION 5.2.1.1.2
Normal Power	Transformers - Liquid Filled	VISUAL INSPECTION: 1. The transformer exterior should be inspected for nicks, dents, and scratches. Any damage to weather-resistant finishes should be repaired promptly. 2. The tank covers, manhole seals, handhole seals, and any other gaskets or seals should be inspected for damage or evidence of liquid seepage. Repair or replace as required. 3. Check the liquid level inside the tank. *At this stage, if there is no reason to suspect interior issues or damage, the following steps are optional: 4. Open then tank and inspect for moisture on the underside of the tank or					X					SECTION 5.2.1.1.1
Normal Power	Switchboard	3 YEAR SERVICE: 1. Clean the entire switchboard interior. 2. Clean all bus insulators & check for cracks and chips. 3. Clean, lubricate, and verify operation of all control switches, auxiliary							X			5.2.1.2.1
Plumbing												
Plumbing	Backflow Preventer	Bring a certified contractor onsite to test the Plumbing and Fire Suppression Backflow Preventers.					X					8.3.5.2 Required by Louisville Water. WVC performed latest test on 2/1/2017
Security/Access Control												
Security/Access Control	CCTV System	ANNUAL CLEANING AND INSPECTION: 1. Unplug cameras from power source 2. Check all mounts and supports 3. Clean camera lenses with a microfiber cloth and lens cleaning solution					X					9.3.2
Security/Access Control	Access Control	ANNUAL TEST 1. Open the Access Control Panels, check for any damage or loose connections. Wipe away any dust. 2. Open and Close each door, and verify with the C-Cure software that the sensors are functioning properly. 3. Unlock and Lock each door with the C-Cure software. Verify locally that the commands are working					X					5.2.4
Civil/Structural/Architectura												
Civil/Structural/Architectural		WEEKLY INSPECTION DURING BELOW-FREEZING TEMPERATURES: Inspect the tunnel walls, tunnel liner, and portal shotcrete for ice and snow buildup - address as necessary	X*									10.10 *During winter months
Civil/Structural/Architectural	Tunnel Signage	**QUARTERLY** INSPECTION: A. NIGHT VISIBILITY & DAY VISIBILITY B. PLUMBNESS/ORIENTATION C. CLEANLINESS D. BENT OR DAMAGED SIGNS E. SCRAPES OR HOLES F. SPRAY PAINT			X							10.7.1 Reference 10.7.1 for further details on these inspection items
Civil/Structural/Architectural		BI-ANNUAL TUNNEL CLEANING: Wash all tunnel surfaces, including the tile; Only power-wash where acceptable and not at-risk to equipment Flush out the drainage system				X*						10.9 *Interval may vary based on traffic levels experienced, do not wash tunnel during winter months at freezing temperatures

Preventive Maintenance Schedule

System	Sub-System		Frequency									Notes & Reference
			Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Civil/Structural/Architectural	Portal Shotcrete	ANNUAL INSPECTION: Inspect the portal shotcrete, identify and address the following issues: 1. Debris, snow, or ice buildup 2. Wet spots on the portal facing 3. Water seepage through cracks					X					10.2 Reference 10.2 for repair methods
Civil/Structural/Architectural	Tunnel Liner & Portal Beams Cross Passages	Inspect the Tunnel Liner, Portal Beams, and Cross Passages for: - Spalling - Staining - Cracking - Leakage					X					10.1 and 10.5 Consult a structural engineer before attempting any structurally significant repairs
Civil/Structural/Architectural	Tunnel Handrail	ANNUAL INSPECTION: 1. Clean the rail with soapy rags and water prior to the inspection to ensure that damage is not obscured by things like dirt or scuffs. 2. Inspectors should note any points of stress or deterioration in the handrail members and welded connections. Any rust or efflorescence should be removed. 3. All rail posts should be plumb, and the rail should not be warped or					X					10.6
Civil/Structural/Architectural	Cross Passage Doors	ANNUAL INSPECTION Verify the following: - Required Opening Force with and without Emergency Pressurization System pressure differentials is within NFPA limits - Labels are clearly visible and legible - No holes or breaks exist in the surfaces of either the door or the frame - Curtain, barrel, and guides are aligned, level, plumb and true - Drop release arms and weights are not blocked or wedged - Mounting and assembly blocks are intact and secured - No parts are missing or broken					X					10.5.1 NFPA 80 5.2.3.6.2
Traffic Control Signals												
Traffic Control Signals		MONTHLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds.		X								9.5
Traffic Control Signals		QUARTERLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds. 2. Inspect all Portal Signals, AWFs, and LCS. Tighten any loose connections. Replace any burnt out lamps or LEDs.			X							9.5
Traffic Control Signals	Lane Control Signals	BI-ANNUAL INSPECTION: 1. Visually inspect the LCS housings for damage. 2. Inspect the hinges, locks, door seals, and drainage holes. Repair or replace as required. 3. Confirm acceptable humidity levels inside housing. 4. Test protective switches.				X						5.2.5
Ventilation												
Ventilation	Jet Fans	JET FAN NON-INSTRUMENT CHECK • Start up each jet fan • Check for unusually high noise or vibration levels		X								8.3.1
Ventilation	CO/Vis Detectors	Clean the optical surfaces of the CO/Vis sensors and reflector units				X						8.3.1.1
Ventilation	Jet Fans	JET FAN INSTRUMENT CHECK • Start up each jet fan • Check for appropriate levels with a sound level meter and an ammeter/voltmeter • Measure vibrations on the motor casing in a radial position • After powering down, check clearances of jet fan blades with thickness				X						8.3.1

Preventive Maintenance Schedule			Frequency									Notes & Reference
System	Sub-System		Weekly	Monthly	3 Months/ Quarterly	6 Months	Annually	2 Years	3 Years	5+ Years	Before 1st Freeze	
Ventilation	Cross Passage Fans	CROSS PASSAGE FAN ANNUAL SERVICE • Visually inspect fans for damage or signs of deterioration • Check bearing alignment • Clean fans, including the inside of housing and impeller blades					X					8.3.2
Ventilation	Jet Fans	JET FAN ANNUAL INSPECTION • Perform all the items listed in the bi-annual INSTRUMENT CHECK • Inspect the inside of the fan, the impeller, the motor, and the fan exterior for damage or wear • Check the vibration sensor • Check the temperature and heating sensors					X					8.3.1

Preventive Maintenance - Weekly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Building & Room HVAC					
Drainage					
Emergency Communication					
Emergency Power					
Emergency Power	Generator	WEEKLY STARTUP TEST • Can be pre-programmed to run remotely, Controller will send signals to offsite workstations of any alarms or malfunctions. • Can also be done locally at the Generator. Switch master switch to RUN, run for 30 minutes, then switch to OFF/RESET. Confirm that there are no alarms. If Generator passes test, put master switch back in AUTO.	5.2.2.2		
Emergency Power	Generator	WEEKLY INSPECTION • Inspect the Fuel System day tank level, main supply tank level, flexible lines and connections • Inspect and test fuel level switch • Inspect and test solenoid valve and transfer pump operation • Check for water in the fuel system, remove if needed • Check oil level in lubrication system • Check the Cooling System air cleaner, block heater operation, coolant levels,flexible hoses & connectors, water pump • Drain the condensate trap in the Exhaust System; Check for any leakage • Inspect the AC Electrical System, and test the Controller lamp • Inspect the Engine and its mounting supports • Check the condition of the remote control compartment • Inspect the Alternator • Check for and address any conditions of vibration, leakage, noise, temperature, or deterioration. • Clean the interior of the equipment room and the outdoor weather housing.	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Fire Detection					
Fire Detection	Fire Alarm Control Panel	WEEKLY ALARM CHECK: Access the FACP either remotely through the TrueSite software [Section 6.7] or locally inside the TCB Control Room. Address any unresolved troubles or supervisories and reset the panel. The FACP must be completely cleared of any active alerts.	11.1.1		
Fire Suppression					
Fire Suppression	Deluge Valves & Boxes	WEEKLY INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Verify that the valve and trim are adequately heated and protected. 3. Address any uncovered issues immediately.	11.2.2.2		
Fire Suppression	TCB Fire Suppression Equipment	WEEKLY INSPECTION 1. Inspect the TCB Suppression riser. Verify that the Main Water Supply control valve is open and that all other valves are in their normal operating positions and appropriately secured. 2. Check the riser for any signs of mechanical damage, leakage, or corrosion. Perform maintenance as required. 3. Verify that the valves and trim are properly heated. Verify that the Tunnel HVAC systems are adequately heating the building. 4. Inspect the condition of the pre-action air compressors. Identify and record the air pressure readings.	11.3.4		
Freeze Protection					
General Electrical					

Preventive Maintenance - Weekly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Lighting					
Network & Controls					
Normal Power					
Plumbing					
Security/Access Control					
Civil/Structural/Architectura					
Civil/Structural/Architectural		WEEKLY INSPECTION DURING BELOW-FREEZING TEMPERATURES: Inspect the tunnel walls, tunnel liner, and portal shotcrete for ice and snow buildup - address as necessary	10.10 *During winter months		
Traffic Control Signals					
Ventilation					

Preventive Maintenance - Monthly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Building & Room HVAC					
Building & Room HVAC	Portal Vaults	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*	8.3.4		
Building & Room HVAC	Tunnel Control Building	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*	8.3.4		
Drainage					
Emergency Communication					
Emergency Power					
Emergency Power	Generator	WEEKLY STARTUP TEST • Can be pre-programmed to run remotely, Controller will send signals to offsite workstations of any alarms or malfunctions. • Can also be done locally at the Generator. Switch master switch to RUN, run for 30 minutes, then switch to OFF/RESET. Confirm that there are no alarms. If Generator passes test, put master switch back in AUTO.	5.2.2.2		
Emergency Power	Generator	WEEKLY INSPECTION • Inspect the Fuel System day tank level, main supply tank level, flexible lines and connections • Inspect and test fuel level switch • Inspect and test solenoid valve and transfer pump operation • Check for water in the fuel system, remove if needed • Check oil level in lubrication system • Check the Cooling System air cleaner, block heater operation, coolant levels,flexible hoses & connectors, water pump • Drain the condensate trap in the Exhaust System; Check for any leakage • Inspect the AC Electrical System, and test the Controller lamp • Inspect the Engine and its mounting supports • Check the condition of the remote control compartment • Inspect the Alternator • Check for and address any conditions of vibration, leakage, noise, temperature, or deterioration. • Clean the interior of the equipment room and the outdoor weather housing.	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	MONTHLY INSPECTION AND SERVICE • Drain water from the fuel tank and water separator • Check the fan and alternator belts, replace as necessary • Inspect the battery charger operation, electrolyte level, and charge rate. • Test the battery SG and charge state; check its recharge after Engine Start • Remove battery corrosion, clean and dry the batteyr and rack • Inspect, clean, and test the circuit breakers and fuses, replace as needed • Check the Engine governor operation, lubricate moving parts as needed • Test the remote control functions, run the Generator remotely	5.2.2.2		
Emergency Power	Uninterruptible Power Sup	Check the dust filters on all UPS equipment - wash or replace as needed	5.2.2.3		
Fire Detection					
Fire Detection	Fire Alarm Control Panel	WEEKLY ALARM CHECK: Access the FACP either remotely through the TrueSite software [Section 6.7] or locally inside the TCB Control Room. Address any unresolved troubles or supervisories and reset the panel. The FACP must be completely cleared of any active alerts.	11.1.1		

Preventive Maintenance - Monthly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Detection	Fire Alarm Control Panel	MONTHLY FACP INSPECTION: Access the FACP locally at the TCB Control Room. Inspect the panel for any signs of damage or tampering. Open the panel and check for any loose connections or other damage. Pull a pull station in the Tunnel and confirm that all visual and audible signals from both the FACP and SCADA initiate properly. Check the Event Printer in the Control Room for paper jams, low ink, or any other problems. Just as in the weekly inspection, resolve any open troubles or supervisories.	11.1.1		
Fire Suppression					
Fire Suppression	Deluge Valves & Boxes	WEEKLY INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Verify that the valve and trim are adequately heated and protected. 3. Address any uncovered issues immediately.	11.2.2.2		
Fire Suppression	TCB Fire Suppression Equipment	WEEKLY INSPECTION 1. Inspect the TCB Suppression riser. Verify that the Main Water Supply control valve is open and that all other valves are in their normal operating positions and appropriately secured. 2. Check the riser for any signs of mechanical damage, leakage, or corrosion. Perform maintenance as required. 3. Verify that the valves and trim are properly heated. Verify that the Tunnel HVAC systems are adequately heating the building. 4. Inspect the condition of the pre-action air compressors. Identify and record the air pressure readings.	11.3.4		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	MONTHLY INSPECTION AND SERVICE 1. Verify the temperature inside the Fire Suppression Equipment room is well above freezing, and that the Freeze Protection System is running if the ambient temperature is below 50^{o}F. 2. Visually inspect the pumps for any signs of corrosion, damage, or tampering. 3. Visually inspect all gauges for any signs of damage or tampering. During the test, observe the gauges to confirm functionality. 4. Test the automatic start of the fire pumps by opening a test line to reduce the system pressure. 5. Start the pumps and check the pump suction, discharge, and bypass valves to ensure that they are open and piping is free of leaks. Record the observed pressures. Allow the pumps to run for at least 10 minutes. 6. Check the temperature and tightness of the shaft seal packing. Alight leakage is normal and indicates that water lubrication and cooling is adequate. 7. Check the pump bearings for overheating or signs of vibration. Check the bearing temperatures. 8. Check the lubrication of all moving parts, re-lubricate as needed. 9. Verify that the pump startups initiated the appropriate alarms at the offsite workstations. 10. Check the pump controller for alarm conditions, and confirm that the controller is back in AUTO before ending the inspection.	11.2.5.4		

Preventive Maintenance - Monthly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Suppression	Fire Extinguishers	MONTHLY INSPECTION: 1. Take the extinguisher out of the cabinet. Invert it, and give it a gentle shake. This will prevent caking over time. 2. Make sure the hose and horn are unobstructed. 3. The gauge pressure must be in the "operable" range identified on the extinguisher label. 4. The lock-pin and tamper seal must be in place.	11.8		
Freeze Protection					
Freeze Protection	Freeze Protection System	MONTHLY SERVICE - Verify there are no system alarms - Drain the protection system regulator monthly. - If needed, clean the exterior of the equipment with a non-solvent cleaning agent.			
General Electrical					
Lighting					
Network & Controls					
Normal Power					
Plumbing					
Security/Access Control					
Civil/Structural/Architectura					
Civil/Structural/Architectural		WEEKLY INSPECTION DURING BELOW-FREEZING TEMPERATURES: Inspect the tunnel walls, tunnel liner, and portal shotcrete for ice and snow buildup - address as necessary	10.10 *During winter months		
Traffic Control Signals					
Traffic Control Signals		MONTHLY TEST 1. Operate all-Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds.	9.5		
Ventilation					
Ventilation	Jet Fans	JET FAN NON-INSTRUMENT CHECK • Start up each jet fan • Check for unusually high noise or vibration levels	8.3.1		

Preventive Maintenance - Quarterly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Building & Room HVAC					
Building & Room HVAC	Portal Vaults	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*	8.3.4		
Building & Room HVAC	Tunnel Control Building	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*	8.3.4		
Building & Room HVAC	Portal Vaults	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality. 4. The Condensing units should be drained	8.3.4		
Building & Room HVAC	Tunnel Control Building	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality. 4. The Condensing units should be drained	8.3.4		
Drainage					
Emergency Communication					
Emergency Communication	Radio Rebroadcast	QUARTERLY FILTER CHECK: 1. Clean the air filters at the equipment racks.	7.3.1		
Emergency Power					
Emergency Power	Generator	WEEKLY STARTUP TEST • Can be pre-programmed to run remotely, Controller will send signals to offsite workstations of any alarms or malfunctions. • Can also be done locally at the Generator. Switch master switch to RUN, run for 30 minutes, then switch to OFF/RESET. Confirm that there are no alarms. If Generator passes test, put master switch back in AUTO.	5.2.2.2		
Emergency Power	Generator	WEEKLY INSPECTION • Inspect the Fuel System day tank level, main supply tank level, flexible lines and connections • Inspect and test fuel level switch • Inspect and test solenoid valve and transfer pump operation • Check for water in the fuel system, remove if needed • Check oil level in lubrication system • Check the Cooling System air cleaner, block heater operation, coolant levels,flexible hoses & connectors, water pump • Drain the condensate trap in the Exhaust System; Check for any leakage • Inspect the AC Electrical System, and test the Controller lamp • Inspect the Engine and its mounting supports • Check the condition of the remote control compartment • Inspect the Alternator • Check for and address any conditions of vibration, leakage, noise, temperature, or deterioration. • Clean the interior of the equipment room and the outdoor weather housing.	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		

Preventive Maintenance - Quarterly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Emergency Power	Generator	MONTHLY INSPECTION AND SERVICE • Drain water from the fuel tank and water separator • Check the fan and alternator belts, replace as necessary • Inspect the battery charger operation, electrolyte level, and charge rate. • Test the battery SG and charge state; check its recharge after Engine Start • Remove battery corrosion, clean and dry the batteyr and rack • Inspect, clean, and test the circuit breakers and fuses, replace as needed • Check the Engine governor operation, lubricate moving parts as needed • Test the remote control functions, run the Generator remotely	5.2.2.2		
Emergency Power	Uninterruptible Power Sup	Check the dust filters on all UPS equipment - wash or replace as needed	5.2.2.3		
Emergency Power	Generator	QUARTERLY INSPECTION: • Visually inspect the Generator nameplates, anchorage, and grounding. • Inspect for loose or contaminated connections and address as needed. • Check for chips or deterioration in the winding coating and recoat as needed. • Ensure that all warning and caution labels are intact and legible. • Check and adjust valve clearances • Check the Exhaust System insulation, confirm that there are no fire hazards • Check for any wire abrasions near moving equipment	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	QUARTERLY CLEANING & SERVICE: • Clean the Generator, removing all dust and debris. • Ensure that the air intake and exhaust are all clear. • Change the oil, coolant, water separator element & filters. • Replace any damaged or oil-soaked insulation. • Relubricate the bearings. • Adjust belt tension. • Change the Lubrication System crankcase breather • Clean and tighten battery terminals	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	QUARTERLY TEST: • Perform insulation resistance checks, phase rotation tests, & a vibration baseline tests. • Functionally test the engine shutdown. • Check alarms for low oil pressure, overtemperature, overspeed • Perform a load bank test. • Monitor and verify operation & timing of relays, start sequences, transfers, interlocks.	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Fire Detection					
Fire Detection	Fire Alarm Control Panel	WEEKLY ALARM CHECK: Access the FACP either remotely through the TrueSite software [Section 6.7] or locally inside the TCB Control Room. Address any unresolved troubles or supervisories and reset the panel. The FACP must be completely cleared of any active alerts.	11.1.1		
Fire Detection	Fire Alarm Control Panel	MONTHLY FACP INSPECTION: Access the FACP locally at the TCB Control Room. Inspect the panel for any signs of damage or tampering. Open the panel and check for any loose connections or other damage. Pull a pull station in the Tunnel and confirm that all visual and audible signals from both the FACP and SCADA initiate properly. Check the Event Printer in the Control Room for paper jams, low ink, or any other problems. Just as in the weekly inspection, resolve any open troubles or supervisories.	11.1.1		

Preventive Maintenance - Quarterly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Detection	Sensors & Detectors	QUARTERLY DETECTOR INSPECTION: Inspect the smoke detectors in the TCB for any signs of damage or tampering. The Linear Heat Detection System consists of cabling, and does not have any detectors to inspect, however the heat detection panels should be inspected for any damage or dust buildup.	11.1		
Fire Suppression					
Fire Suppression	Deluge Valves & Boxes	WEEKLY INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Verify that the valve and trim are adequately heated and protected. 3. Address any uncovered issues immediately.	11.2.2.2		
Fire Suppression	TCB Fire Suppression Equipment	WEEKLY INSPECTION 1. Inspect the TCB Suppression riser. Verify that the Main Water Supply control valve is open and that all other valves are in their normal operating positions and appropriately secured. 2. Check the riser for any signs of mechanical damage, leakage, or corrosion. Perform maintenance as required. 3. Verify that the valves and trim are properly heated. Verify that the Tunnel HVAC systems are adequately heating the building. 4. Inspect the condition of the pre-action air compressors. Identify and record the air pressure readings.	11.3.4		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	MONTHLY INSPECTION AND SERVICE 1. Verify the temperature inside the Fire Suppression Equipment room is well above freezing, and that the Freeze Protection System is running if the ambient temperature is below 50^{o}F. 2. Visually inspect the pumps for any signs of corrosion, damage, or tampering. 3. Visually inspect all gauges for any signs of damage or tampering. During the test, observe the gauges to confirm functionality. 4. Test the automatic start of the fire pumps by opening a test line to reduce the system pressure. 5. Start the pumps and check the pump suction, discharge, and bypass valves to ensure that they are open and piping is free of leaks. Record the observed pressures. Allow the pumps to run for at least 10 minutes. 6. Check the temperature and tightness of the shaft seal packing. Alight leakage is normal and indicates that water lubrication and cooling is adequate. 7. Check the pump bearings for overheating or signs of vibration. Check the bearing temperatures. 8. Check the lubrication of all moving parts, re-lubricate as needed. 9. Verify that the pump startups initiated the appropriate alarms at the offsite workstations. 10. Check the pump controller for alarm conditions, and confirm that the controller is back in AUTO before ending the inspection.	11.2.5.4		

Preventive Maintenance - Quarterly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Suppression	Fire Extinguishers	MONTHLY INSPECTION: 1. Take the extinguisher out of the cabinet. Invert it, and give it a gentle shake. This will prevent caking over time. 2. Make sure the hose and horn are unobstructed. 3. The gauge pressure must be in the "operable" range identified on the extinguisher label. 4. The lock-pin and tamper seal must be in place.	11.8		
Fire Suppression	Foam System	QUARTERLY INSPECTION: 1. Inspect the equipment for any damage or wear. 2. Inspect the tanks, inlets, and outlets for any leakage. 3. Test the tank level indicators 4. Check the foam level trends. Outside of any suppression events, they should be holding steady. A gradual decrease in levels could indicate a leak in the tank, and a gradual increase in levels could indicate that water is infiltrating the system	11.2.6.3		
Fire Suppression	TCB Fire Suppression Equipment	QUARTERLY INSPECTION 1. Perform the WEEKLY INSPECTION as usual. 2. Notify the AHJ, and then perform the "Water Flow Alarm Test." This test is detailed step by step in Chapter 6 of the document "11.3.2 Pre-Action Riser" of APPENDIX A. 3. Notify the AHJ, and then perform the "Main Drain Test." This test is detailed step by step in Chapter 6 of the document "11.3.2 Pre-Action Riser" of APPENDIX A.	11.3.4		
Freeze Protection					
Freeze Protection	Freeze Protection System	MONTHLY SERVICE - Verify there are no system alarms - Drain the protection system regulator monthly. - If needed, clean the exterior of the equipment with a non-solvent cleaning agent.			
General Electrical					
Lighting					
Lighting		QUARTERLY LIGHTING TEST AND INSPECTION: 1. Switch the LED lighting through all 8 levels (Levels #1-#5 in Table, plus #1-#3 again in Contraflow configuration). Confirm that there are no burnt out or malfunctioning fixtures. 2. Test all non-automated fixtures, which should include the facility lighting and emergency exit fixtures. Confirm that there are no burnt out or malfunctioning fixtures. 3. Inspect all fixture anchors and supports. Identify and address any loose, damaged, or missing components. Identify and address any rust or other corrosion. **This can be a cursory inspection from the ground, or a close inspection of each fixture via lifts. Determined at KYTC discretion.** 4. Inspect the fixture housings and enclosures for cracks and holes. **This can be a cursory inspection from the ground, or a close inspection of each fixture via lifts. Determined at KYTC discretion.**	5.2.3.2		

Preventive Maintenance - Quarterly Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Lighting		Inspect and Clean the Luminance Sensors - The front window should be clear and free of dust, debris, or smears.	5.2.3.2		
Network & Controls					
Network & Controls		QUARTERLY INSPECTION: 1. Observe all network equipment, check for any local alarms or error messages. 2. Open cabinets to check for any damage, tampering, or loose connections. 3. Inspect all cabinet cooling fans and air filters. Clean or replace filters as needed.	6.10 Reference APPENDIX E SPARE PARTS - Section 6.10 The WVC-provided filters are all re-usable and can be washed		
Normal Power					
Plumbing					
Security/Access Control					
Civil/Structural/Architectura					
Civil/Structural/Architectural		WEEKLY INSPECTION DURING BELOW-FREEZING TEMPERATURES: Inspect the tunnel walls, tunnel liner, and portal shotcrete for ice and snow buildup - address as necessary	10.10 *During winter months		
Civil/Structural/Architectural	Tunnel Signage	**QUARTERLY** INSPECTION: A. NIGHT VISIBILITY & DAY VISIBILITY B. PLUMBNESS/ORIENTATION C. CLEANLINESS D. BENT OR DAMAGED SIGNS E. SCRAPES OR HOLES F. SPRAY PAINT G. SIGN HAS REACHED OR EXCEEDED ITS SERVICE LIFE H. PEELING OR DAMAGE OF ADHESIVES	10.7.1 Reference 10.7.1 for further details on these inspection items		
Traffic Control Signals					
Traffic Control Signals		MONTHLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds.	9.5		
Traffic Control Signals		QUARTERLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds. 2. Inspect all Portal Signals, AWFs, and LCS. Tighten any loose connections. Replace any burnt out lamps or LEDs. 3. Clean the Portal Signals, AWFs, and LCS.	9.5		
Ventilation					
Ventilation	Jet Fans	JET FAN NON-INSTRUMENT CHECK • Start up each jet fan • Check for unusually high noise or vibration levels	8.3.1		

Preventive Maintenance - Bi-Annual Checklist

INSPECTOR_____

DATE_____

System	Sub-System		Reference Notes	Complete	Inspection Notes
Building & Room HVAC					
Building & Room HVAC	Portal Vaults	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*	8.3.4		
Building & Room HVAC	Tunnel Control Building	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*	8.3.4		
Building & Room HVAC	Portal Vaults	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality. 4. The Condensing units should be drained	8.3.4		
Building & Room HVAC	Tunnel Control Building	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality. 4. The Condensing units should be drained	8.3.4		
Drainage					
Drainage	Sluice Gate	1. The Sluice Gate, seals, stem, and motor should be thoroughly inspected for corrosion, damage, or tampering. 2. Exercise the gate in at least one full cycle 3. When open, the seal should be inspected for damage or wear. 4. When closed, the seal should be inspected to ensure full closure with no obstructions. 5. Clean the gate, seal, motor housing, and stem threads. 6. Lubricate the moving parts as needed.	8.3.3		
Drainage	Hydrocarbon Detection	BI-ANNUAL SERVICE: • Open the system panel, check for any signs of damage, excessive moisture, or loose connections • Clean the panel interior with a lint free rag • Check the sampling and exhaust ports for blockages, clear as needed	8.3.3.1		
Drainage	Vortechs Basin	INSPECTION Use a stadia rod or similar tool to measure the following: 1. The water depth to the top of sediment in the swirl chamber 2. The floatable layer thickness against the baffle wall Measurements #1 and #2 should be recorded. The technical documents for Section 8.3.3.4 in APPENDIX A include a useful maintenance record sheet for this purpose. **EVACUATE CHAMBER OF SILT AND FLOATABLES IF REQUIRED**	8.3.3.4		
Emergency Communication					
Emergency Communication	Radio Rebroadcast	QUARTERLY FILTER CHECK: 1. Clean the air filters at the equipment racks.	7.3.1		
Emergency Communication	PA System	LOCAL BI-ANNUAL TEST 1. Review all pre-recorded messages saved in the system software. Verify for accuracy. 2. “Poll” and “Silent Test” all RTUs and confirm success. 3. Check all RTUs for damage or loose connections. Address as necessary. 4. Check all speakers for damage or loose connections. Address as necessary. 5. Clean equipment with a lint free rag, only use cleaning solution on the exterior.	7.3.4		

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Emergency Communication	PA System	OFFSITE BI-ANNUAL TEST (at TRIMARC) 1. Review all pre-recorded messages saved in the system software. Verify for accuracy. 2. Ping or "Query" all other offsite CCUs to confirm they are up and connected to the Network. 3. "Poll" and "Silent Test" all RTUs and confirm success.	7.3.4		
Emergency Communication	Radio Rebroadcast	BI-ANNUAL TESTING AND SERVICE: 1. Clean the air filters at the equipment racks. 2. Check the function of the cooling fans at the equipment racks. If the cooling fans are not working properly, the subsystem should be shut down until they are repaired. 3. Visually inspect the exterior and interior of the equipment racks. Check the physical condition of the enclosures and their components. Address any dust accumulation inside the enclosure. Check for and address any loose connections, damaged cables, or damaged power supply units. 4. Review and address any active alarms. 5. Make backups of all network and software files 6. Perform a Connectivity Verification. 7. Perform a RF Performance Verification. 8. Perform an Expected Gain Verification. 9. Perform 2-Way Radio checks with both base stations on all necessary channels. (see O&M for details on steps 6-8)	7.3.1 & 7.3.2 Items 5 through 8 can be performed remotely by Canam technicians. In order to do this, the TCB workstation must be temporarily connected to the internet to allow for remote assistance. Consult TRIMARC Network Engineers before scheduling a remote service inspection with Canam.		
Emergency Communication	Telephone System	BI-ANNUAL EMERGENCY CALL BOX TESTING AND SERVICE: 1. Inspect each box for damage. 2. Inspect call box gaskets for damage or leakage. 3. Wipe each box down with a damp rag and cleaning solution. 4. Check each phone, verify dial tone. 5. Use the emergency call button on each phone, verify that it auto-dials TRIMARC as programmed.	7.3.3.2		
Emergency Communication	WIZARD Broadcast	BI-ANNUAL TEST: Initiate a live message and any pre-recorded messages from the TCB unit, verify transmission from the Tunnel.	9.3.7		
Emergency Power					
Emergency Power	Generator	WEEKLY STARTUP TEST • Can be pre-programmed to run remotely, Controller will send signals to offsite workstations of any alarms or malfunctions. • Can also be done locally at the Generator. Switch master switch to RUN, run for 30 minutes, then switch to OFF/RESET. Confirm that there are no alarms. If Generator passes test, put master switch back in AUTO.	5.2.2.2		

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Emergency Power	Generator	WEEKLY INSPECTION • Inspect the Fuel System day tank level, main supply tank level, flexible lines and connections • Inspect and test fuel level switch • Inspect and test solenoid valve and transfer pump operation • Check for water in the fuel system, remove if needed • Check oil level in lubrication system • Check the Cooling System air cleaner, block heater operation, coolant levels,flexible hoses & connectors, water pump • Drain the condensate trap in the Exhaust System; Check for any leakage • Inspect the AC Electrical System, and test the Controller lamp • Inspect the Engine and its mounting supports • Check the condition of the remote control compartment • Inspect the Alternator • Check for and address any conditions of vibration, leakage, noise, temperature, or deterioration. • Clean the interior of the equipment room and the outdoor weather housing.	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	MONTHLY INSPECTION AND SERVICE • Drain water from the fuel tank and water separator • Check the fan and alternator belts, replace as necessary • Inspect the battery charger operation, electrolyte level, and charge rate. • Test the battery SG and charge state; check its recharge after Engine Start • Remove battery corrosion, clean and dry the batteyr and rack • Inspect, clean, and test the circuit breakers and fuses, replace as needed • Check the Engine governor operation, lubricate moving parts as needed • Test the remote control functions, run the Generator remotely	5.2.2.2		
Emergency Power	Uninterruptible Power Sup	Check the dust filters on all UPS equipment - wash or replace as needed	5.2.2.3		
Emergency Power	Generator	QUARTERLY INSPECTION: • Visually inspect the Generator nameplates, anchorage, and grounding. • Inspect for loose or contaminated connections and address as needed. • Check for chips or deterioration in the winding coating and recoat as needed. • Ensure that all warning and caution labels are intact and legible. • Check and adjust valve clearances • Check the Exhaust System insulation, confirm that there are no fire hazards • Check for any wire abrasions near moving equipment	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	QUARTERLY CLEANING & SERVICE: • Clean the Generator, removing all dust and debris. • Ensure that the air intake and exhaust are all clear. • Change the oil, coolant, water separator element & filters. • Replace any damaged or oil-soaked insulation. • Relubricate the bearings. • Adjust belt tension. • Change the Lubrication System crankcase breather • Clean and tighten battery terminals	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Emergency Power	Generator	QUARTERLY TEST: • Perform insulation resistance checks, phase rotation tests, & a vibration baseline tests. • Functionally test the engine shutdown. • Check alarms for low oil pressure, overtemperature, overspeed • Perform a load bank test. • Monitor and verify operation & timing of relays, start sequences, transfers, interlocks.	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	BI-ANNUAL SERVICE: • Check fuel supply, change if needed • Test the coolant temperature level • Inspect the flexible connectors of the Exhaust System • Check for and tighten any loose DC electrical connections • Test safety and alarm operations • Check the air cleaner service, change out filters and equipment as necessary • Check the choke and carburetor, change as needed	5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Fire Detection					
Fire Detection	Fire Alarm Control Panel	WEEKLY ALARM CHECK: Access the FACP either remotely through the TrueSite software [Section 6.7] or locally inside the TCB Control Room. Address any unresolved troubles or supervisories and reset the panel. The FACP must be completely cleared of any active alerts.	11.1.1		
Fire Detection	Fire Alarm Control Panel	MONTHLY FACP INSPECTION: Access the FACP locally at the TCB Control Room. Inspect the panel for any signs of damage or tampering. Open the panel and check for any loose connections or other damage. Pull a pull station in the Tunnel and confirm that all visual and audible signals from both the FACP and SCADA initiate properly. Check the Event Printer in the Control Room for paper jams, low ink, or any other problems. Just as in the weekly inspection, resolve any open troubles or supervisories.	11.1.1		
Fire Detection	Sensors & Detectors	QUARTERLY DETECTOR INSPECTION: Inspect the smoke detectors in the TCB for any signs of damage or tampering. The Linear Heat Detection System consists of cabling, and does not have any detectors to inspect, however the heat detection panels should be inspected for any damage or dust buildup.	11.1		
Fire Detection	Sensors & Detectors	BI-ANNUAL CALL BOX & PULL STATION TEST: Open each emergency call box, one at a time. Confirm that the alarms in both the FACP and SCADA initiate when the door was open. Hit the emergency call button, and confirm that the box dials directly to TRIMARC as programmed. Activate each pull station, one at a time. Confirm that the alarms in both the FACP and SCADA initiate as intended. When complete, confirm that all the call boxes are closed, all pull stations are reset, and reset the FACP.	11.1		
Fire Suppression					

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Suppression	Deluge Valves & Boxes	WEEKLY INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Verify that the valve and trim are adequately heated and protected. 3. Address any uncovered issues immediately.	11.2.2.2		
Fire Suppression	TCB Fire Suppression Equipment	WEEKLY INSPECTION 1. Inspect the TCB Suppression riser. Verify that the Main Water Supply control valve is open and that all other valves are in their normal operating positions and appropriately secured. 2. Check the riser for any signs of mechanical damage, leakage, or corrosion. Perform maintenance as required. 3. Verify that the valves and trim are properly heated. Verify that the Tunnel HVAC systems are adequately heating the building. 4. Inspect the condition of the pre-action air compressors. Identify and record the air pressure readings.	11.3.4		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	MONTHLY INSPECTION AND SERVICE 1. Verify the temperature inside the Fire Suppression Equipment room is well above freezing, and that the Freeze Protection System is running if the ambient temperature is below 50^{o}F. 2. Visually inspect the pumps for any signs of corrosion, damage, or tampering. 3. Visually inspect all gauges for any signs of damage or tampering. During the test, observe the gauges to confirm functionality. 4. Test the automatic start of the fire pumps by opening a test line to reduce the system pressure. 5. Start the pumps and check the pump suction, discharge, and bypass valves to ensure that they are open and piping is free of leaks. Record the observed pressures. Allow the pumps to run for at least 10 minutes. 6. Check the temperature and tightness of the shaft seal packing. Alight leakage is normal and indicates that water lubrication and cooling is adequate. 7. Check the pump bearings for overheating or signs of vibration. Check the bearing temperatures. 8. Check the lubrication of all moving parts, re-lubricate as needed. 9. Verify that the pump startups initiated the appropriate alarms at the offsite workstations. 10. Check the pump controller for alarm conditions, and confirm that the controller is back in AUTO before ending the inspection.	11.2.5.4		
Fire Suppression	Fire Extinguishers	MONTHLY INSPECTION: 1. Take the extinguisher out of the cabinet. Invert it, and give it a gentle shake. This will prevent caking over time. 2. Make sure the hose and horn are unobstructed. 3. The gauge pressure must be in the “operable” range identified on the extinguisher label. 4. The lock-pin and tamper seal must be in place.	11.8		

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Suppression	Foam System	QUARTERLY INSPECTION: 1. Inspect the equipment for any damage or wear. 2. Inspect the tanks, inlets, and outlets for any leakage. 3. Test the tank level indicators 4. Check the foam level trends. Outside of any suppression events, they should be holding steady. A gradual decrease in levels could indicate a leak in the tank, and a gradual increase in levels could indicate that water is infiltrating the system	11.2.6.3		
Fire Suppression	TCB Fire Suppression Equipment	QUARTERLY INSPECTION 1. Perform the WEEKLY INSPECTION as usual. 2. Notify the AHJ, and then perform the “Water Flow Alarm Test.” This test is detailed step by step in Chapter 6 of the document “11.3.2 Pre-Action Riser” of APPENDIX A. 3. Notify the AHJ, and then perform the “Main Drain Test.” This test is detailed step by step in Chapter 6 of the document “11.3.2 Pre-Action Riser” of APPENDIX A.	11.3.4		
Fire Suppression	Deluge Valves & Boxes	BI-ANNUAL INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Remove the Deluge System from service. Notify the AHJ before undertaking this step. It may be advisable to do this in sections, to avoid leaving the entire Tunnel unprotected at one time. 3. Exercise all valves, confirm proper clearance and movement. 4. Verify that the valve and trim are adequately heated and protected. 5. Inspect all trim for signs of corrosion or blockage. Clean or replace as required. 6. Inspect all gauges for damage and functionality. 7. Address any uncovered issues immediately.	11.2.2.2		
Fire Suppression	Clean Agent System	BI-ANNUAL MAINTENANCE 1. Inspect the equipment for any signs of damage or tampering. 2. Check the quantity and pressure of the clean agent containers.	11.6.1		
Fire Suppression	Fire Hydrants	BI-ANNUAL INSPECTION - Conduct a routine inspection of hydrants, covering all points identified in AWWA M17 - Open the hydrants completely and flush for several minutes - Open and close valves to ensure proper operation - Remove caps and verify proper draining - Remove all nozzle caps to clean rust, corrosion, and debris - Replace nuts, caps, or gaskets as necessary - Relubricate as necessary	11.7		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	BI-ANNUAL INSPECTION AND SERVICE 1. Perform all the steps indicated in the “Monthly Inspection and Service” 2. Inspect the bearing packings and replace as necessary. 3. Take vibration readings on the bearing housings and compare these to previous readings. 4. Inspect the shafts and shaft sleeves for scoring. 5. Check the pump and motor alignments, and correct as needed.	11.2.5.4		

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Fire Suppression	TCB Fire Suppression Equipment	BI-ANNUAL SERVICE 1. Perform the WEEKLY INSPECTION and QUARTERLY INSPECTION as usual. 2. Put the system out of service. 3. Close the Main Water Supply control valve and the Priming Valve. Open the Auxiliary Drain Valve. Relieve the pressure in the chamber by opening the Emergency Release Valve. 4. Inspect all trim for signs of corrosion or blockage. Clean or replace as needed. 5. Clean or replace all strainer screens. 6. Put the system back into service.	11.3.4		
Freeze Protection					
Freeze Protection	Freeze Protection System	MONTHLY SERVICE - Verify there are no system alarms - Drain the protection system regulator monthly. - If needed, clean the exterior of the equipment with a non-solvent cleaning agent.			
General Electrical					
Lighting					
Lighting		QUARTERLY LIGHTING TEST AND INSPECTION: 1. Switch the LED lighting through all 8 levels (Levels #1-#5 in Table, plus #1-#3 again in Contraflow configuration). Confirm that there are no burnt out or malfunctioning fixtures. 2. Test all non-automated fixtures, which should include the facility lighting and emergency exit fixtures. Confirm that there are no burnt out or malfunctioning fixtures. 3. Inspect all fixture anchors and supports. Identify and address any loose, damaged, or missing components. Identify and address any rust or other corrosion. **This can be a cursory inspection from the ground, or a close inspection of each fixture via lifts. Determined at KYTC discretion.** 4. Inspect the fixture housings and enclosures for cracks and holes. **This can be a cursory inspection from the ground, or a close inspection of each fixture via lifts. Determined at KYTC discretion.**	5.2.3.2		
Lighting		Inspect and Clean the Luminance Sensors - The front window should be clear and free of dust, debris, or smears.	5.2.3.2		
Lighting		Clean the light fixtures - Wipe off exterior dirt and debris with a soft, clean cloth. A mild detergent and water may be used if necessary.	5.2.3.2		
Network & Controls					
Network & Controls		QUARTERLY INSPECTION: 1. Observe all network equipment, check for any local alarms or error messages. 2. Open cabinets to check for any damage, tampering, or loose connections. 3. Inspect all cabinet cooling fans and air filters. Clean or replace filters as needed.	6.10 Reference APPENDIX E SPARE PARTS - Section 6.10 The WVC-provided filters are all re-usable and can be washed		
Normal Power					
Plumbing					
Security/Access Control					

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System	Sub-System		Reference Notes	Complete	Inspection Notes
Civil/Structural/Architectura					
Civil/Structural/Architectural		WEEKLY INSPECTION DURING BELOW-FREEZING TEMPERATURES: Inspect the tunnel walls, tunnel liner, and portal shotcrete for ice and snow buildup - address as necessary	10.10 *During winter months		
Civil/Structural/Architectural	Tunnel Signage	**QUARTERLY** INSPECTION: A. NIGHT VISIBILITY & DAY VISIBILITY B. PLUMBNESS/ORIENTATION C. CLEANLINESS D. BENT OR DAMAGED SIGNS E. SCRAPES OR HOLES F. SPRAY PAINT G. SIGN HAS REACHED OR EXCEEDED ITS SERVICE LIFE H. PEELING OR DAMAGE OF ADHESIVES	10.7.1 Reference 10.7.1 for further details on these inspection items		
Civil/Structural/Architectural		BI-ANNUAL TUNNEL CLEANING: Wash all tunnel surfaces, including the tile; Only power-wash where acceptable and not at-risk to equipment Flush out the drainage system	10.9 *Interval may vary based on traffic levels experienced, do not wash tunnel during winter months at freezing temperatures		
Traffic Control Signals					
Traffic Control Signals		MONTHLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds.	9.5		
Traffic Control Signals		QUARTERLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds. 2. Inspect all Portal Signals, AWFs, and LCS. Tighten any loose connections. Replace any burnt out lamps or LEDs. 3. Clean the Portal Signals, AWFs, and LCS.	9.5		
Traffic Control Signals	Lane Control Signals	BI-ANNUAL INSPECTION: 1. Visually inspect the LCS housings for damage. 2. Inspect the hinges, locks, door seals, and drainage holes. Repair or replace as required. 3. Confirm acceptable humidity levels inside housing. 4. Test protective switches. 5. Inspect over voltage protection units and ventilation. 6. Check and resolve any error messages. 7. Replace any nonfunctioning LED chains.	5.2.5		
Ventilation					
Ventilation	Jet Fans	JET FAN NON-INSTRUMENT CHECK • Start up each jet fan • Check for unusually high noise or vibration levels	8.3.1		
Ventilation	CO/Vis Detectors	Clean the optical surfaces of the CO/Vis sensors and reflector units	8.3.1.1		
Ventilation	Jet Fans	JET FAN INSTRUMENT CHECK • Start up each jet fan • Check for appropriate levels with a sound level meter and an ammeter/voltmeter • Measure vibrations on the motor casing in a radial position • After powering down, check clearances of jet fan blades with thickness gauges • Inspect the support system & anti-sway brackets • Clean the fan exterior surfaces	8.3.1		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Building & Room HVAC									
Building & Room HVAC	Portal Vaults	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*					8.3.4		
Building & Room HVAC	Tunnel Control Building	Clean or replace the air filters under the AHUs *(see Spare Parts list for ordering details)*					8.3.4		
Building & Room HVAC	Portal Vaults	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality. 4. The Condensing units should be drained					8.3.4		
Building & Room HVAC	Tunnel Control Building	QUARTERLY SERVICE 1. The air filters at the AHUs should be changed out. 2. The external cooling fans should be cleaned. 3. The safety valves should be manually operated to ensure functionality. 4. The Condensing units should be drained					8.3.4		
Building & Room HVAC	Portal Vaults	Schedule a full inspection and service with an HVAC technician					8.3.4		
Building & Room HVAC	Tunnel Control Building	Schedule a full inspection and service with an HVAC technician					8.3.4		
Building & Room HVAC		Perform a complete visual inspection and functional test of facility heating systems in preparation for freezing temperatures.				X	8.3.4		
Drainage									
Drainage	Sluice Gate	1. The Sluice Gate, seals, stem, and motor should be thoroughly inspected for corrosion, damage, or tampering. 2. Exercise the gate in at least one full cycle 3. When open, the seal should be inspected for damage or wear. 4. When closed, the seal should be inspected to ensure full closure with no obstructions. 5. Clean the gate, seal, motor housing, and stem threads. 6. Lubricate the moving parts as needed.					8.3.3		
Drainage	Hydrocarbon Detection	BI-ANNUAL SERVICE: • Open the system panel, check for any signs of damage, excessive moisture, or loose connections • Clean the panel interior with a lint free rag • Check the sampling and exhaust ports for blockages, clear as needed					8.3.3.1		
Drainage	Vortechs Basin	INSPECTION Use a stadia rod or similar tool to measure the following: 1. The water depth to the top of sediment in the swirl chamber 2. The floatable layer thickness against the baffle wall Measurements #1 and #2 should be recorded. The technical documents for Section 8.3.3.4 in APPENDIX A include a useful maintenance record sheet for this purpose. **EVACUATE CHAMBER OF SILT AND FLOATABLES IF REQUIRED**					8.3.3.4		
Drainage	Exhaust Fans	ANNUAL INSPECTION • Inspect exhaust fans for any damage or signs of wear • Tighten connections as needed • Check fan bearing lubrication, relubricate as needed					8.3.3.2		
Drainage	Hydrocarbon Detection	Recalibrate hydrocarbon detection system					8.3.3.1		
Drainage	Hydrocarbon Detection	Replace the hydrocarbon detection system sensors as needed					8.3.3.1		
Emergency Communication									
Emergency Communication	Radio Rebroadcast	QUARTERLY FILTER CHECK: 1. Clean the air filters at the equipment racks.					7.3.1		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Emergency Communication	PA System	LOCAL BI-ANNUAL TEST 1. Review all pre-recorded messages saved in the system software. Verify for accuracy. 2. “Poll” and “Silent Test” all RTUs and confirm success. 3. Check all RTUs for damage or loose connections. Address as necessary. 4. Check all speakers for damage or loose connections. Address as necessary. 5. Clean equipment with a lint free rag, only use cleaning solution on the exterior.					7.3.4		
Emergency Communication	PA System	OFFSITE BI-ANNUAL TEST (at TRIMARC) 1. Review all pre-recorded messages saved in the system software. Verify for accuracy. 2. Ping or “Query” all other offsite CCUs to confirm they are up and connected to the Network. 3. “Poll” and “Silent Test” all RTUs and confirm success.					7.3.4		
Emergency Communication	Radio Rebroadcast	BI-ANNUAL TESTING AND SERVICE: 1. Clean the air filters at the equipment racks. 2. Check the function of the cooling fans at the equipment racks. If the cooling fans are not working properly, the subsystem should be shut down until they are repaired. 3. Visually inspect the exterior and interior of the equipment racks. Check the physical condition of the enclosures and their components. Address any dust accumulation inside the enclosure. Check for and address any loose connections, damaged cables, or damaged power supply units. 4. Review and address any active alarms. 5. Make backups of all network and software files 6. Perform a Connectivity Verification. 7. Perform a RF Performance Verification. 8. Perform an Expected Gain Verification. 9. Perform 2-Way Radio checks with both base stations on all necessary channels. (see O&M for details on steps 6-8)					7.3.1 & 7.3.2 Items 5 through 8 can be performed remotely by Canam technicians. In order to do this, the TCB workstation must be temporarily connected to the internet to allow for remote assistance. Consult TRIMARC Network Engineers before scheduling a remote service inspection with Canam.		
Emergency Communication	Telephone System	BI-ANNUAL EMERGENCY CALL BOX TESTING AND SERVICE: 1. Inspect each box for damage. 2. Inspect call box gaskets for damage or leakage. 3. Wipe each box down with a damp rag and cleaning solution. 4. Check each phone, verify dial tone. 5. Use the emergency call button on each phone, verify that it auto-dials TRIMARC as programmed.					7.3.3.2		
Emergency Communication	WIZARD Broadcast	BI-ANNUAL TEST: Initiate a live message and any pre-recorded messages from the TCB unit, verify transmission from the Tunnel.					9.3.7		
Emergency Power									
Emergency Power	Generator	WEEKLY STARTUP TEST • Can be pre-programmed to run remotely, Controller will send signals to offsite workstations of any alarms or malfunctions. • Can also be done locally at the Generator. Switch master switch to RUN, run for 30 minutes, then switch to OFF/RESET. Confirm that there are no alarms. If Generator passes test, put master switch back in AUTO.					5.2.2.2		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Emergency Power	Generator	WEEKLY INSPECTION • Inspect the Fuel System day tank level, main supply tank level, flexible lines and connections • Inspect and test fuel level switch • Inspect and test solenoid valve and transfer pump operation • Check for water in the fuel system, remove if needed • Check oil level in lubrication system • Check the Cooling System air cleaner, block heater operation, coolant levels,flexible hoses & connectors, water pump • Drain the condensate trap in the Exhaust System; Check for any leakage • Inspect the AC Electrical System, and test the Controller lamp • Inspect the Engine and its mounting supports • Check the condition of the remote control compartment • Inspect the Alternator • Check for and address any conditions of vibration, leakage, noise, temperature, or deterioration. • Clean the interior of the equipment room and the outdoor weather housing.					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	MONTHLY INSPECTION AND SERVICE • Drain water from the fuel tank and water separator • Check the fan and alternator belts, replace as necessary • Inspect the battery charger operation, electrolyte level, and charge rate. • Test the battery SG and charge state; check its recharge after Engine Start • Remove battery corrosion, clean and dry the batteyr and rack • Inspect, clean, and test the circuit breakers and fuses, replace as needed • Check the Engine governor operation, lubricate moving parts as needed • Test the remote control functions, run the Generator remotely					5.2.2.2		
Emergency Power	Uninterruptible Power Sup	Check the dust filters on all UPS equipment - wash or replace as needed					5.2.2.3		
Emergency Power	Generator	QUARTERLY INSPECTION: • Visually inspect the Generator nameplates, anchorage, and grounding. • Inspect for loose or contaminated connections and address as needed. • Check for chips or deterioration in the winding coating and recoat as needed. • Ensure that all warning and caution labels are intact and legible. • Check and adjust valve clearances • Check the Exhaust System insulation, confirm that there are no fire hazards • Check for any wire abrasions near moving equipment					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	QUARTERLY CLEANING & SERVICE: • Clean the Generator, removing all dust and debris. • Ensure that the air intake and exhaust are all clear. • Change the oil, coolant, water separator element & filters. • Replace any damaged or oil-soaked insulation. • Relubricate the bearings. • Adjust belt tension. • Change the Lubrication System crankcase breather • Clean and tighten battery terminals					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	QUARTERLY TEST: • Perform insulation resistance checks, phase rotation tests, & a vibration baseline tests. • Functionally test the engine shutdown. • Check alarms for low oil pressure, overtemperature, overspeed • Perform a load bank test. • Monitor and verify operation & timing of relays, start sequences, transfers, interlocks.					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Emergency Power	Generator	BI-ANNUAL SERVICE: • Check fuel supply, change if needed • Test the coolant temperature level • Inspect the flexible connectors of the Exhaust System • Check for and tighten any loose DC electrical connections • Test safety and alarm operations • Check the air cleaner service, change out filters and equipment as necessary • Check the choke and carburetor, change as needed					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	ANNUAL SERVICE • Inspect fuel piping; check the tank and vent lines for obstructions • Inspect and clean the Cooling System; including air ducts, louvers, heat exchangers, radiators • Test the Cooling System louver controls • Change the coolant • Check the water supply to the heat exchanger • Test for excessive back pressure in the Exhaust System • Visually inspect all hangers and supports • Tighten control and power wiring connections • Inspect and clean the main contacts at the transfer switch • Test all relays and voltage-sensing devices • Test the Engine injector pump and flow rate, pressure, and spray pattern • Inspect and clean all Engine ignition components • Clean the Alternator rotor and stator, check the condition of the bearings and replace as needed • Inspect and clean the Alternator exciter and voltage regulator • Measure and record the resistance readings of the Alternator windings					5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Generator	3 YEAR SERVICE • Check all valve clearances • Check all bolted connections; test bolt torque • Test wires and cables for insulation breakdown • Blow dust out of the alternator		X			5.2.2.2 WHEN COMPLETE, ensure that the Generator is set back to AUTO, Confirm at the controller and at the offsite workstations		
Emergency Power	Automatic Transfer Switch	3 YEAR SERVICE 1. Completely de-energize the ATS. 2. Clean all contact surfaces. 3. Apply anti-ox grease where required. 4. Measure & record contact resistance. 5. Lubricate bearings, links, pins, and cams. 6. Perform insulation resistance tests. 7. Test all voltage settings, frequency sensing, & timing relays.		X			5.2.1.3		
Fire Detection									
Fire Detection	Fire Alarm Control Panel	WEEKLY ALARM CHECK: Access the FACP either remotely through the TrueSite software [Section 6.7] or locally inside the TCB Control Room. Address any unresolved troubles or supervisories and reset the panel. The FACP must be completely cleared of any active alerts.					11.1.1		
Fire Detection	Fire Alarm Control Panel	MONTHLY FACP INSPECTION: Access the FACP locally at the TCB Control Room. Inspect the panel for any signs of damage or tampering. Open the panel and check for any loose connections or other damage. Pull a pull station in the Tunnel and confirm that all visual and audible signals from both the FACP and SCADA initiate properly. Check the Event Printer in the Control Room for paper jams, low ink, or any other problems. Just as in the weekly inspection, resolve any open troubles or supervisories.					11.1.1		
Fire Detection	Sensors & Detectors	QUARTERLY DETECTOR INSPECTION: Inspect the smoke detectors in the TCB for any signs of damage or tampering. The Linear Heat Detection System consists of cabling, and does not have any detectors to inspect, however the heat detection panels should be inspected for any damage or dust buildup.					11.1		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Fire Detection	Sensors & Detectors	BI-ANNUAL CALL BOX & PULL STATION TEST: Open each emergency call box, one at a time. Confirm that the alarms in both the FACP and SCADA initiate when the door was open. Hit the emergency call button, and confirm that the box dials directly to TRIMARC as programmed. Activate each pull station, one at a time. Confirm that the alarms in both the FACP and SCADA initiate as intended. When complete, confirm that all the call boxes are closed, all pull stations are reset, and reset the FACP.					11.1		
Fire Detection	Sensors & Detectors	ANNUAL INSPECTION OF ALL EQUIPMENT AND PANELS: Walk down all equipment listed in Section 11.1. Open all detection panels and inspect for damage, corrosion, loose connections, or dust. Address as needed. Inspect every detector, sensor, pull station, and call box for damage, corrosion, or loose connections. Address as needed. It is recommended that the AHJ be invited to this annual inspection.					11.1		
Fire Suppression									
Fire Suppression	Deluge Valves & Boxes	WEEKLY INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Verify that the valve and trim are adequately heated and protected. 3. Address any uncovered issues immediately.					11.2.2.2		
Fire Suppression	TCB Fire Suppression Equipment	WEEKLY INSPECTION 1. Inspect the TCB Suppression riser. Verify that the Main Water Supply control valve is open and that all other valves are in their normal operating positions and appropriately secured. 2. Check the riser for any signs of mechanical damage, leakage, or corrosion. Perform maintenance as required. 3. Verify that the valves and trim are properly heated. Verify that the Tunnel HVAC systems are adequately heating the building. 4. Inspect the condition of the pre-action air compressors. Identify and record the air pressure readings.					11.3.4		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	MONTHLY INSPECTION AND SERVICE 1. Verify the temperature inside the Fire Suppression Equipment room is well above freezing, and that the Freeze Protection System is running if the ambient temperature is below 50^{o}F. 2. Visually inspect the pumps for any signs of corrosion, damage, or tampering. 3. Visually inspect all gauges for any signs of damage or tampering. During the test, observe the gauges to confirm functionality. 4. Test the automatic start of the fire pumps by opening a test line to reduce the system pressure. 5. Start the pumps and check the pump suction, discharge, and bypass valves to ensure that they are open and piping is free of leaks. Record the observed pressures. Allow the pumps to run for at least 10 minutes. 6. Check the temperature and tightness of the shaft seal packing. Alight leakage is normal and indicates that water lubrication and cooling is adequate. 7. Check the pump bearings for overheating or signs of vibration. Check the bearing temperatures. 8. Check the lubrication of all moving parts, re-lubricate as needed. 9. Verify that the pump startups initiated the appropriate alarms at the offsite workstations. 10. Check the pump controller for alarm conditions, and confirm that the controller is back in AUTO before ending the inspection.					11.2.5.4		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Fire Suppression	Fire Extinguishers	MONTHLY INSPECTION: 1. Take the extinguisher out of the cabinet. Invert it, and give it a gentle shake. This will prevent caking over time. 2. Make sure the hose and horn are unobstructed. 3. The gauge pressure must be in the "operable" range identified on the extinguisher label. 4. The lock-pin and tamper seal must be in place.					11.8		
Fire Suppression	Foam System	QUARTERLY INSPECTION: 1. Inspect the equipment for any damage or wear. 2. Inspect the tanks, inlets, and outlets for any leakage. 3. Test the tank level indicators 4. Check the foam level trends. Outside of any suppression events, they should be holding steady. A gradual decrease in levels could indicate a leak in the tank, and a gradual increase in levels could indicate that water is infiltrating the system					11.2.6.3		
Fire Suppression	TCB Fire Suppression Equipment	QUARTERLY INSPECTION 1. Perform the WEEKLY INSPECTION as usual. 2. Notify the AHJ, and then perform the "Water Flow Alarm Test." This test is detailed step by step in Chapter 6 of the document "11.3.2 Pre-Action Riser" of APPENDIX A. 3. Notify the AHJ, and then perform the "Main Drain Test." This test is detailed step by step in Chapter 6 of the document "11.3.2 Pre-Action Riser" of APPENDIX A.					11.3.4		
Fire Suppression	Deluge Valves & Boxes	BI-ANNUAL INSPECTION 1. Visually inspect the deluge valves and boxes, checking for leaks, abnormal operation, or corrosion. 2. Remove the Deluge System from service. Notify the AHJ before undertaking this step. It may be advisable to do this in sections, to avoid leaving the entire Tunnel unprotected at one time. 3. Exercise all valves, confirm proper clearance and movement. 4. Verify that the valve and trim are adequately heated and protected. 5. Inspect all trim for signs of corrosion or blockage. Clean or replace as required. 6. Inspect all gauges for damage and functionality. 7. Address any uncovered issues immediately.					11.2.2.2		
Fire Suppression	Clean Agent System	BI-ANNUAL MAINTENANCE 1. Inspect the equipment for any signs of damage or tampering. 2. Check the quantity and pressure of the clean agent containers.					11.6.1		
Fire Suppression	Fire Hydrants	BI-ANNUAL INSPECTION - Conduct a routine inspection of hydrants, covering all points identified in AWWA M17 - Open the hydrants completely and flush for several minutes - Open and close valves to ensure proper operation - Remove caps and verify proper draining - Remove all nozzle caps to clean rust, corrosion, and debris - Replace nuts, caps, or gaskets as necessary - Relubricate as necessary					11.7		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	BI-ANNUAL INSPECTION AND SERVICE 1. Perform all the steps indicated in the "Monthly Inspection and Service" 2. Inspect the bearing packings and replace as necessary. 3. Take vibration readings on the bearing housings and compare these to previous readings. 4. Inspect the shafts and shaft sleeves for scoring. 5. Check the pump and motor alignments, and correct as needed.					11.2.5.4		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Fire Suppression	TCB Fire Suppression Equipment	BI-ANNUAL SERVICE 1. Perform the WEEKLY INSPECTION and QUARTERLY INSPECTION as usual. 2. Put the system out of service. 3. Close the Main Water Supply control valve and the Priming Valve. Open the Auxiliary Drain Valve. Relieve the pressure in the chamber by opening the Emergency Release Valve. 4. Inspect all trim for signs of corrosion or blockage. Clean or replace as needed. 5. Clean or replace all strainer screens. 6. Put the system back into service.					11.3.4		
Fire Suppression	Fire Extinguishers	ANNUAL INSPECTION: All fire extinguishers should be inspected and tagged by a qualified inspector annually					11.8		
Fire Suppression	Fire Pumps Foam Pumps Jockey Pump	ANNUAL INSPECTION AND SERVICE 1. Perform all the steps indicated in the "Monthly Inspection and Service" and the "Bi-Annual Inspection and Service" 2. Remove the upper half of the pump casings - Inspect the pumps thoroughly for wear and replace parts as needed. 3. Check the wear ring clearances and replace as needed. 4. Remove any deposits or scaling. 5. Clean out the stuffing box piping. 6. Record the water flow measurements, suction readings, and discharge readings for several different flow volumes. These should be plotted on a rating chart as a way to help gauge pump performance form year to year.					AC Fire Pump O&M		
Fire Suppression	TCB Fire Suppression Equipment	ANNUAL INSPECTION 1. Perform the WEEKLY INSPECTION, QUARTERLY INSPECTION, and BI-ANNUAL SERVICE as usual. 2. Notify the AHJ, and then perform the "Annual Test." This test is detailed step by step in Chapter 6 of the document "11.3.2 Pre-Action Riser" of APPENDIX A.					11.3.4		
Fire Suppression	Clean Agent System	ANNUAL MAINTENANCE This should be performed by a qualified technician. Contact Vulcan Fire Systems of Louisville, KY or a similarly qualified vendor for service. 1. Thoroughly inspect the system for any signs of damage or tampering. Examine the hoses closely for damage. 2. Check the quantity and pressure of the clean agent containers. 3. Test the system alarm, the detectors and the release controls.					11.6.1		
Fire Suppression	Backflow Preventer	Bring a certified contractor onsite to test the Plumbing and Fire Suppression Backflow Preventers.					11.10.1 Required by Louisville Water. WVC performed latest test on 2/1/2017.		
Fire Suppression	All Systems	In addition to the prescribed annual inspections of the equipment identified in the previous sub-sections, a full visual inspection should be performed on all: - Hangers and Supports - Bracing - Piping and Fittings - Sprinklers - Spare Parts - Signage The suppression systems should be flushed, and all automatic valves should be inspected for obstructions.					11.10.2		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Fire Suppression	All Systems	Sprinklers should be tested every 10-20 years. Consult with KYTC supervision and the AHJ to determine the required frequency and method for sprinkler testing in the Tunnel.			X		11.10.3		
Freeze Protection									
Freeze Protection	Freeze Protection System	MONTHLY SERVICE - Verify there are no system alarms - Drain the protection system regulator monthly. - If needed, clean the exterior of the equipment with a non-solvent cleaning agent.							
Freeze Protection	Freeze Protection System	ANNUALLY 1. Calibrate the enclosure pressure indicator to 0". Then fully open the enclosure pressure control regulator to blow out any deposits around the tip of the valve and to ensure the vent is operating properly. 2. De-energize the system. 3. Check the stem packing nut, replace or tighten as required. 4. Carefully clean the flapper valve and vent body seats with warm soap and water, being careful not to extend the vent valve beyond its normal opening point or to exert any stress on the valve hinge. 5. Examine the entire protection system. Replace any defective parts. 6. Visually inspect the heat exchanger. Clean and replace gaskets as needed.					11.4.3		
General Electrical									
General Electrical	Motor Control Centers	Visual inspection of all associated equipment; Inspect bus & connections via infrared scanning.					5.2.1.4		
General Electrical	Panelboards	Conduct annual panelboard inspection per O&M instructions (APP A, Chapter 5.2.1.2.2): 1. Check for any accumulation of dust or dirt. Clean out the Panelboard using a brush, vacuum, or lint-free rag. Do not use a blower or compressed air. 2. Inspect all visible electrical joints and terminals in the bus and wiring system. 3. Inspect all conductors and connections to ensure they are clean and secure. 4. Check for discoloration or flaking of insulation or metal parts. This could indicate overheating. 5. Check for pitting or melting of connecting surfaces. This could indicate arcing due to a loose or poor connection. 6. Examine the fuse clip contact pressure and contact means. There should be no signs of overheating or looseness.					5.2.1.2.2		
General Electrical	Circuit Breakers	3 YEAR CIRCUIT BREAKER CHECK: 1. Clean each circuit breaker and its contact surfaces. 2. Lubricate & verify operation of all circuit breaker mechanisms. 3. Apply anti-ox grease to the main contacts. 4. Apply a current equal to 90-110% of the breaker's trip setting to verify proper pick-up of the tripping mechanism. 5. Record the breaker trip times; measure the contact resistance; and perform insulation resistance tests. 6. Address any issues that may be uncovered during testing.		X			5.4		
General Electrical	Motor Control Centers	1. Completely de-energize the MCCs. 2. Clean the entire controller interior. 3. Check the bus connections for tightness. 4. Check the bus insulators for cracks and chips. 5. Clean, lubricate, and verify operation of all switches, relays, & devices. 6. Perform an insulation resistance test and PI test on the bus and motor feeder with the motor connected. 7. Test overloads at 125% and 600% of rating against tripping curve. 8. Perform a calibration test and verify proper operation of all meters.		X					
Lighting									

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Lighting		QUARTERLY LIGHTING TEST AND INSPECTION: 1. Switch the LED lighting through all 8 levels (Levels #1-#5 in Table, plus #1-#3 again in Contraflow configuration). Confirm that there are no burnt out or malfunctioning fixtures. 2. Test all non-automated fixtures, which should include the facility lighting and emergency exit fixtures. Confirm that there are no burnt out or malfunctioning fixtures. 3. Inspect all fixture anchors and supports. Identify and address any loose, damaged, or missing components. Identify and address any rust or other corrosion. **This can be a cursory inspection from the ground, or a close inspection of each fixture via lifts. Determined at KYTC discretion.** 4. Inspect the fixture housings and enclosures for cracks and holes. **This can be a cursory inspection from the ground, or a close inspection of each fixture via lifts. Determined at KYTC discretion.**					5.2.3.2		
Lighting		Inspect and Clean the Luminance Sensors - The front window should be clear and free of dust, debris, or smears.					5.2.3.2		
Lighting		Clean the light fixtures - Wipe off exterior dirt and debris with a soft, clean cloth. A mild detergent and water may be used if necessary.					5.2.3.2		
Network & Controls									
Network & Controls		QUARTERLY INSPECTION: 1. Observe all network equipment, check for any local alarms or error messages. 2. Open cabinets to check for any damage, tampering, or loose connections. 3. Inspect all cabinet cooling fans and air filters. Clean or replace filters as needed.					6.10 Reference APPENDIX E SPARE PARTS - Section 6.10 The WVC-provided filters are all re-usable and can be washed		
Normal Power									
Normal Power	Switchboard	ANNUAL INSPECTION: Inspect the switchboard bus and connections with an infrared scan					5.2.1.2.1		
Normal Power	Medium Voltage Switchgea	1. Wipe away any dust or dirt that may have accumulated inside each switchgear vertical section. Pay close attention to the insulators and insulating material. 2. De-energize all primary circuits, then remove circuit enclosure parts. 3. Before cleaning, take Megger readings between any live parts and ground. 4. Inspect for any signs of overheating or weakened insulation. 5. Remove dust from conductors, live parts, insulators, and surfaces. Wipe clean with isopropyl alcohol or distilled water. Wipe dry with a lint-free cloth. 6. Re-lubricate where required, taking care to remove all excess lubricant with a clean cloth. 7. Take Megger readings again to ensure that insulation resistance has not been lowered. 8. Perform an ultrasonic inspection of the bus supports, insulators, and barriers.					5.2.1.2.3		
Normal Power	Transformers - All	TESTING: 1. Inspect the transformer connections with infrared scanning 2. Perform ultrasonic inspection of bus supports, insulators, and barriers 3. Test circuit breakers					SECTION 5.2.1.1.1 and 5.2.1.1.2		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Normal Power	Transformers - Dry	VISUAL INSPECTION: 1. Check for the accumulation of dust or dirt on the terminations or vents. If necessary, clean by vacuuming, brushing, or blowing dry air. 2. Inspect insulators, terminals, and terminal boards. Check for tracking, breaks, cracks, or burns. Clean or repair as necessary. 3. Inspect ground connections and ground contact surfaces. Tighten or repair as necessary. 4. Inspect the paint finish for scratches or wear. Repair as necessary.					SECTION 5.2.1.1.2		
Normal Power	Transformers - Liquid Filled	VISUAL INSPECTION: 1. The transformer exterior should be inspected for nicks, dents, and scratches. Any damage to weather-resistant finishes should be repaired promptly. 2. The tank covers, manhole seals, handhole seals, and any other gaskets or seals should be inspected for damage or evidence of liquid seepage. Repair or replace as required. 3. Check the liquid level inside the tank. *At this stage, if there is no reason to suspect interior issues or damage, the following steps are optional: 4. Open then tank and inspect for moisture on the underside of the tank or manhole covers. 5. Inspect for loose, shifted, or damaged parts; such as bushings, fuses, etc. Repair or replace as necessary. 6. Check for broken or loose connections. Repair as necessary. 7. Inspect the insulating liquid for contamination. This could include sediment or foreign objects collecting at the tank bottom, dirt, or air bubbles suspended in the liquid.					SECTION 5.2.1.1.1		
Normal Power	Switchboard	3 YEAR SERVICE: 1. Clean the entire switchboard interior. 2. Clean all bus insulators & check for cracks and chips. 3. Clean, lubricate, and verify operation of all control switches, auxiliary relays, and devices. 4. Clean lubricate, adjust, and add anti-ox grease to all disconnect switch contacts.		X			5.2.1.2.1		
Plumbing									
Plumbing	Backflow Preventer	Bring a certified contractor onsite to test the Plumbing and Fire Suppression Backflow Preventers.					8.3.5.2 Required by Louisville Water. WVC performed latest test on 2/1/2017.		
Security/Access Control									
Security/Access Control	CCTV System	ANNUAL CLEANING AND INSPECTION: 1. Unplug cameras from power source 2. Check all mounts and supports 3. Clean camera lenses with a microfiber cloth and lens cleaning solution 4. Re-energize and verify functionality					9.3.2		
Security/Access Control	Access Control	ANNUAL TEST 1. Open the Access Control Panels, check for any damage or loose connections. Wipe away any dust. 2. Open and Close each door, and verify with the C-Cure software that the sensors are functioning properly. 3. Unlock and Lock each door with the C-Cure software. Verify locally that the commands are working. 4. ***Optional*** Trigger each of the intrusion detection devices listed in Section 5.2.4.2 to ensure functionality.					5.2.4		
Civil/Structural/Architectura									
Civil/Structural/Architectural		WEEKLY INSPECTION DURING BELOW-FREEZING TEMPERATURES: Inspect the tunnel walls, tunnel liner, and portal shotcrete for ice and snow buildup - address as necessary					10.10 *During winter months		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Civil/Structural/Architectura	Tunnel Signage	**QUARTERLY** INSPECTION: A. NIGHT VISIBILITY & DAY VISIBILITY B. PLUMBNESS/ORIENTATION C. CLEANLINESS D. BENT OR DAMAGED SIGNS E. SCRAPES OR HOLES F. SPRAY PAINT G. SIGN HAS REACHED OR EXCEEDED ITS SERVICE LIFE H. PEELING OR DAMAGE OF ADHESIVES					10.7.1 Reference 10.7.1 for further details on these inspection items		
Civil/Structural/Architectural		BI-ANNUAL TUNNEL CLEANING: Wash all tunnel surfaces, including the tile; Only power-wash where acceptable and not at-risk to equipment Flush out the drainage system					10.9 *Interval may vary based on traffic levels experienced, do not wash tunnel during winter months at freezing temperatures		
Civil/Structural/Architectura	Portal Shotcrete	ANNUAL INSPECTION: Inspect the portal shotcrete, identify and address the following issues: 1. Debris, snow, or ice buildup 2. Wet spots on the portal facing 3. Water seepage through cracks 4. Spalling					10.2 Reference 10.2 for repair methods		
Civil/Structural/Architectura	Tunnel Liner & Portal Beams Cross Passages	Inspect the Tunnel Liner, Portal Beams, and Cross Passages for: - Spalling - Staining - Cracking - Leakage - Settlement - Other damage or vandalism					10.1 and 10.5 Consult a structural engineer before attempting any structurally significant repairs		
Civil/Structural/Architectura	Tunnel Handrail	ANNUAL INSPECTION: 1. Clean the rail with soapy rags and water prior to the inspection to ensure that damage is not obscured by things like dirt or scuffs. 2. Inspectors should note any points of stress or deterioration in the handrail members and welded connections. Any rust or efflorescence should be removed. 3. All rail posts should be plumb, and the rail should not be warped or twisted. 4. The concrete under and around the handrail base plates should be inspected for any signs of spalling, cracking, or other damage. There should be no exposed rebar or embedded anchorage.					10.6		
Civil/Structural/Architectura	Cross Passage Doors	ANNUAL INSPECTION Verify the following: - Required Opening Force with and without Emergency Pressurization System pressure differentials is within NFPA limits - Labels are clearly visible and legible - No holes or breaks exist in the surfaces of either the door or the frame - Curtain, barrel, and guides are aligned, level, plumb and true - Drop release arms and weights are not blocked or wedged - Mounting and assembly blocks are intact and secured - No parts are missing or broken - Doors have an average closing speed of not less than 6 inches/second and not more than 24 inches/second					10.5.1 NFPA 80 5.2.3.6.2		
Traffic Control Signals									
Traffic Control Signals		MONTHLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds.					9.5		

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System	Sub-System		2 Years	3 Years	5+ Years	Before 1st Freeze	Reference Notes	Complete	Inspection Notes
Traffic Control Signals		QUARTERLY TEST 1. Operate all Portal Signals, AWFs, and the LCS remotely through SCADA. Verify their functionality either locally or via the CCTV feeds. 2. Inspect all Portal Signals, AWFs, and LCS. Tighten any loose connections. Replace any burnt out lamps or LEDs. 3. Clean the Portal Signals, AWFs, and LCS.					9.5		
Traffic Control Signals	Lane Control Signals	BI-ANNUAL INSPECTION: 1. Visually inspect the LCS housings for damage. 2. Inspect the hinges, locks, door seals, and drainage holes. Repair or replace as required. 3. Confirm acceptable humidity levels inside housing. 4. Test protective switches. 5. Inspect over voltage protection units and ventilation. 6. Check and resolve any error messages. 7. Replace any nonfunctioning LED chains.					5.2.5		
Ventilation									
Ventilation	Jet Fans	JET FAN NON-INSTRUMENT CHECK • Start up each jet fan • Check for unusually high noise or vibration levels					8.3.1		
Ventilation	CO/Vis Detectors	Clean the optical surfaces of the CO/Vis sensors and reflector units					8.3.1.1		
Ventilation	Jet Fans	JET FAN INSTRUMENT CHECK • Start up each jet fan • Check for appropriate levels with a sound level meter and an ammeter/voltmeter • Measure vibrations on the motor casing in a radial position • After powering down, check clearances of jet fan blades with thickness gauges • Inspect the support system & anti-sway brackets • Clean the fan exterior surfaces					8.3.1		
Ventilation	Cross Passage Fans	CROSS PASSAGE FAN ANNUAL SERVICE • Visually inspect fans for damage or signs of deterioration • Check bearing alignment • Clean fans, including the inside of housing and impeller blades • Check bearing lubrication and re-lubricate as necessary					8.3.2		
Ventilation	Jet Fans	JET FAN ANNUAL INSPECTION • Perform all the items listed in the bi-annual INSTRUMENT CHECK • Inspect the inside of the fan, the impeller, the motor, and the fan exterior for damage or wear • Check the vibration sensor • Check the temperature and heating sensors • Inspect all wiring and connections • Check the clearance between the fan blades and the housing					8.3.1		

Exhibit C
Renewal Project Plan Requirements

TABLE OF CONTENTS

This Exhibit C includes a framework for development of and potential requirements for a Renewal Project Plan. Each Renewal Project Plan shall be tailored to the complexity of the applicable Renewal Project. The Cabinet has no obligation to include any of the content described below in an Approved Renewal Project Plan and reserves the right to apply any requirement it considers appropriate for a Renewal Project. If the Cabinet desires to authorize Preconstruction Services separately from Construction Services for a Renewal Project, the Contractor shall submit the Renewal Project Plan in phases.

1 SCOPE OF WORK

The Contractor shall describe the Renewal Project to a level of detail that indicates the scope of services provided, location, and project goals.

2 APPLICABLE STANDARDS

All Renewal Work shall be in compliance with the current editions as of all applicable KYTC and AASHTO Design Standards, KYTC Standard Specifications for Road and Bridge Construction and Supplemental Specifications, KYTC Standard Drawings and Sepias, KYTC Guidance Manuals, KYTC Special Notes and Special Provisions, and KYTC Design, Construction, and Technical Memos. Where there are conflicts between AASHTO design requirements and KYTC design requirements, the KYTC requirements shall govern.

The Renewal Project Plan shall include a list of Applicable Standards that will be used for the Renewal Work Project and shall describe any proposed exceptions, deviations, or modifications to Applicable Standards.

3 THIRD PARTY COORDINATION

The Contractor shall identify all required coordination with third parties including utilities, railroads, local governments, and other stakeholders and shall describe its approach to third-party coordination in the delivery of the Renewal Project.

4 ENVIRONMENTAL

The Contractor shall include a list of Hazardous Materials expected to be encountered during Construction Services.

5 SCHEDULE

The Contractor shall provide a working day schedule that shows the various activities of Renewal Work in sufficient detail to demonstrate a reasonable and workable plan to complete the Renewal Project. The Renewal Project schedule shall show the order and interdependence of activities and the sequence for delivering the Renewal Project.

6 SUBCONTRACTING

The Contractor shall describe any planned use of Subcontractors for the Renewal Project.

7 QUALITY MANAGEMENT

The Contractor shall describe its approach to quality management and how it will coordinate with the Cabinet in the Cabinet's performance of oversight and acceptance of the Renewal Project.

7.1 Nonconforming Work

The Contractor shall describe processes and procedures for the identification of Nonconforming Work and the procedures that the Contractor shall take when Nonconforming Work is discovered.

7.2 Design Quality

The Contractor shall describe the approach for design quality management. The approach shall incorporate processes to resolve disagreement, correct errors or omissions, resolve comments, and make the resulting appropriate modifications to the design documents.

7.3 Construction Quality

The Contractor shall describe the approach for construction quality management. This shall include processes to control to the Contractor's production operations by developing processes, procedures, tests, inspections, checks, and control points to be implemented by Contractor to control the quality of the Construction Work.

8 RELIEF EVENTS

The Renewal Project Plan shall include an itemized list of all events that may trigger an extension of time or payment of additional costs.

9 INSURANCE

The Contractor shall include Certificates of Insurance required by the Cabinet as an attachment to the Renewal Project Plan.

10 PREQUALIFICATION

The Contractor shall identify Renewal Work that is subject to Cabinet prequalification requirements. The Contractor shall obtain required prequalification prior to commencing Work that is subject to prequalification.

11 RENEWAL PROJECT COST AND PAYMENT METHOD

The Contractor shall detail the Renewal Project costs.

11.1 Unit Price

If the Renewal Project uses a unit price bid, the Contractor shall supply standard KYTC bid item codes whenever possible. Any non-standard bid items used shall be thoroughly explained in the cost breakdown.

11.2 Lump Sum

If the Renewal Project uses a single "all-inclusive" lump-sum bid item, the Contractor shall provide supplemental cost information and supporting documentation of the costs for each component of the Renewal Project. In order to document how the lump-sum bid price was determined, the Contractor shall supply, using standard KYTC bid item codes whenever possible, all work items, quantities, units, and prices to support the lump sum bid submitted. Any non-standard bid items used shall be thoroughly explained in the cost breakdown. The breakdown shall include all materials to be used in the Renewal Work and shall be in sufficient detail to provide the Cabinet with a means to check partial payment requests.

Exhibit D
Form of Maintenance Payment and Performance Bond

Maintenance Payment and Performance Bonds No. _____

Principal: Webber Infrastructure Management, Inc.
10415 Morado Circle, Building 2, Suite 200
Austin, TX 78759

Surety: _____
_____
_____
_____

Owner: Commonwealth of Kentucky
Kentucky Transportation Cabinet
Division of Construction Procurement
200 Mero Street
Frankfort, Kentucky 40622

MAINTENANCE PAYMENT AND PERFORMANCE BONDS

We, Webber Infrastructure Management, Inc. [Principal] as "Principal" and _____[Surety] duly authorized to transact the business of suretyship in the Commonwealth of Kentucky, as "Surety", jointly and severally bind themselves, their heirs, executors, administrators, successors, and assigns to the Commonwealth of Kentucky, Kentucky Transportation Cabinet, as "Owner", for performance of the Operation and Maintenance Agreement – East End Crossing Tunnel (the "O&M Agreement"), which is incorporated herein by reference, and to pay for all labor, materials, equipment, and services furnished for use in the performance of the O&M Agreement, again incorporated herein by reference.

CONDITIONS OF THIS OBLIGATION:

The Principal has entered into the O&M Agreement with the Owner dated _____[Date], for the performance of routine and corrective maintenance as stated in the O&M Agreement for a period of 7 years that may be extended pursuant to the O&M Agreement to a total of 10 years for the East End Crossing Tunnel, including but not limited to, all roadway, bridge, drainage, and ITS systems between approximately MP 35.15 (west of the I-71/KY 841 (I-265) interchange) and approximately MP 37.75 (west of Harrod's Creek). (the "Project"), CID No. 22-9001.

The Surety hereby waives notice of any change, including any changes in time, alterations, omissions, or modifications to the O&M Agreement, including any incorporated or referenced documents, or to the related subcontracts, purchase orders, or other obligations.

The Payment Bond shall inure to the benefit of Subcontractors and suppliers with respect to the work performed pursuant to the O&M Agreement so as to give a right of action to such persons and their assigns in any suit brought upon this Bond.

This obligation shall remain in effect until the Principal fully and faithfully performs all of the following:

Complete all requirements and execute the Routine Maintenance Work for the Project and all obligations pursuant to the provisions of said O&M Agreement, as may be amended, and the incorporated plans, specifications, and any O&M Agreement modifications made, which may be made without notice to or consent of the surety;

Perform all Project operations agreed to by the Principal pursuant to the O&M Agreement; and

Pays all indebtedness incurred for supplies, materials, equipment, labor furnished, services furnished, and all other costs incurred used in the delivery and completion of the Project and services required in the O&M Agreement.

The Principal's and Surety's responsibilities shall expressly include 1.) the correction of all defective or incomplete work pursuant to the O&M Agreement, 2.) all legal, design professional, and delay costs resulting from the Principal's actions or failures to act, as well as 3.) all liquidated damages and actual damages arising from the Principal's actions and failures to act pursuant to the O&M Agreement.

The Surety's total obligation shall not exceed the amount of the O&M Agreement.

The guarantees contained herein shall survive the expiration or termination of the O&M Agreement with respect to those obligations of Principal pursuant to the O&M Agreement that survive such expiration or termination.

These Bonds and any dispute shall be governed by the laws of the Commonwealth of Kentucky. Any proceeding, legal or equitable, under these Bonds shall be instituted in Franklin Circuit Court in the Commonwealth of Kentucky.

Signed and Sealed this date: _____.

_____
Principal

_____
Name and title

_____
Address

Signed and Sealed this date: _____.

_____
Surety

_____
Name and title

_____
Address

[Corporate Seal]

(Note: Certified copy of Resolution or Power of Attorney authorizing the execution of this instrument on behalf of the Surety must be attached.)

Exhibit E
Routine Maintenance Price

FORM H-1
Routine Maintenance Price Form

ITEM	CONTRACT TERM: (YEARS) 7		
A	ROUTINE MAINTENANCE:		
	MONTHLY LUMP SUM		$244,804.17
	SUBTOTAL MAINTENANCE VALUE:	$	20,563,550.28
B	FINAL O&M PRICE	$	20,563,550.28

FORM H-2
ROUTINE MAINTENANCE PAYMENT SCHEDULE

MONTHLY PAYMENT FOR FIRST 83 MONTHS	$	245,226.70	83 PAYMENTS AT 1/84TH OF THE MAINTENANCE VALUE SUBTOTAL FROM FORM H-1 *(will be adjusted based on inflation index)*
FINAL PAYMENT INCENTIVE AMOUNT	$	588,544.08	20% OF ANNUAL VALUE OF CONTRACT (VALUE OF 12 MONTHS OF PAYMENTS *.2)
84TH AND FINAL MONTHLY PAYMENT	$	833,770.78	*84TH PAYMENT (ONE MONTHLY PAYMENT + INCENTIVE)*