

**PROFESSIONAL SERVICES AGREEMENT FOR A PAVEMENT CONDITION
ASSESSMENT AND MANAGEMENT SYSTEM**

THIS AGREEMENT (“Agreement” or “agreement”) is by and between THE MUNICIPALITY OF PRINCETON (“PRINCETON”), a municipal corporation of the state of New Jersey, 400 Witherspoon Street, Princeton, New Jersey, 08540 (hereinafter referred to as "PRINCETON") and ADVANCED INFRASTRUCTURE DESIGN, INC., 1 Crossroads Drive, Hamilton, New Jersey 08691-3389 (hereinafter referred to as "CONSULTANT").

WITNESS

WHEREAS, PRINCETON desires to obtain a Pavement Condition Assessment and Management System; and

WHEREAS, on June 9, 2026, CONSULTANT provided a written proposal to PRINCETON for purposes of performing the sought-after professional services to PRINCETON, a copy of which is attached as Exhibit B hereto; and

WHEREAS, by resolution, the Council awarded an agreement for professional services to CONSULTANT without public bidding as authorized by law, in accordance with the provisions of the Local Public Contracts Law, N.J.S.A. 40A:11-1 et seq.

NOW THEREFORE, IT IS AGREED by and between PRINCETON and CONSULTANT as follows:

1. **Scope of Services.**

- a. In consideration for payment of the cost set forth in Section 3 below, CONSULTANT shall use its best efforts to perform professional services and other related duties as set forth in the CONSULTANT’S proposal, a copy of which is attached hereto as Exhibit B and incorporated herein as if fully restated. Should there be any conflict between the terms of CONSULTANT’S proposal and this Agreement, the terms of this Agreement shall control.

2. **Contract Term.**

- a. This Agreement shall become effective upon the date of the final signature below.
- b. This Agreement shall expire twelve months from the effective date, unless terminated sooner pursuant to the termination provisions set forth in subsection 2c. below.
- c. The Agreement may be terminated by either party, by giving thirty (30) days advanced written notice to the other, to the address as set forth on page 1 above.

3. **Compensation; Manner of Payment.**

- a. The anticipated cost of CONSULTANT’S services as described herein shall not exceed one hundred fifty thousand, two hundred seventy-two dollars and eighteen cents (\$150,272.18), subject to annual budgetary appropriations.

- b. CONSULTANT shall bill PRINCETON monthly on municipal vouchers for services rendered and reimbursement for such expenses incurred during the prior month, based on the hourly rates and fees set forth in Exhibit B. CONSULTANT shall give written notice to PRINCETON when the CONSULTANT has billed eighty percent (80%) of the compensation set forth in paragraph 3a.
- c. PRINCETON agrees to pay CONSULTANT within thirty (30) days of receipt of invoice and an audited and approved signed voucher.

4. Terms and Conditions.

- a. CONSULTANT shall take note of and comply with the requirements of N.J.S.A. 10:5-31 et seq. and N.J.A.C. 17:27 regarding Affirmative Action/ Equal Employment Opportunity and the Americans with Disabilities Act. The parties hereby incorporate into this Agreement the Affirmative Action/Non-Discrimination addendum per the attached Exhibit A.
- b. CONSULTANT shall take note of and comply with the requirements of P.L. 2004, c.57 (N.J.S.A. 52:32-44 et seq.) regarding Business Registration and Sales and Use Tax. The parties hereby incorporate into this Agreement the Business Registration and Sales and Use Tax addendum per the attached Exhibit C.
- c. The Terms and Conditions printed on the purchase order issued by PRINCETON to CONSULTANT shall be incorporated into this agreement per the attached Exhibit D.

5. Political Contributions.

- a. This Agreement has been awarded to CONSULTANT based on the merits and abilities of CONSULTANT to provide the services as described herein. This Agreement was not awarded through a “fair and open process” as that phrase is defined in N.J.S.A. 19:44A-20.7. As such, CONSULTANT hereby certifies that CONSULTANT (including persons and other business entities having an interest in CONSULTANT, as defined by N.J.S.A. 19:44A-20.7) has neither made a contribution that is reportable by the recipient under P.L. 1973, c.83, N.J.S.A. 19:44A-1 et seq. (i.e., in excess of \$200.00), in the one (1) year period preceding the award of this Agreement nor will it make a reportable contribution during the term of this Agreement to any municipal committee of a political party if a member of that political party is serving in an elective public office of the municipality of PRINCETON when the Agreement is awarded, or to any candidate committee of any person serving in an elective public office of the municipality of PRINCETON when the Agreement is awarded.
- b. CONSULTANT is advised of the responsibility to file an annual disclosure statement on political contributions with the New Jersey Election Law Enforcement Commission (ELEC) pursuant to N.J.S.A. 19:44A-20.27 if CONSULTANT receives in a calendar year \$50,000 or more in the aggregate through agreements or contracts with a public entity. It is CONSULTANT’S responsibility to determine if filing is necessary. Additional information on this requirement is available from ELEC at (888) 313-3532 or www.elec.state.nj.us.

6. Insurance; Hold Harmless.

- a. Prior to commencing work, CONSULTANT shall furnish PRINCETON with a Certificate of Insurance as evidence that it has procured such commercial, automobile, workers' compensation, employer's and professional liability insurance coverage as is customary for the type and scope of services to be rendered under this Agreement. PRINCETON, and its officers, employees, agents and consultants, shall be listed as additional insured and as the certificate holder on such policies.
- b. CONSULTANT shall defend, indemnify and hold harmless PRINCETON, its officers, employees, agents and consultants from any and all claims, suits, actions, damages or costs, of any nature whatsoever, whether for personal injury, property damage or other liability, arising out of or in any way connected with the CONSULTANT'S acts or omissions, or those of its officers, employees, agents and consultants, in connection with this Agreement.
- c. It is also agreed that the acceptance of the final payment by the CONSULTANT shall be considered as a release in full of all claims against PRINCETON arising out of or by reason of performance or non-performance of the CONSULTANT'S obligations under this contract.

7. Complete Agreement.

- a. This Agreement and any attachments hereto or incorporated by reference represents the entire contract between the parties and shall take precedence over all other prior or existing understandings or agreements, if any, whether oral or written.

IN WITNESS WHEREOF, the parties have set their hand and seal the day and date first written above.

ATTEST:

THE MUNICIPALITY OF PRINCETON

By: _____
Dawn M. Mount, Municipal Clerk

By: _____
Mark Freda, Mayor

Date: _____

Date: _____

WITNESS:

**ADVANCED INFRASTRUCTURE
DESIGN, INC.**

By: _____

By: _____
Authorized Representative

Date: _____

Date: _____

EXHIBIT A

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq. (P.L. 1975, c. 127)

N.J.A.C. 17:27 et seq.

GOODS, GENERAL SERVICE AND PROFESSIONAL SERVICES CONTRACTS

During the performance of this contract, the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will ensure that equal employment opportunity is afforded to such applicants in recruitment and employment, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such equal employment opportunity shall include, but not be limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable 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 age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor will send to each labor union, with which it has a collective bargaining agreement, a notice, to be provided by the agency contracting officer, advising the labor union of the contractor's commitments under this chapter and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor, where applicable, agrees to comply with any regulations promulgated by the Treasurer pursuant to N.J.S.A. 10:5-31 et seq., as amended and supplemented from time to time and the Americans with Disabilities Act.

The contractor or subcontractor agrees to make good faith efforts to meet targeted county employment goals established in accordance with N.J.A.C. 17:27-5.2.

The contractor or subcontractor agrees to inform in writing its appropriate recruitment agencies including, but not limited to, employment agencies, placement bureaus, colleges, universities, and labor unions, that it does not discriminate on the basis of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, and that it will discontinue the use of any recruitment agency which engages in direct or indirect discriminatory practices.

The contractor or subcontractor agrees to revise any of its testing procedures, if necessary, to assure that all personnel testing conforms with the principles of job related testing, as established by the statutes and court decisions of the State of New Jersey and as established by applicable Federal law and applicable Federal court decisions.

In conforming with the targeted employment goals, the contractor or subcontractor agrees to review all procedures relating to transfer, upgrading, downgrading and layoff to ensure that all such actions are taken without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, consistent with the statutes and court decisions of the State of New Jersey, and applicable Federal law and applicable Federal court decisions.

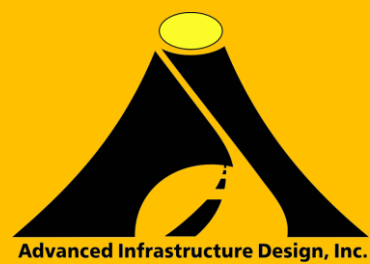
The contractor shall submit to the public agency, after notification of award but prior to execution of a goods and services contract, one of the following three documents:

Letter of Federal Affirmative Action Plan Approval;

Certificate of Employee Information Report; or

Employee Information Report Form AA302 (electronically provided by the Division and distributed to the public agency through the Division's website at http://www.state.nj.us/treasury/contract_compliance).

The contractor and its subcontractors shall furnish such reports or other documents to the Division of Purchase and Property, CCAU, EEO Monitoring Program as may be requested by the office from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Purchase and Property, CCAU, EEO Monitoring Program for conducting a compliance investigation pursuant to **N.J.A.C. 17:27-1 et seq.**



**Professional Services for a Pavement Condition Assessment and
Management System (2026) – Municipality of Princeton, New Jersey**

Technical Proposal

06/09/26

James J. Purcell, PE

Assistant Municipal Engineer / Acting Land Use Engineer
Department of Infrastructure & Operations
Municipality of Princeton
400 Witherspoon Street
Princeton, NJ 08540

**Re: Municipality of Princeton, New Jersey - Pavement Condition Assessment and
Management System**

Dear Mr. Purcell:

As per your request, Advanced Infrastructure Design, Inc. (AID) is pleased to present you with this proposal, which highlights our proposed scope of services, deliverables and cost.

We trust that the enclosed package is satisfactory; however, should you require any additional information, please do not hesitate to contact us.

Sincerely yours,

Manuel Celaya

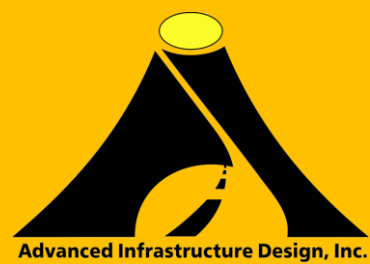
Manuel Celaya, Ph.D., P.E.

Practice Lead, NDT/NDE

mcelaya@aidpe.com

609-838-2216 x208





Professional Services for a Pavement Condition Assessment and Management System (2026) – Municipality of Princeton, New Jersey

Technical Proposal

Advanced Infrastructure Design (AID)

The go-to expert in pavement engineering for NJDOT over the past decade and beyond, Advanced Infrastructure Design, Inc. (AID) is a consulting engineering firm located in Mercer County New Jersey that specializes in pavement testing, evaluation, design, and management. Working under the Municipal Engineer, AID looks forward to the potential opportunity to serve the Municipality of Princeton through this project. Similar to the pavement condition data collected in 2022-2023, the objective of this follow-up investigation is to continue to provide a low-cost automated pavement data collection method as a way to provide the Municipality with the data needed to continue making informed pavement management decisions.

AID, a certified WBE, SBE and DBE/ESBE firm, is staffed with a diversified, strong team of pavement engineers and owns and operates all equipment required for data collection on this project, including a state-of-the-art “Integrated Testing Vehicle” that collects all data necessary for this project. As demonstrated by its past performance on similar projects, AID will commit the required resources, including staff and equipment, to deliver the pertinent data on time, within budget, and meeting or exceeding quality standards. As such, AID will lead all data collection, analysis, and reporting efforts. Manuel Celaya, Ph.D., P.E., will serve as the AID Team’s Project Manager and lead the project from AID’s Hamilton, NJ office. Dr. Celaya will also be the point of contact and can be reached as follows:

Advanced Infrastructure Design, Inc.

1 Crossroads Drive

Hamilton, NJ 08691-3389

(609)-838-2216, ext. 208

mcelaya@aidpe.com



Project Understanding

In an effort to continue assisting the Princeton Municipality's Engineering Department to maintain a roadway maintenance program, AID proposes to collect pavement condition data as per the Highway Performance Monitoring System (HPMS) Field Manual. HPMS is a national program that houses inventory information for all of the Nation's public road mileage, as certified by State Governments and updated on an annual basis. All roads open to public travel are reported in HPMS, regardless of ownership, including Federal, State, County, City, and privately-owned roads such as toll roads. NJDOT and other MPOs are required to annually furnish all data per the reporting requirements specified in the HPMS Field Manual. HPMS data is used to categorize the performance measures in terms of "Good" or "Bad" condition, independent of whether or not the roadway under consideration is classified as an interstate or non-interstate system. As noted in the HPMS Field Manual, pavement data that needs to be collected and reported includes: International Roughness Index (IRI), Present Serviceability Rating (PSR), Rutting, Faulting (for concrete pavements), and Cracking Percent.

Princeton's Engineering Department has requested a follow-up assessment of **100% of their network** for total of about **one hundred seventeen (117) lane miles** of municipal roadway. It should be noted that in 2022-2023 the entire network (also 117 lane miles) was investigated. To allocate funding in the most effective manner and prioritize resurfacing projects and to perform preventative maintenance, pavement condition analysis as a data-driven method is highly recommended by the Federal Highway Administration (FHWA). Pavement condition data is a valuable resource when developing work programs. This project will also provide the necessary groundwork to implement FHWA's Every Day Counts "Pavement Preservation" initiative. The goal of incorporating a Pavement Preservation approach is to improve or maintain the condition of transportation assets in a state of good repair. Preservation activities generally do not add capacity or structural value but do restore the asset's overall condition. A "mix of fixes" approach, utilizing various treatments and construction methods, helps infrastructure owners to cost-effectively achieve and sustain the desired state of good repair.

In addition, as an optional task (Task 3 in the RFP), AID will obtain ancillary data from our data collection efforts. As requested by Municipality staff, a high-definition LIDAR system will be used to evaluate selected ADA Ramps. As requested, a total of one hundred (100) ADA Ramps (locations to be determined) will be extracted and further analyzed. Moreover, LIDAR data will be used to catalog a selected number (anticipated 200) of traffic signs (Optional).

AID, possessing expertise and experience in these tasks, welcomes the opportunity to assist the Municipality with this effort. As demonstrated by previous similar project experience, AID is committed to fulfilling the project objectives in a timely manner. Samples of AID's similar projects include:

- Pavement Condition Assessment and Management System – Jackson Township, New Jersey (2023)
- Pavement Condition Assessment and Management System – Municipality of Princeton, New Jersey (2023)

- New Jersey Turnpike and Garden State Parkway Pavement Asset Data Collection, OPS No. A3352 (2013-2015) and A3384 (2016-2020) and A3795 (2021-2025)
- Atlantic City Expressway Pavement Data Collection & Support (2009, 2014, 2019 and 2025)
- South Jersey Transportation Planning Organization (SJTPO), Regional Pavement Condition Data Collection Project on 4 counties – Atlantic, Cape May, Cumberland & Salem (2018 – 2019)
- Development of a Pavement Management Initiative, Burlington County (2017-2018)
- Development of a Pavement Evaluation, Management, and Design for County Roads, Middlesex County (2015-2016)
- Sign Inventory and Roadway Assessment Program, Union County (2012)

Project Approach

Beyond its experienced team of pavement engineers, AID brings a unique asset to complete the objectives for this project – dedicated equipment, locally housed at our company headquarters in Hamilton Township, Mercer County, and ready for use at a moment's notice. AID proposes to collect all pavement condition data simultaneously at posted roadway speeds without interruption to traffic using our Integrated Testing Vehicle (ITV), which is an all-encompassing pavement data collection van. AID will complement the ITV with an experienced group of pavement engineers to collect and report pavement condition as well as provide pavement treatment techniques if desired, for the Municipality of Princeton.

Our approach will fully satisfy data gathering requirements with regard to FHWA's HPMS reporting and help the Municipality of Princeton in optimizing the condition of its pavement network. Please note that about 10% of the network will be excluded (i.e., newly resurfaced roads). Our efforts will enable the Municipality to develop optimized roadway improvement programs that consider the needs of the pavement network and current or anticipated funding levels, similar to the previously completed project in 2023. Optimization involves maximizing the long-term performance of the pavement network within the forecasted budget by selecting a mix of fixes for a prioritized listing of project segments. AID will identify appropriate pavement treatment types based on the collected pavement condition data and other pertinent factors. As an option, AID can also provide a physical inventory and evaluation of selected assets (i.e., 100 ADA Ramps and 200 Signs) within the Municipality network limits. To achieve this objective, AID's LIDAR and asset extraction software package will be applied to the geo-referenced LIDAR database obtained during pavement condition data collection. Additionally, AID could extract all traffic signs within the Municipality network, also using data collected with the LIDAR system. However, only the cost to extract a selected number of signs (i.e., 200) is included.

The pavement condition and pavement treatment database will be delivered in an ESRI ArcGIS 10 format that will contain the condition and treatment data mapped to the pavement segments. The resulting database will be developed in such a manner to allow easy access and use by Municipality staff, officials, and other stakeholders. Quality assurance/Quality control (QA/QC) will be incorporated into all facets of the project from project planning to data collection to analysis and compilation through data delivery. The final task will be to provide training and technical support on all software and hardware developed to ensure comfortable understanding and use of the new system by all prospective users.

Similarly, ADA Ramps and traffic signs will be delivered in an ESRI ArcGIS 10 format (latest release version 10.8.2).

Task 1: Pavement Condition Assessment

Project Setup

AID will initiate the project by coordinating a kick-off meeting and follow-up meetings as necessary to gather the project requirements and ensure that all stakeholder concerns and interests are fully understood. AID will use this information to develop and fine-tune an appropriate plan for collection, processing, QA/QC, and delivery of the desired data. Under the project setup task, the following one-time work efforts will be undertaken before data collection:

1. Obtain LRS (Linear Referencing System) and Municipality map and geodatabase files with the street network for the Municipality.

The existing LRS and geodatabase files related to the road network will be reviewed, enabling AID to fully understand the design, and if applicable, connecting attributes between systems. AID will also determine the beginning and end points of all Municipality roads to be inspected by comparing maps to GIS and other available sources. It is anticipated that similar to the 2022-2023 investigation, AID will use the same roadway segments (same beginning and end points). On that project, roadway segments were designated at 0.05-mile increments.

2. Assess the Municipality's existing Asset Management System.

The Municipality's existing asset management system will be reviewed to better understand the current use of GIS and asset management applications and study the feasibility of proposing new options for implementing a PMS.

3. Create data tables and develop data fields for each traveled lane divided into segments.

AID will outline the design of the pavement database. The geodatabase model will be set up with standard domains, tracking pavement attributes to describe pavement condition, index ratings, and positional information. A template will be developed and its format will be provided to Municipality staff for approval. Attributes will include: route number (i.e., street name), route type, functional class, length, divided/undivided route section, pavement type, number of lanes and width, shoulder type and width, municipality, IRI, rut depth, distresses (percentages by type and severity) and corresponding Surface Distress Index (SDI), and cracking percent for every roadway segment (anticipated 0.05-mile long) of lanes tested, referenced in terms of both the Municipality's LRS and GPS coordinates (start and end of each segment). Video links will also be generated to allow access to video files for every segment.

4. Develop plan for data collection.

AID will generate route mapping from the data received from the Municipality. These maps will be used as an informative scheduling visual aid that will outline weekly routes of travel and peak traffic times. A test plan will be developed by AID in close coordination with Municipality staff. If heavy traffic, construction, or other impediments are anticipated for specific roads, these issues will be discussed with Municipality Engineering staff. Weather constraints such as snow coverage and rain (wet roadways) will impede data collection, thus forecasted weather will be factored into the test plan.

Technical Proposal

5. Establish data collection and formatting protocols.

Data will be collected and delivered to the Municipality in an agreed upon electronic format. The following data will be collected and reported for each selected segments (0.05-mile increments, other) : IRI per *ASTM E950-09* and *E1926-08* and *AASHTO M 328-10-UL* and *R 057-10-UL* with reporting of left and right wheel paths and the average; SDI per NJDOT's New Jersey Pavement Management System Pavement Condition Indices & Analysis; distresses, cracking percent, rut depths (all wheel paths and the average) and average cross-slope. GPS coordinates to sub-meter accuracy, including Latitude and Longitude, will be reported along with locations per the Municipality's LRS.

6. Establish Quality Management Plan for project.

AID recognizes the importance of QA/QC at every step of a successful project. The Quality Management Plan will be prepared and submitted to the Municipality at the outset of the project. This plan will be distributed and reviewed with all members of AID to ensure an understanding of the required procedures to be followed. QA/QC will occur at each stage of the project – field data collection, processing of field data, analysis of field data, data compilation, and reporting. QA/QC will include the following standards and operations to control quality as well as carrying out random inspections to assure quality.

7. Obtain from the Municipality, where available, and populate data tables with activity type and date of last pavement treatment.

Where available, existing data outlining pavement treatment activities and dates of last pavement treatment will be obtained from the Municipality and organized into a database that will be used as reference data for the pavement treatment program. Because AID conducted a similar investigation in 2022-2023, the same database and corresponding updates will be used.

Data Collection – Pavement Functional Adequacy

All the roads within the Municipality network will be tested with AID's ITV. It is anticipated that **all roads** will be collected in both directions of travel. Therefore, approximately **234 lane-miles** will be collected using AID's testing vehicle. AID's ITV, shown below, integrates linear distance measurement and GPS, 3 high-resolution forward-facing video cameras, a Laser Crack Measurement System (LCMS), and Ground Penetrating Radar (GPR) antennas, such that video, 3D distress mapping, IRI, SDI, rut depth, cross-slope, and asphalt pavement thickness data are simultaneously collected at normal roadway speeds. AID's ITV is also equipped with an Applanix POS LV 420 unit to enhance its GPS capabilities to provide sub-centimeter accuracy.



AID's ITV Equipped with LCMS, HD Cameras, GPR, and GPS w/Applanix

The LCMS system utilizes single-pass 3D sensors for pavement inspection. This technology is able to automatically detect, measure, and quantify all key functional pavement parameters within a lane in a single pass, including but not limited to: rutting, cracking (longitudinal, transverse, and alligator), roughness (IRI), and lane/shoulder drop off and faulting (for concrete pavements).

The automated distress analysis system will be used to convert identified distresses (including their severity and extent) to NJDOT's SDI. Additional distresses will be captured through semi-automated methods (raters reviewing automated images in the office). These include bleeding, block cracking, bumps and sags, corrugation, depressions, edge cracking, joint reflection cracking, patching and utility cuts, polished aggregate, potholes, railroad crossings, and weathering and raveling. For concrete pavements (if they exist), additional distresses include buckling, joint seal damage, patching, and utility cuts, polished aggregate, pumping, punch-outs, railroad crossings, shrinkage cracking, and spalling (corner and joint).

A typical visual output from the LCMS system, showing the integrated 3D surface laser images (with superimposed distresses) and video images from the center camera, is shown below for reference (from the previously completed project in 2023). In addition, the LCMS is able to collect and report longitudinal profile and roughness (IRI) with the precision and bias of an *ASTM E950* Class 1 profiler across the entire lane width. Continuous bound pavement thickness is also collected simultaneously with the ITV via GPR testing per *ASTM D4748*. Although pavement thickness data is not required, it will be available for analysis at an additional cost if requested.



Integrated Camera and LCMS Images

A route mapping plan will be generated from the data received from the Municipality, which will act as the visual management component to describe the mission planning of our field collection. These maps will outline weekly routes of travel and peak traffic times. AID will meet with the Municipality to outline the locations and/or days where route travel may be inaccessible due to construction, weather constraints or other obstructions. These areas will be noted prior to the project data collection efforts. Data collection with AID's ITV will be performed by two people, a driver/technician and an experienced engineer who will set up and supervise the data collection.

Roadway video log data collection will be simultaneously performed to enable a cost-efficient method to provide a back-up for QA and a tool to identify additional pavement distress data. AID will conduct QA of the distress data by simultaneously reviewing video and LCMS images at a sampling rate of ~10% on a random basis within each tenth mile of road. For QA of the video log images, the AID Team will examine the images to identify and catalog abnormalities, including distortion, sun overexposure, darkness, occasions when parts of the collection vehicle are visible in the image, and others. 10% of the images will be randomly selected and reviewed initially for QA purposes. AID's Quality Management Plan will detail action plans for correcting all errors, both random and systematic. No Maintenance and Protection of Traffic (MPT) is required for data collection efforts.

Video will be collected with 3 high-resolution cameras affixed to the roof of the ITV. The video cameras are arranged to provide diagonally left, straight, and diagonally right angle views of the roadway pavement and are capable of recording high-quality images at a rate of 5 images per second on each camera. The

system in use includes Lumenera LT425C cameras with USB 3.0, Gigabit (GigE) and Ethernet capabilities, which provide 4.2 Megapixel images. AID has developed an in-house post-processing system that allows stitching 3 images to obtain a panoramic image (see sample below). All images will be accessible via hyperlinks in spreadsheets and geo-referenced with other information of interest (date/time of testing, speed, etc.).

Image File	LaneDes	Milepost	Latitude	Longitude	Veh. Speed (mph)	Date of Testing	Time of Testing
2018 TPK HWE CL 0.023138.jpg	2	0.023	40.70808	-74.15607	23.8	5/21/2018	1:10:53 PM
2018 TPK HWE CL 0.027026.jpg	2	0.027	40.70805	-74.15600	24.6	5/21/2018	1:10:54 PM
2018 TPK HWE CL 0.030834.jpg	2	0.031	40.70803	-74.15594	24.4	5/21/2018	1:10:54 PM
2018 TPK HWE CL 0.036032.jpg	2	0.036	40.70799	-74.15585	25.2	5/21/2018	1:10:55 PM
2018 TPK HWE CL 0.039945.jpg	2						
2018 TPK HWE CL 0.043725.jpg	2						
2018 TPK HWE CL 0.047662.jpg	2						
2018 TPK HWE CL 0.051591.jpg	2						
2018 TPK HWE CL 0.055538.jpg	2						
2018 TPK HWE CL 0.059695.jpg	2						
2018 TPK HWE CL 0.063292.jpg	2						
2018 TPK HWE CL 0.067181.jpg	2						
2018 TPK HWE CL 0.071062.jpg	2						
2018 TPK HWE CL 0.075139.jpg	2						
2018 TPK HWE CL 0.078909.jpg	2						
2018 TPK HWE CL 0.082816.jpg	2						
2018 TPK HWE CL 0.086658.jpg	2						



Typical Summary Spreadsheet (and Stitched Panoramic Image Link) for Video Images

Task 2: Pavement Treatment Program (Optional)

Developing the pavement management platform is a critical task that transforms the data collected and compiled from the previous tasks into an effective management tool. During the 2022–2023 PMS efforts, the platform was established for the Municipality, including completion of the distress survey, segmentation based on pavement conditions and attributes, and development of treatment recommendations.

For the current iteration of the PMS work, this task will build directly upon that established PMS framework. The focus will be on refining and enhancing the existing system based on lessons learned, incorporating new PCI data and treatment adjustments, and generating an updated, prioritized list of projects with appropriate treatment strategies. This approach ensures continuity with the previous work while avoiding duplication of effort and associated costs. The proposed subtasks are described in more detail below.

Selection of Treatment Types

As part of 2022-2023 PMS, AID met with the Municipality officials to determine the pavement treatment strategies to be incorporated into the PMS. Five treatment alternatives were identified, representing a range of approaches from no action to full reconstruction. These include Do Nothing, Preservation Treatments (excluding thin overlay), Thin Overlay, Mill and Pave, and Road Reconstruction.

These categories provide a structured framework to address varying pavement conditions. Emphasis is placed on utilizing pavement preservation treatments where appropriate, as they offer a cost-effective means of extending pavement life when distress is still minimal. More intensive measures, such as rehabilitation or reconstruction, are reserved for roadways exhibiting advanced deterioration.

With AID's expertise in designing pavement solutions for hundreds of NJDOT and New Jersey county projects over the past two decades, AID is well-positioned to develop an appropriate menu of options. Communication with the Municipality will still be critical for this step to incorporate the Municipality's lessons learned and experience with various treatment methods. It is envisioned that the ultimate mix of fixes to be considered will include those favored by the Municipality supplemented by additional options that hold promise for the successful use and cost savings. With such options available, the Municipality can be proactive in its pavement program, maintaining smooth-riding roads by making data-driven decisions that employ a "best first" approach rather than a "worst first" mentality that chases poor pavements in a vicious cycle of fiscal futility.

Development of Data-Driven Logic for Treatment Selection

This subtask will involve re-visiting the logic and associated decision matrix/tree that was developed during the 2022-2023 PMS work relating the data collected under the previous tasks to the optimal pavement treatment type. The decision tree developed under the previous work considered NJDOT's Surface Distress Index (SDI) along with select individual distresses (including Fatigue Cracking and Rutting) and aging/oxidation of the surface to give a composite picture of the overall condition of the pavement and therefore enable selection of appropriate treatments to address the pavement needs.

Treatment Selection and Prioritization

Under this subtask, treatment types will be assigned to the same Municipality roadway segments evaluated in the 2022–2023 project, using the decision matrix developed in the previous subtask. Once treatments are assigned, the segments will be ranked for prioritization. The prioritization approach will build on the methodology established during the 2022–2023 effort, which was developed collaboratively with the Municipality and informed by both AID's pavement engineering expertise and the Municipality's experience and preferences. Segments were ranked based on the anticipated benefit of each project, primarily in terms of condition improvement. A similar approach is anticipated for this effort, with continued coordination with the Municipality. Additional factors—such as traffic volumes, operational considerations, or geographic priorities—can also be incorporated, as appropriate, to ensure the final prioritization reflects the Municipality's needs and objectives.

Deliverables

The pavement condition and inventory data will be provided in MS Excel format for every 0.05-mile (same as in 2023) of each road, allowing for easy syncing back into the Municipality's geodatabases and/or Pavement Management System (see sample below). In addition, stitched LCMS and video image files and links via MS Excel will be provided every 20 ft., similar to that shown below. A prioritized listing of constructable road segments with corresponding pavement treatments will also be provided.

Rte	Dir	MPFrom	MPTo	GPSFrom	GPSTo	LaneDes	ProfilerDate	URI	RIRI	AIRI	PSR	Crack %	Faulting	LRut	RRut	ARut	MRut	ACThick	Treatment Type		
Blair Rd	NB	0.7	0.8	40.57042	-74.25901	40.57180	-74.25849	1	7/3/2017	618.6	730.3	674.4	3.1	0%	N/A	0.58	0.24	0.41	1.66	11.0	Microsurface
Blair Rd	NB	0.8	0.9	40.57180	-74.25849	40.57318	-74.25789	1	7/3/2017	711.8	608.2	660.0	0.8	0%	N/A	0.37	0.47	0.42	2.13	11.0	Microsurface
Blair Rd	NB	0.9	1.0	40.57318	-74.25789	40.57456	-74.25728	1	7/3/2017	466.2	371.3	418.7	3.3	0%	N/A	0.30	0.13	0.22	1.80	11.0	Microsurface
Blair Rd	NB	1.0	1.1	40.57456	-74.25728	40.57592	-74.25664	1	7/3/2017	531.8	449.3	490.6	2.1	0%	N/A	0.22	0.12	0.17	1.38	11.0	Microsurface
Blair Rd	NB	1.1	1.2	40.57592	-74.25664	40.57729	-74.25599	1	7/3/2017	538.2	506.8	522.5	2.2	60%	N/A	0.31	0.13	0.22	1.00	11.0	Microsurface
Blair Rd	NB	1.2	1.3	40.57729	-74.25599	40.57865	-74.25536	1	7/3/2017	500.8	433.5	467.2	2.3	0%	N/A	0.39	0.12	0.26	2.09	11.0	Crack seal
Blair Rd	NB	1.3	1.4	40.57865	-74.25536	40.58002	-74.25478	1	7/3/2017	487.6	548.5	518.0	1.6	0%	N/A	0.40	0.30	0.35	2.73	8.0	Microsurface
Blair Rd	NB	1.4	1.5	40.58002	-74.25478	40.58142	-74.25419	1	7/3/2017	324.3	358.8	341.5	2.4	0%	N/A	0.51	0.29	0.40	0.99	11.5	Microsurface
Blair Rd	NB	1.5	1.6	40.58142	-74.25419	40.58281	-74.25368	1	7/3/2017	226.6	280.3	253.4	3.6	0%	N/A	0.23	0.19	0.21	1.61	11.5	Microsurface
Blair Rd	NB	1.6	1.7	40.58281	-74.25368	40.58419	-74.25335	1	7/3/2017	376.9	450.2	413.5	3.9	0%	N/A	0.20	0.20	0.20	1.73	11.5	Microsurface
Blair Rd	NB	1.7	1.8	40.58419	-74.25335	40.58566	-74.25302	1	7/3/2017	255.7	378.4	317.0	3.5	0%	N/A	0.30	0.27	0.29	1.18	11.5	Microsurface
Blair Rd	NB	1.8	1.9	40.58566	-74.25302	40.58707	-74.25271	1	7/3/2017	383.5	368.3	375.9	3.8	0%	N/A	0.21	0.22	0.22	1.99	11.5	Microm III & HPTO
Blair Rd	NB	1.9	2.0	40.58707	-74.25271	40.58854	-74.25274	1	7/3/2017	189.8	195.0	192.4	3.7	0%	N/A	0.30	0.27	0.29	0.66	11.5	Microm III & HPTO
Blair Rd	NB	2.0	2.1	40.58854	-74.25274	40.58996	-74.25304	1	7/3/2017	231.3	310.2	270.8	3.6	0%	N/A	0.23	0.25	0.24	2.61	11.5	Microm III & HPTO
Blair Rd	NB	2.1	2.2	40.58996	-74.25304	40.59136	-74.25264	1	7/3/2017	168.2	216.6	192.4	3.9	0%	N/A	0.22	0.20	0.21	0.62	11.5	Microm III & HPTO
Blair Rd	NB	2.2	2.3	40.59136	-74.25264	40.59271	-74.25213	1	7/3/2017	142.9	196.6	169.8	3.5	0%	N/A	0.26	0.25	0.26	0.50	11.5	Microm III & HPTO
Blair Rd	NB	2.3	2.4	40.59271	-74.25213	40.59417	-74.25213	1	7/3/2017	142.9	196.6	169.8	3.8	0%	N/A	0.23	0.24	0.24	0.56	11.5	Microm III & HPTO
Blair Rd	NB	2.4	2.5	40.59417	-74.25213	40.59555	-74.25230	1	7/3/2017	130.3	166.1	148.2	3.6	0%	N/A	0.23	0.42	0.33	2.10	11.5	Microm III & HPTO
		Milepost		GPS Coordinates				IRI			PSR	Cracking Percent		Faulting	Rutting				Treatment		
														Faulting					Thickness (Optional)		

Milepost

GPS Coordinates

IRI

PSR Cracking Percent

Faulting

Rutting

Thickness (Optional)

Typical Summary Spreadsheet Showing Pavement Condition Data and Recommended Treatment

Geo-Coded Pavement Images

Roadway video log data from the center camera will be stitched with the LCMS-laser images. All images will be accessible via hyperlinks in spreadsheets and geo-referenced with other information of interest (date/time of testing, speed, etc.), as shown in the sample below. Images will be provided for each street/roadway on separate folders for easy access. These spreadsheets are easily converted to an ESRI supported GIS format as well.

Image File	LaneDes	Milepost	Latitude	Longitude	Date of Testing
Battle Rd 2022 NB MP 0.1186.jpg	1	0.119	40.33658	-74.66965	5/5/2022
Battle Rd 2022 NB MP 0.1207.jpg	1	0.121	40.33660	-74.66962	5/5/2022
Battle Rd 2022 NB MP 0.1246.jpg					
Battle Rd 2022 NB MP 0.1284.jpg					
Battle Rd 2022 NB MP 0.1322.jpg					
Battle Rd 2022 NB MP 0.136.jpg					
Battle Rd 2022 NB MP 0.1399.jpg					
Battle Rd 2022 NB MP 0.1438.jpg					
Battle Rd 2022 NB MP 0.1476.jpg					
Battle Rd 2022 NB MP 0.1514.jpg					
Battle Rd 2022 NB MP 0.1552.jpg					
Battle Rd 2022 NB MP 0.159.jpg					
Battle Rd 2022 NB MP 0.1628.jpg					
Battle Rd 2022 NB MP 0.1666.jpg					
Battle Rd 2022 NB MP 0.1705.jpg					



Typical Summary Spreadsheet That Links Geocoded Pavement Images

Task 3: Physical Inventory of Assets of Interest: ADA Ramps and Traffic Signs using LIDAR (Optional)

Provided as an option, AID can record assets of interest (pavement markings, traffic signs, utility assets, street lighting, sidewalks, curbs, etc.) using its newly acquired high-definition LIDAR (Trimble MX 60). As indicated by Municipality staff, there is a need to identify and evaluate a total of 100 ADA Ramps. Additionally, there could be a need to identify all traffic signs within the Municipality network. On this proposal AID is assuming that 200 signs will be extracted and reported.

AID) will utilize a state-of-the-art mobile LiDAR mapping system (Trimble MX60) to perform high-speed and high-accuracy geospatial data collection in support of corridor-level inspection and inventory of ADA ramps and roadway traffic signage. The proposed approach enables efficient documentation of transportation infrastructure along the Municipality's roadway network. The Trimble MX60 is an integrated mobile mapping platform that combines dual laser scanning sensors, synchronized 360-degree panoramic imaging, and advanced GNSS/IMU positioning technology to enable simultaneous acquisition of dense three-dimensional spatial data and high-resolution imagery at normal traffic speeds. The dual-sensor configuration improves roadside visibility and reduces shadowing effects, allowing reliable capture of vertical infrastructure such as traffic signs, pedestrian facilities, guardrails, and utility features. Panoramic imagery supports visual condition review and enables engineering staff to virtually revisit the corridor environment during post-processing activities.



AID testing vehicle equipped with mobile LiDAR system

The mobile mapping system is capable of collecting high-density spatial measurements suitable for engineering evaluation of roadway geometry, roadside infrastructure placement, and asset inventory development. The synchronized LiDAR and imagery datasets provide a scalable framework for corridor screening, digital documentation, and long-term asset management initiatives. A Sample LiDAR and imagery datasets are shown below.



Sample mobile LiDAR point cloud dataset (left) and sample synchronized panoramic imagery (right)

Mobile LiDAR Data Collection Methodology

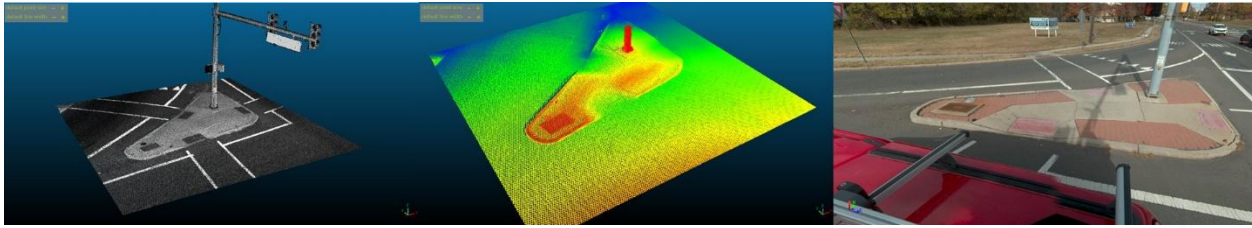
AID will implement a structured mobile LiDAR data collection methodology designed to ensure complete coverage, reliable positioning, and consistent data quality. Mobile LiDAR data will be collected by operating AID's survey vehicle within the Municipality's roadway network at posted speeds. One or two passes per street/road will be needed to achieve full coverage.

Accurate positioning will be achieved through integration of GNSS observations, inertial measurements, and vehicle distance measurement data. Where required, surveyed control points may be incorporated to enhance absolute positional accuracy and support quality validation of the mobile mapping dataset. Data collection will be performed by two experienced AID engineers. One engineer will operate the survey vehicle while the second monitors real-time system performance indicators including positioning solution quality, sensor functionality, and preliminary data coverage.

Mobile LiDAR Data Processing and Asset Inspection

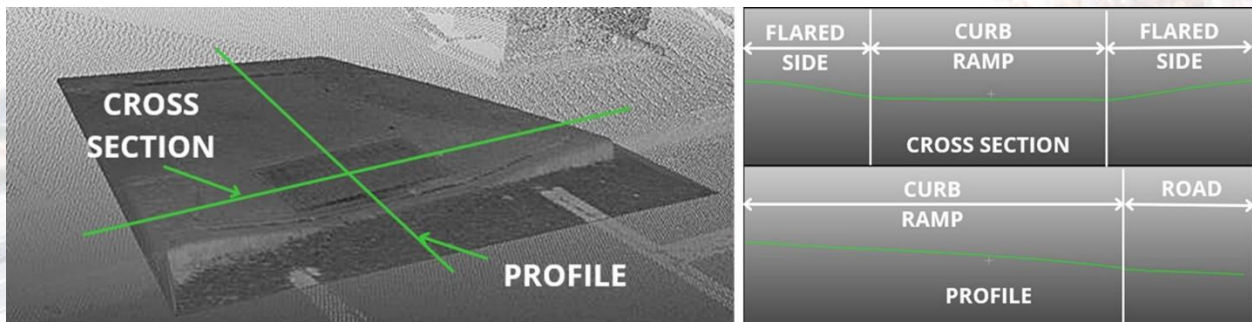
Following completion of field activities, mobile LiDAR and imagery datasets will be processed using Trimble Business Center (TBC) mobile mapping software. Navigation data will be post-processed to improve vehicle trajectory and positioning. LiDAR measurements will then be georeferenced to generate a dense three-dimensional point cloud representing roadway geometry and surrounding infrastructure. Strip alignment procedures may be performed to improve spatial consistency between multiple passes. Panoramic imagery will be synchronized with the LiDAR dataset to support engineering review, condition assessment, and optional point cloud colorization. AID will perform internal quality control procedures to verify dataset completeness, positional consistency, and trajectory stability prior to asset extraction.

On this project asset inspection activities will be limited to ADA ramps and roadway traffic signage including associated sign supports. Selected ADA ramps will be identified and evaluated using the processed point cloud dataset and synchronized imagery in accordance with NJDOT specifications and ADA compliance guidance (see Figure below). Engineering review will include evaluation of ramp geometry such as running slope, cross-slope, ramp width, landing configuration, and elevation transitions. Additional observable characteristics such as curb reveal, sidewalk interface conditions, surface deterioration, and potential accessibility obstructions may also be documented.



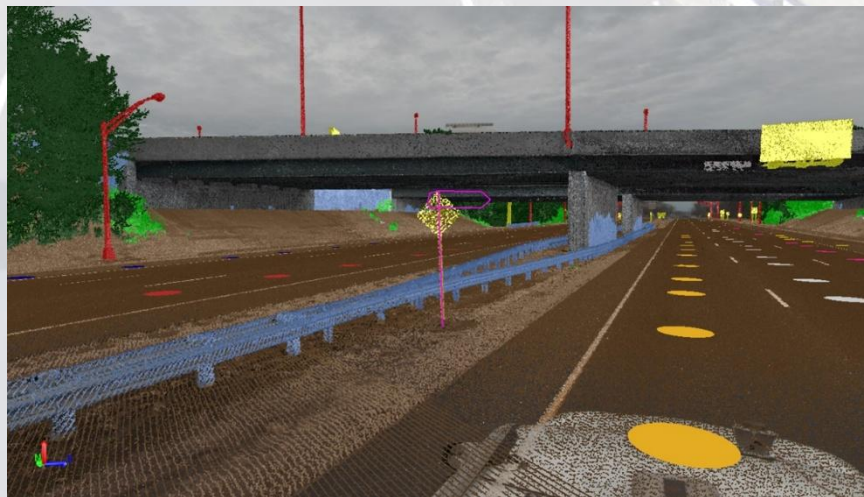
Example of ADA ramp captured using mobile LiDAR and imagery

Geometric measurements derived from the LiDAR dataset will support preliminary assessment of ramp compliance and prioritization of locations requiring field verification. An example of geometric evaluation derived from point cloud data is shown below.



Example of ADA ramp geometric evaluation derived from point cloud data

Traffic signage will be identified and reviewed using synchronized panoramic imagery consistent with MUTCD guidance. Observable deficiencies such as damage, fading, obstruction, misalignment, or improper placement will be documented. The LiDAR dataset will be used to extract spatial measurements including mounting height, lateral offset from roadway edge, and relative position within the roadway corridor (see Figure below). All inspected assets will be geospatially referenced and compiled within a structured inventory dataset suitable for GIS integration or asset management applications.



Example of traffic signage captured using mobile LiDAR and panoramic imagery

Although inspection under this task is limited to ADA ramps and traffic signage, the mobile LiDAR survey will inherently capture a wide range of additional roadway and roadside infrastructure assets including guardrails, utility poles, drainage structures, pavement markings, bridge elements, intelligent transportation system components, and general roadway geometry features. AID will retain the collected datasets; however, processing and engineering evaluation of assets beyond the defined inspection scope will not be performed unless authorized by the Municipality under a future scope modification.

As previously indicated, detailed inspection will be limited to up to 100 ADA ramps and up to 200 traffic signs and associated sign supports. Should additional assets require inspection beyond these quantities, such services may be performed under future task authorization.

While mobile LiDAR provides an efficient and scalable framework for network-level inspection screening, certain limitations are inherent to remote sensing methodologies. Vegetation, parked vehicles, construction activities, lighting conditions, or surface material characteristics may affect visibility of specific features at the time of survey. Measurement of properties such as retro-reflectivity or confirmation of concealed structural deficiencies cannot be performed using mobile LiDAR data alone. Where detailed verification is required, supplemental field investigation may be recommended.

Technical Proposal

COST PROPOSAL

The cost for performing the Pavement Condition Assessment, Pavement Treatment Program, Asphalt Thickness (Optional) and Physical Inventory of Assets of Interest (Optional) is as follows:

Requested Items:

- Pavement Condition Assessment (234 Lane Miles, data collection and SDI analysis): **\$54,252.44**
- Pavement Treatment Recommendations: **\$27,519.71**

Optional Items:

- Asphalt Thickness **\$19,576.60**
- Physical Inventory of Additional Assets of Interest: 100 ADA Ramps extraction and evaluation **\$32,685.14**
- Physical Inventory of Additional Assets of Interest: Traffic Sign Inventory **\$16,238.29**

A detailed cost breakdown is shown below for reference and for all Options.

ADVANCED INFRASTRUCTURE DESIGN, INC.								
Municipality of Princeton								
Proposal: Princeton, New Jersey - Pavement Management/Assessment Program (2026)								
Tasks	Senior Manager ASCE VIII	Senior Project Manager ASCE VII	Project Manager ASCE VI	Project Manager ASCE V	Senior Engineer ASCE III	Engineer ASCE I	Senior NDT Specialist	Total Hrs.
<u>Task 1: Pavement Condition Assessment</u>								
Project Setup	1		4		4			
Data Collection, 10 days (100% Network)			2			80	80	
Data Processing & Reporting (100% Network)	1		16		40	80	100	
Asphalt Thickness (Optional)								
<u>Task 2: Pavement Treatment Program (Optional)</u>								
Selection of Treatment Types								
Development of Data-Driven Logic for Treatment Selection								
Project Segmentation, Treatment Selection, and Prioritization								
<u>Task 3: LIDAR and ADA Ramps</u>								
Project Setup								
Data Collection, 4 days (100% Network)								
Data Processing & Reporting (100 ADA ramps)								
Data Processing & Reporting (200 signages)								
<u>Task 4: Project Management and Administration</u>	1	2	4					
Total Staff Hrs.	3	2	26	0	44	160	180	415
Hourly Rate	\$111.45	\$86.88	\$76.27	\$65.65	\$47.76	\$38.50	\$37.60	
Direct Labor Cost	\$334.35	\$173.76	\$1,983.02	\$0.00	\$2,101.44	\$6,160.00	\$6,768.00	
Total Direct Labor Cost				\$17,520.57				
Overhead (184.65%)				\$32,351.73				
<u>Fixed Fee (25% of Labor)</u>				\$4,380.14				
TOTAL AID				\$54,252.44				
<u>Direct Expenses</u>								
Print Reports & Data Storage	\$0.00							
Total Direct Expense	\$0.00							
GRAND TOTAL				\$54,252.44				

Detailed Cost Breakdown: Pavement Condition Assessment

Professional Services for a Pavement Condition Assessment and Management System (2026) – Municipality of Princeton, New Jersey

Technical Proposal

ADVANCED INFRASTRUCTURE DESIGN, INC.								
Municipality of Princeton								
Proposal: Princeton, New Jersey - Pavement Management/Assessment Program (2026)								
Tasks	Senior Manager ASCE VIII	Senior Project Manager ASCE VII	Project Manager ASCE VI	Project Manager ASCE V	Senior Engineer ASCE III	Engineer ASCE I	Senior NDT Specialist	Total Hrs.
Task 1: Pavement Condition Assessment								
Project Setup								
Data Collection, 10 days (100% Network)								
Data Processing & Reporting (100% Network)								
Asphalt Thickness (Optional)								
Task 2: Pavement Treatment Program (Optional)								
Selection of Treatment Types		2	4	8				
Development of Data-Driven Logic for Treatment Selection		2	4	16				
Project Segmentation, Treatment Selection, and Prioritization		4	8	24	80			
Task 3: LIDAR and ADA Ramps								
Project Setup								
Data Collection, 4 days (100% Network)								
Data Processing & Reporting (100 ADA ramps)								
Data Processing & Reporting (200 signages)								
Task 4: Project Management and Administration								
Total Staff Hrs.	0	8	16	48	80	0	0	152
Hourly Rate	\$111.45	\$86.88	\$76.27	\$65.65	\$47.76	\$38.50	\$37.60	
Direct Labor Cost	\$0.00	\$695.04	\$1,220.32	\$3,151.20	\$3,820.80	\$0.00	\$0.00	
Total Direct Labor Cost				\$8,887.36				
Overhead (184.65%)				\$16,410.51				
Fixed Fee (25% of Labor)				\$2,221.84				
TOTAL AID				\$27,519.71				
Direct Expenses								
Print Reports & Data Storage	\$0.00							
Total Direct Expense	\$0.00							
GRAND TOTAL	\$27,519.71							

Detailed Cost Breakdown: Pavement Treatment Recommendations

ADVANCED INFRASTRUCTURE DESIGN, INC.								
Municipality of Princeton								
Proposal: Princeton, New Jersey - Pavement Management/Assessment Program (2026)								
Tasks	Senior Manager ASCE VIII	Senior Project Manager ASCE VII	Project Manager ASCE VI	Project Manager ASCE V	Senior Engineer ASCE III	Engineer ASCE I	Senior NDT Specialist	Total Hrs.
Task 1: Pavement Condition Assessment								
Project Setup								
Data Collection, 10 days (100% Network)								
Data Processing & Reporting (100% Network)								
Asphalt Thickness (Optional)	1		16		40	80		
Task 2: Pavement Treatment Program (Optional)								
Selection of Treatment Types								
Development of Data-Driven Logic for Treatment Selection								
Project Segmentation, Treatment Selection, and Prioritization								
Task 3: LIDAR and ADA Ramps								
Project Setup								
Data Collection, 4 days (100% Network)								
Data Processing & Reporting (100 ADA ramps)								
Data Processing & Reporting (200 signages)								
Task 4: Project Management and Administration								
Total Staff Hrs.	1	0	16	0	40	80	0	137
Hourly Rate	\$111.45	\$86.88	\$76.27	\$65.65	\$47.76	\$38.50	\$37.60	
Direct Labor Cost	\$111.45	\$0.00	\$1,220.32	\$0.00	\$1,910.40	\$3,080.00	\$0.00	
Total Direct Labor Cost				\$6,322.17				
Overhead (184.65%)				\$11,673.89				
Fixed Fee (25% of Labor)				\$1,580.54				
TOTAL AID				\$19,576.60				
Direct Expenses								
Print Reports & Data Storage	\$0.00							
Total Direct Expense	\$0.00							
GRAND TOTAL	\$19,576.60							

Detailed Cost Breakdown: Asphalt Thickness

Professional Services for a Pavement Condition Assessment and Management System (2026) – Municipality of Princeton, New Jersey

Technical Proposal

ADVANCED INFRASTRUCTURE DESIGN, INC.								
Municipality of Princeton								
Proposal: Princeton, New Jersey - Pavement Management/Assessment Program (2026)								
Tasks	Senior Manager ASCE VIII	Senior Project Manager ASCE VII	Project Manager ASCE VI	Project Manager ASCE V	Senior Engineer ASCE III	Engineer ASCE I	Senior NDT Specialist	Total Hrs.
Task 1: Pavement Condition Assessment								
Project Setup								
Data Collection, 10 days (100% Network)								
Data Processing & Reporting (100% Network)								
Asphalt Thickness (Optional)								
Task 2: Pavement Treatment Program (Optional)								
Selection of Treatment Types								
Development of Data-Driven Logic for Treatment Selection								
Project Segmentation, Treatment Selection, and Prioritization								
Task 3: LIDAR and ADA Ramps								
Project Setup	1		8			4		
Data Collection, 4 days (100% Network)	1		8				40	
Data Processing & Reporting (100 ADA ramps)	1	4	16			150		
Data Processing & Reporting (200 signages)								
Task 4: Project Management and Administration								
Total Staff Hrs.	3	4	32	0	0	154	40	233
Hourly Rate	\$111.45	\$86.88	\$76.27	\$65.65	\$47.76	\$38.50	\$37.60	
Direct Labor Cost	\$334.35	\$347.52	\$2,440.64	\$0.00	\$0.00	\$5,929.00	\$1,504.00	
Total Direct Labor Cost				\$10,555.51				
Overhead (184.65%)				\$19,490.75				
Fixed Fee (25% of Labor)				\$2,638.88				
TOTAL AID				\$32,685.14				
Direct Expenses								
Print Reports & Data Storage	\$0.00							
Total Direct Expense	\$0.00							
GRAND TOTAL				\$32,685.14				

Detailed Cost Breakdown: Physical Inventory of Additional Assets of Interest (ADA Ramps)

ADVANCED INFRASTRUCTURE DESIGN, INC.								
Municipality of Princeton								
Proposal: Princeton, New Jersey - Pavement Management/Assessment Program (2026)								
Tasks	Senior Manager ASCE VIII	Senior Project Manager ASCE VII	Project Manager ASCE VI	Project Manager ASCE V	Senior Engineer ASCE III	Engineer ASCE I	Senior NDT Specialist	Total Hrs.
Task 1: Pavement Condition Assessment								
Project Setup								
Data Collection, 10 days (100% Network)								
Data Processing & Reporting (100% Network)								
Asphalt Thickness (Optional)								
Task 2: Pavement Treatment Program (Optional)								
Selection of Treatment Types								
Development of Data-Driven Logic for Treatment Selection								
Project Segmentation, Treatment Selection, and Prioritization								
Task 3: LIDAR and ADA Ramps								
Project Setup								
Data Collection, 4 days (100% Network)								
Data Processing & Reporting (100 ADA ramps)								
Data Processing & Reporting (200 signages)		2	16			100		
Task 4: Project Management and Administration								
Total Staff Hrs.	0	2	16	0	0	100	0	118
Hourly Rate	\$111.45	\$86.88	\$76.27	\$65.65	\$47.76	\$38.50	\$37.60	
Direct Labor Cost	\$0.00	\$173.76	\$1,220.32	\$0.00	\$0.00	\$3,850.00	\$0.00	
Total Direct Labor Cost				\$5,244.08				
Overhead (184.65%)				\$9,683.19				
Fixed Fee (25% of Labor)				\$1,311.02				
TOTAL AID				\$16,238.29				
Direct Expenses								
Print Reports & Data Storage	\$0.00							
Total Direct Expense	\$0.00							
GRAND TOTAL				\$16,238.29				

Detailed Cost Breakdown: Physical Inventory of Additional Assets of Interest (Traffic Signs)

EXHIBIT C

BUSINESS REGISTRATION AND SALES AND USE TAX REQUIREMENTS

A. Business Registration

P.L. 2004, c.57, as amended by P.L. 2009, C.315 (N.J.S.A. 52:32-44) requires VENDOR (also "CONTRACTOR") to provide PRINCETON with its business registration and that of any named subcontractors prior to the time this Agreement is awarded. In addition:

1. A Subcontractor named in the proposal made by CONTRACTOR shall provide a copy of its business registration to CONTRACTOR who shall provide it to PRINCETON as provided above. No Contract with a subcontractor shall be entered into by CONTRACTOR under this Agreement with PRINCETON unless the subcontractor first provides CONTRACTOR with proof of a valid business registration.
2. PRINCETON will retain the proof of business registration in an alphabetical file.
3. CONTRACTOR shall maintain and submit to PRINCETON a list of subcontractors and their addresses that may be updated from time to time during the course of the contract performance. A complete and accurate list shall be submitted before final payment is made for goods provided or services rendered under the Agreement.

B. Sales and Use Tax

1. For the term of this Agreement, CONTRACTOR and each of its affiliates shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury the use tax due pursuant to the "Sales and Use Tax Act," P.L. 1966, c.30 (C.54:32B-1 et seq.) on all their sales of tangible personal property delivered into this State.
2. CONTRACTOR shall include within its subcontracts the requirement that, for the term of this Agreement, the subcontractor and each of its affiliates shall collect and remit to the Director of the Division of Taxation in the Department of the Treasury the use tax due pursuant to the "Sales and Use Tax Act," P.L. 1966, c.30 (C.54:32B-1 et seq.) on all their sales of tangible personal property delivered into this State.

Information on the law and its requirements is available by calling (609) 292-9292.

TERMS & CONDITIONS**EXEMPTION**

Princeton is exempted by statute from payment of all Federal, State, and Municipal excise, sales and other taxes.
FEDERAL I.D. 30-0746654

LEGAL REQUIREMENTS

The vendor agrees to comply with all statutes, rules and regulations and orders set forth by the State of New Jersey, Federal Government, and ordinances of Princeton.

STATE REQUIREMENT (BUSINESS REGISTRATION REQUIREMENT)

N.J.S.A. 52:32-44 imposes the following requirements on contractors and all subcontractors that knowingly provide goods or perform services for a contractor fulfilling this contract:

- 1) the contractor shall provide written notice to its subcontractors to submit proof of business registration to the contractor;
- 2) prior to receipt of final payment from a contracting agency, a contractor must submit to the contracting agency an accurate list of all subcontractors or attest that none was used;
- 3) during the term of this contract, the contractor and its affiliates shall collect and remit, and shall notify all subcontractors and their affiliates that they must collect and remit to the Director, New Jersey Division of Taxation, the use tax due pursuant to the Sales and Use Tax Act, (N.J.S.A. 54:32B-1 et seq.) on all sales of tangible personal property delivered into this State. A contractor, subcontractor or supplier who fails to provide proof of business registration or provides false business registration information shall be liable to a penalty of \$25.00 for each day of violation, not to exceed \$50,000 for each business registration not properly provided or maintained under a contract with a contracting agency. Information on the law and its requirements is available by calling (609)292-9292

AUTHORIZATION TO PROCEED

Princeton shall not be responsible for materials delivered or services performed delivered without authority of its written order and properly signed and executed by authorized Princeton official (s).

QUALITY & QUANTITY

All materials or services furnished on this order must be as specified, and subject to Princeton officials' inspection and approval within a reasonable time after delivery at destination. Materials other than specified will be returned at the order must not be substituted without the review and approval of authorized Princeton official(s). Materials rejected will be returned at the vendor's risk and expense. Quantities and unit prices specified must be adhered to. In case of a change, it first requires Princeton approval or it will be paid at the quoted price and quantity.

ASSIGNMENT

Neither party shall assign or transfer this order or any interest therein or monies payable thereunder without the written consent of the other party and any assignment made without such consent shall be null and void, except that Princeton may assign this order and its interest therein to any affiliated corporation or to any corporation succeeding to Princeton's business without consent of vendor.

MANDATORY EQUAL EMPLOYMENT OPPORTUNITY LANGUAGE

N.J.S.A. 10:5-31 et seq., N.J.A.C. 17:27

GOODS, PROFESSIONAL SERVICES AND GENERAL SERVICE CONTRACTS

During the performance of this contract the contractor agrees as follows:

The contractor or subcontractor, where applicable, will not discriminate against any employee or applicant for employment because of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Except with respect to affectional or sexual orientation and gender identity or expression, the contractor will take affirmative action to ensure that such applicants are recruited and employed, and that employees are treated during employment, without regard to their age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex. Such action shall include, but not limited to the following: employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided by the Public Agency Compliance Officer setting forth provisions of this nondiscrimination clause.

The contractor or subcontractor, where applicable 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 age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex.

The contractor or subcontractor, where applicable, will send to each labor union or representative or workers with which it has a collective bargaining agreement or other contract or understanding, a notice, to be provided by the agency contracting officer advising the labor union or workers' representative of the contractor's commitments under this act and shall post copies of the notice in conspicuous places available to employees and applicants for employment.

The contractor or subcontractor where applicable, agrees to comply with any regulations promulgated by the Treasurer pursuant to **N.J.S.A. 10:5-31 et seq.** as amended and supplemented from time to time and the Americans with Disabilities Act.

The contractor or subcontractor agrees to make good faith efforts to employ minority and women workers consistent with the applicable county employment goals established in accordance with **N.J.A.C. 17:27-5.2** or a binding determination of the applicable county employment goals determined by the Division, pursuant to **N.J.A.C. 17:27-5.2**.

The contractor or subcontractor agrees to inform in writing its appropriate recruitment agencies including, but not limited to, employment agencies, placement bureaus, colleges, universities, labor unions, that it does not discriminate on the basis of age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, and that it will discontinue the use of any recruitment agency which engages in direct or indirect discriminatory practices.

The contractor or subcontractor agrees to revise any of its testing procedures, if necessary, to assure that all personal testing conforms with the principles of job-related testing, as established by the statutes and court decisions of the State of New Jersey and as established by applicable Federal law and applicable Federal court decisions.

In conforming with the applicable employment goals, the contractor or subcontractor agrees to review all procedures relating to transfer, upgrading, downgrading and layoff to ensure that all such actions are taken without regard to age, race, creed, color, national origin, ancestry, marital status, affectional or sexual orientation, gender identity or expression, disability, nationality or sex, consistent with the statutes and court decisions of the State of New Jersey, and applicable Federal law and applicable Federal court decisions.

The contractor shall submit to the public agency, after notification of award but prior to execution of a goods and services contract, one of the following three documents:

- Letter of Federal Affirmative Action Plan Approval
- Certificate of Employee Information Report
- Employee Information Report Form AA302

The contractor and its subcontractor shall furnish such reports or other documents to the Division of Contract Compliance & EEO as may be requested by the Division from time to time in order to carry out the purposes of these regulations, and public agencies shall furnish such information as may be requested by the Division of Contract Compliance & EEO for conducting a compliance investigation pursuant to **Subchapter 10 of the Administrative Code at N.J.A.C.17:27**.