Scope of Work
McHenry County Pavement Condition Assessment Project

1. **Pavement Data Collection:**
   a. **Kickoff meeting** - Coordinate with the County to schedule a project kickoff meeting. Consultant's participants shall include (at a minimum) the Project Principal, Project Manager, and Data Manager. A comprehensive meeting agenda will be prepared and disseminated ahead of the meeting; the agenda will cover topics such as:
      i. Introductions of key project team members and identification of roles
      ii. Confirmation of project scope, schedule, and budget
      iii. Review and confirmation of deliverables and deliverable formats
      iv. Establishing key points of contact, lines of communication and a project communication plan/frequency
      v. Review GIS maps, location referencing, and other mapping needs
      vi. QA, QC, and data acceptance standards

   Other topics of discussion may include the existence of ongoing paving programs, construction projects, and other public works related activities that we will use in the development of our field data collection plan. The Consultant's Project Manager will submit meeting minutes within 5 business days following the kickoff meeting.

   b. **Pavement Map Review** – Using existing information provided by the County, the Consultant will perform a comprehensive review of the roadway inventory and GIS Shapefile that will be used for pavement condition inspections and asset inventory. The review will include existing GIS shapefiles and pavement management reports that the County will make available to Consultant.

   All processes, methodologies, applications, and data collection equipment shall be tightly integrated with GIS and shall use existing roadway GIS maps and Location Referencing. The GIS map review activity in this task is especially critical for the successful pavement condition data delivery and pavement management analysis; therefore, any concerns or inconsistencies observed with the County's GIS maps will be promptly brought to the attention of the County's project team to reach a resolution that benefits the County.

   c. **Mobilization and Data Collection** – Consultant will mobilize Advanced Transportation Linear Inspection System (ATLIS) vehicle and perform collections across the County's 218-centerline miles of roadway. The ATLIS vehicle shall include 2nd generation Laser Crack Measurement System (LCMS), inertial profiler, 9 MP static cameras, and a 75 MP spherical camera to capture accurate and georeferenced roadway condition and inventory information on the County's roadway network.
   To allow for optimal pavement scans and imagery capture, data collection shall only be performed on dry pavement surfaces under adequate daylight conditions. To provide accurate pavement condition, Consultant will collect data in the driving lane in one

direction for all 2-lane roads and in the driving lane in both directions for all median-divided or 4+ lane roads.

2. **Pavement Data Processing:**
   a. **Pavement Distress Processing** - Consultant shall be highly experienced in processing pavement distress data following multiple types of pavement distress manuals. Central to the ability to offer objective pavement condition data, the Consultant must have the capability to collect continuous, detailed, and precise 3D pavement scans that are processed through manual processing and automation algorithms to generate a rich database of pavement defects that include **location, type, severity, and quantity** of each pavement defect. Consultant will inspect each captured pavement image to perform distress identification and quantification according to the Illinois DOT's Condition Rating System (CRS) and will also use automation to process the pavement distress data according to the ASTM D3303 standard.

   Additionally, Consultant will also process and report condition data per FHWA's Highway Performance Monitoring System (HPMS) which meets the requirements of 23 CFR 490 Subpart C. These data types include Percent Cracking, Rutting, IRI, and Faulting values.

   To verify that all distresses have been correctly identified and quantified, the Consultant's certified Pavement Analysts shall use a Distress Selector application to review all 3D pavement frames and augment the automated distress selection with manual ratings if needed. The Distress Selector application must also allow analysts to view associated ROW imagery to inventory roadway attributes and attribute changes such as the number of lanes per segment, pavement surface type, or name changes.

   b. **Pavement Condition Reporting** – Consultant will provide a pavement condition report, in spreadsheet and GIS format, that includes the results of the condition evaluation. The report will include both CRS scores as well as the pavement condition index (PCI) calculated per the ASTM D3303 standards. The report will also include HPMS data items such as Percent Cracking, IRI, Rutting, and Faulting.

3. **Data Loading into Cartegraph –** Consultant will work with the County staff to load all processed CRS and ASTM E3303 pavement condition metrics into the County's pavement management system. HPMS data items are typically produced for 0.1-mile increments of the pavement network and will be delivered via shapefiles or spreadsheets.

4. **Pavement Management Analysis**
   a. **Pavement management system settings review and update** - Consultant shall perform a full review of the County's pavement management system in Cartegraph OMS. The assessment will include review of the following:
      i. Condition Categories
         1. Weights
         2. Filters
         3. Index mappings

4. Impacts
  ii. Prediction Groups (i.e. deterioration curves)
  iii. Condition Groups (i.e. failure OCI points)
  iv. Risk
   1. Consequence of Failure settings
   2. Probability of Failure settings
  v. Data quality review for Inspection data
  vi. Other related data
   1. Treatment types (i.e. types of activities defined)
   2. Activity unit costs
  vii. Maintenance policies (i.e. typical maintenance cycles for pavement)

The County is a long-time user of Cartegraph, and the County's Cartegraph pavement management system has been configured using best-practices, however the Consultant shall review and update the County's Cartegraph pavement management system to update any/all settings and configurations that may have changed, as opposed to performing a full implementation. Should the County determine a more substantial involvement is required, further discussions will be needed to properly quantify additional levels of effort that may be needed.

b. **Multi-year Capital Program Recommendations:** once the Consultant has confirmed that the County's pavement management system is properly configured, the Consultant will use the Scenario Builder feature in the County's Cartegraph subscription to perform various multi-year budget and condition analysis. The Consultant may be tasked to perform 5-year or 10-year budget analysis to identify budget needs and condition impacts. While Cartegraph may allow analyses of more than 10-year terms, the County has been advised against performing any analyses beyond a 10-year time horizon. The required analyses will include:
  i. Budget needs to achieve target conditions (up to 5 target conditions)
  ii. Budget needed to maintain current condition
  iii. Future condition impacts of using current budget level
  iv. Future condition impacts of using target budget levels (up to 5 target budgets)

After performing these analyses, the Consultant shall identify the appropriate budget and/or condition target to develop our recommended capital program. Consultant shall also generate a prioritized list of pavement maintenance and rehabilitation projects for the County to consider implementing over the next five to ten years. This list of prioritized project recommendations will consider proximity planning to enable project-bundling that decreases geographic dispersion of the recommended projects. The Consultant will perform up to two iterations of proximity-planning based capital program development.

5. **Final Report** - The Consultant will produce a comprehensive final pavement management report that provides information about the State of the County's Streets. The final report will describe the methodology used to collect pavement condition data and perform the pavement management analysis. The report will also include results of the capital programing analysis.

6. **Pavement Data Viewer (PDV)** - The Consultant will deliver a custom Pavement Data Viewer (PDV) application, which will be a web-based application that will allow the County to access synchronized right-of-way and pavement images along with a map that allows users to take virtual drives within the roadway network. PDV shall incorporate synchronized pavement condition data so that users can view the details of the pavement distresses recorded at any point within the roadway network. The PDV's data filtering capabilities must make it easier for users to search for, filter, and identify specific data. PDV shall require no installation of software and can be accessed through most web browsers. By working with the County, the Consultant must provide the option to integrate PDV with the County's Cartegraph software so that staff will be able to access PDV from the Asset Management Software.

7. **Fee** – The Consultant shall propose a Lump Sum/Fixed Fee, all-in cost for the required services. Payment terms will be Net30, and the Consultant shall submit monthly invoices based on the percent completion of the project.

   a. **Fee - $198,850.00**

   The table below includes a summary of cost per task/activity.

Task	Cost
Pavement Data Collection	$61,265
Pavement Data Processing	$52,021
Data Load into Cartegraph	$11,741
Pavement Management Analysis	$57,428
Findal Report	$12,377
Pavement Data Viewer	$4,018
Total Cost	**$198,850**

8. **Schedule** – Data collection shall be performed between May and July of 2025 (weather pending). The County will dedicate twelve-months from Notice-to-Proceed as the project schedule; however, accelerate timelines are requested and appreciated. Per the schedule below, we anticipate completing this project within 28 weeks after the Notice-to-Proceed has been issued by the County.

Tasks	Weeks																											
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
Notice to Proceed	★																											
Pavement Data Collection		■	■	■	■	■	■	■	■	■	■	■																
Kickoff Meeting				★																								
Pavement Map Review					■	■																						
Mobilization and Data Collection								■	■	■	■	■																
Pavement Data Processing													■	■	■	■	■	■										
Pavement Distress Processing													■	■	■													
Pavement Condition Reporting																■	■	■										
Data Load into Cartegraph																				■								
Pavement Management Analysis																						■	■	■				
PMS Settings Review and Update																						■						
Multi-year Capital Program Recommendations																							■	■				
Final Report																									■	■	■	■
Pavement Data Viewer Delivery																												★