

ADDITIONAL & SUPPLEMENTAL APPROPRIATION APPLICATION

The BOS has approved a proposal to engage with Beta Group to update the camera study/data collection and analysis done in 2019. **We request a Supplemental Appropriation of \$27,250 to fund the study.**

ABSTRACT

AMOUNT

\$ 27,250

FYTD PRIOR
SUPPLEMENTAL

\$ 975,125

ACCOUNT NUMBER /
OBJECT CODE

BACKGROUND

This request is for a special appropriation for Beta Group to update the camera study/data collection and analysis that they did in 2019 using the same methodology to develop a new baseline for a road paving plan. This was done in response to concerns expressed at our last BOF meeting about the sufficiency of current road surface ratings and the consequent impact on estimating paving costs. The BOS has chosen Option B as it uses the same Roadbotics (Image Based) data collection utilized in the 2019 study.

BOS/BOE ACTION

BOS Approved Unanimously 2/15/24

SUPPORT MATERIALS

Proposal from Beta Group, Bid Waiver

**PROCUREMENT
COMPLIANCE**

Also attached is the Bid Waiver signed by the First Selectwoman and the Town Administrator dated 02.15.24.

**EXPEDITED ACTION
REQUESTED**

YES

Once approved and signed, Beta Group will complete the assignment in four weeks and provide fresh estimates of proposed costs and plans. This will inform budgeting for road paving this summer

SIGNATURE

Samantha Nestor

DATE

2/16/24



TO: Board of Finance
FROM: Samantha Nestor, First Selectwoman
SUBJECT: Beta Group Study Special Appropriation
DATE: February 16, 2024

I hereby request your consideration to approve a supplemental appropriation in the amount of \$27,250 to engage the services of Beta Group to inspect the Town's roadway network in order to analyze current pavement conditions. The Board of Selectmen approved this supplemental appropriation at their February 15th meeting.

At the February 8th Board of Finance meeting, several concerns were voiced with regard to the overall paving cost projections included in both next year's capital budget and subsequent years as well. Since it has been five years since the last Beta Group study, an updated assessment of our road conditions is crucial for our overall paving plans moving forward. It is my hope that undertaking this updated and thorough inspection of our road system will help alleviate at least some of the concerns expressed at that meeting. The amount of \$27,250 represents option B of four options proposed by Beta Group. This is the same technology utilized in the 2019 study which is the video image based (Roadbotics) approach. Additional information and material is included in the backup for your meeting.

Since the Beta Group conducted the prior round of inspections five years ago, the current inspection process can be expedited as they will be able to utilize the existing database for Weston. Recognizing this factor, and considering the time sensitivity in addressing our roads for the upcoming spring and summer seasons, a bid waiver for these services has been requested by our Public Works Director since the proposed amount of \$27,250 exceeds the \$25,000 threshold for seeking competitive bids according to our Procurement Policies. This has been approved by myself and the Town Administrator.

I appreciate your time and consideration of this funding request.



February 14, 2024

Mr. Larry Roberts
Director of Public Works
Town of Weston
78 Old Hyde Road
Weston, CT 06883

Re: Pavement Management Services

Dear Mr. Roberts,

BETA Group, Inc. (BETA) is pleased to submit this proposal to continue providing pavement management services to the Town of Weston. BETA originally conducted pavement inspections using an automated approach for the Town in 2019 to establish the basis for a Townwide Pavement Management Program (PMP). The PMP ultimately served as the framework for developing a multi-year Capital Improvement Plan (CIP) and public presentations. Based on our recent discussion, it is our understanding that the Town is seeking to re-inspect the roadway network to reflect current pavement conditions. The PMP to be updated will be a GIS-centric platform to facilitate efficient data collection, thematic mapping and viewing via ESRI based tools. Ultimately, the PMP will provide the framework for data analysis, prioritization, and capital improvement planning for future roadway projects.

To complete this project, we have developed the following scope of work and related fees for your review and comment. As requested, we have included a series of inspection methods for your consideration.

SCOPE OF WORK

TASK 1 – SYSTEM UPDATE & ROAD INVENTORY CONFIRMATION

The system configuration/update process can be expedited due to BETA leveraging the existing database from the previous round of inspections completed in 2019. As part of this task, BETA will work with the Town to confirm the status of roadways prior to initiating the field inspection program. BETA will utilize the existing database from the last round of inspections coupled with the most current ConnDOT e911 information to ensure the list of roads to be inspected is up to date. The roadway network is already broken down to the segment level (typically intersection to intersection), but confirmation of the segmentation will also be included as part of this task. It is assumed that **approximately 81 centerline miles of Town Accepted roadways** will be included in the field inspection program.

Additionally, as part of this task, BETA will confirm with the Town that all roadway improvement projects completed since the last round of inspections have been uploaded into the database.

TASK 2 – FIELD DATA COLLECTION PROGRAM (OPTIONS)

BETA currently provides four options for carrying out pavement condition inspections. These options include three automated approaches (LiDAR, Image, Hybrid) as well as a manual inspection option that are all proven and effective. Our partnerships with vendors that provide automated services (Cvvl.ai, RoadBotics and

Pavement Management Group) has allowed us to bolster the capabilities and efficiency for data collection. Any of the four options ensures the Town will receive accurate data for reporting and analysis.

****Please Note: The previous round of inspections for the Town was carried out using the RoadBotics approach.***

Option A: Manual Inspections

The required field inspections will be performed by an experienced BETA Field Team. Each individual roadway segment (typically intersection to intersection) will be evaluated and follow industry standards for establishing a 0-100 Road Surface Rating (RSR). Attribute and inspection related data will include the following:

Data that seldom changes:

- Street Name
- Street Segment Description (From/To)
- Pavement Material (Bituminous Concrete, Gravel, Chip Seal, Other)
- Length/Area of Segment (Feet, Miles, Square Yards)
- Width of Segment (Measured on foot using wheel)

Pavement Distress Data (Extent & Severity):

- Alligator Cracking
- Linear Cracking (Longitudinal/Transverse)
- Edge Cracking
- Patching/Potholes
- Roughness
- Rutting

Additional Roadway Features:

- Curbing (Location, Material, Average Reveal)
- Sidewalks (Location, Material)
- Presence of Line Striping (Double Yellow, Edgeline)

The pavement distress data will be identified by severity (High, Moderate, Low) and extent (0%-100%) for each paved roadway segment to allow for a RSR to be calculated on the fly. As part of this process, BETA will also confirm curb type, average reveal and roadway segments that have sidewalks that was populated from the prior assessment. Sidewalk material type and location will be coded to each respective roadway segment. Finally, a representative photo log will be created, capturing varying degrees of pavement conditions across representative locations throughout the Town.

Option B: Image Based (Automated, RoadBotics)

This process is performed autonomously utilizing smart phone technology. To generate pavement condition data, a smart phone device is mounted to a windshield that captures video along each roadway. The videos collected are extracted to generate images every 10-foot section of roadway. These images are then analyzed, using machine learning technology, to identify pavement surface damage such as cracks, potholes, seals, patches and pavement oxidation. This data is represented as spatially located points with photographs attached to each respective point and included in the final deliverable. The result is data that is then converted to an industry standard 0-100 scale (RSR) for reporting and analysis purposes.

This initial backlog figure will act as the Town's benchmark for progress moving forward and will be classified into the following categories:

- No Maintenance Required
- Routine Maintenance (Crack Seal, Fog Seal)
- Preventative Maintenance (Microsurfacing, Chip Seal, Thin Asphalt Overlay)
- Minor Rehabilitation (Mill and Overlay, Hot-In-Place Recycling, Cold-In-Place Recycling)
- Major Rehabilitation (Full-Depth Reclamation, Reconstruction)

The Town will be able to utilize BETA as a resource with respect to the selection of specific repair methods, design standards and associated unit costs for consideration during the prioritization process. This will facilitate the establishment of a series of specific repair strategies, as mentioned above, to streamline the repair assignment and budgeting process. The Town will have the ability to refine these repair strategies annually by updating the roadway database as improvements are made. This will prove helpful to track the success rate of each repair type and associated unit costs at the segment level.

This task will include the following deliverables:

- Existing Conditions Reports
- Corresponding GIS Roadway Maps
- Summary of Findings
- Cost Benefit Value (CBV)

TASK 4 – SYSTEM DEPLOYMENT & SUPPORT SERVICES

BETA will update the Town's current ManageMyRoads Platform to its latest version for use in viewing and interacting with the pavement data collected. Other roadway asset data collected in previous years including signs and utility data can also be integrated into the platform to expand its use and serve as a standalone asset management site. Through the utilization of ArcGIS Online (AGOL), BETA has developed a platform that allows communities to view and utilize the asset data as a planning tool. In addition to the AGOL platform, BETA will continue to host all reports and maps in electronic format through a portal weblink.

The support services program is designed to act as an avenue for technical support for the Town. This typically includes tracking roadway improvements, candidate selection for maintenance and rehabilitation techniques, adjusting the Town's roadway improvement plan and other miscellaneous requests. Services that can be covered under this support agreement include but are not limited to:

- Updating the pavement management database with the most recent roadway paving history
- Assist with developing and/or updating Capital Improvements Plans (CIPs) based on budget requirements, unit prices and new priorities.
- Additional updates and customization to the AGOL ManageMyRoads Platform based on requests from the Town, including integrating other roadway assets and GIS layers.
- RSR Forecast Modeling
- System Training
- Miscellaneous GIS Requests

Please Note: We have assumed an allowance of 40 hours over the course of 12 months for this Task.

Option C: Lidar Based (Automated, Cyvl.ai)

BETA will leverage its partnership with Cyvl.ai (Cyvl) to propose the latest in field data capture technology to collect pavement condition information. The required field inspections will be performed autonomously utilizing a lidar sensor mounted on a vehicle. The vehicle will conduct one pass per roadway segment and will use lidar technology to develop a point cloud. As the vehicle drives down the roadway, a 3D digital map is developed and all roadway assets within a 50' radius of the lidar sensor are scanned and populated. As part of the data collection, images will be captured, georeferenced and timestamped every 20' section of roadway. Once the data has been collected for all roads included in the project, Cyvl's proprietary algorithms and AI machine learning technology is run to identify pavement surface distresses such as cracks, potholes, seals, patches, and pavement oxidation. Upon completion of the data postprocessing, each roadway segment is rated using an industry standard 0-100 scale (RSR).

Please note: As Cyvl improves its algorithms over time, additional roadside assets such as traffic signs, street trees, utility poles and more may be able to be extracted from the point cloud for an additional fee to be determined. Cyvl also provides an option to capture 360 degree imagery for an additional \$10 per CL mile (\$1,600)

Option D: Video/Paver Based (Hybrid, Pavement Management Group)

The required field inspections will be performed autonomously utilizing a GoPro camera mounted outside of the vehicle which captures High Definition (HD) videos of each roadway segment. The video is used for the pavement distress assessment and has the added benefit of allowing for condition review and network-level decision-making from the office. PMG adheres to the ASTM D6433-20 standard for assessing the condition of asphalt and concrete surfaces. Our skilled inspection team reviews high-definition video of each pavement section in conjunction with our proprietary artificial intelligence (AI) model to identify and document the distress types, severity levels, and quantities that are occurring.

The inventory and distress data go into the PAVERTM Pavement Management System (PMS) for a 0-100 score or RSR to be calculated for each roadway. The corresponding data and video logs will then be integrated into BETA's ManageMyRoads platform and deployed to the Town.

Regardless of the methodology used for data collection, BETA has developed a thorough data review process to ensure the quality of the pavement management data. This process includes comparing the current information to legacy pavement management data. An Excel based log can be created identifying roadway segments that were reviewed if requested.

TASK 3 – DATA ANALYSIS & PLANNING

The pavement management process is conducted with the intent to keep the roadway system in the best possible condition with the most efficient use of available funds. There are distinct advantages to managing the network's pavement condition and significant cost savings that can take place with preventative maintenance or rehabilitation measures rather than waiting until a road is in need of a more costly repair such as reclamation or reconstruction.

Utilizing the RSR, each roadway will be placed into a "repair category" which is designed to, in general, show the type of repair which should be performed on the roadway. An estimated unit cost will be associated with each repair category allowing for a network backlog of work to be calculated.

Mr. Larry Roberts
February 14, 2024
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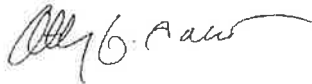
FEE PROPOSAL

For the purposes of this proposal, we have structured the fee as a **lump sum amount**, which is broken down into the following four (4) options below based on pavement inspection methodology.

Field Data Collection Methodology	Total Project Fee
Option A: Manual Inspections	\$ 25,500
Option B: Automated – Image Based (Roadbotics)	\$ 27,250
Option C: Automated – Lidar Based (Cycl.ai)	\$ 28,550
Option D: Automated – Video/Hybrid Approach (PMG)	\$ 37,250

Thank you for the opportunity to continue to assist the Town of Weston with the further development of its Pavement Management Program. If you have any questions or require additional information on this proposal, please feel free to contact me at **(508) 769-2807**.

Sincerely,
BETA GROUP, INC.



Anthony Garro
Senior Vice President
GIS & Asset Management Services

cc: Joe McGuire



TO: Samantha Nestor, First Selectperson
W. Lee Palmer, Interim Town Administrator

FROM: Larry Roberts
Director of Public Works

DATE: February 15, 2024

RE: Bid Waiver Request for Pavement Management Services

Background

On February 14, 2024, BETA Group, Inc. (BETA) submitted the attached (Exhibit A) proposal to Larry Roberts, Director of Public Works for the Town of Weston, CT to continue providing pavement management services to the Town of Weston. BETA originally conducted pavement inspections using an automated approach for the Town in 2019 to establish the basis for a Townwide Pavement Management Program (PMP).

The PMP ultimately served as the framework for developing a multi-year Capital Improvement Plan (CIP) and public presentations.

Given that five (5) years has elapsed since the last study, the Town was seeking a quote from BETA Group to re-inspect the roadway network to reflect current pavement conditions. Their Proposal contained the following elements:

Scope of Work

There are four (4) tasks associated with the Proposal which also includes four (4) different options.

TASK 1 – SYSTEM UPDATE & ROAD INVENTORY CONFIRMATION
TASK 2 – FIELD DATA COLLECTION PROGRAM (OPTIONS) WITH 4 OPTIONS
TASK 3 – DATA ANALYSIS & PLANNING
TASK 4 – SYSTEM DEPLOYMENT & SUPPORT SERVICES

Fee Proposal

Since all of the Proposal field data collection methodology options exceeded the \$25,000 threshold outlined in the Town's current Procurement Policies and Procedures of The Town of Weston and Option B: Automated – Image Based (Roadbotics) costs \$ 27,250 and is the option the Town is interested in pursuing, it necessitates the aforementioned Bid Waiver.

Request

For the foregoing reasons, the Town administration is requesting that the Town Administrator and First Selectwoman approve the above-referenced Bid Waiver to perform the Pavement

Management Services enumerated in the proposal submitted by the BETA Group, and specifically, Option B: Automated at a Total Project Fee cost of \$27,250.; and

IN WITNESS WHEREOF, the parties hereto have set their signatures this 15th of February, 2024.


Larry Roberts, Director of Public Works

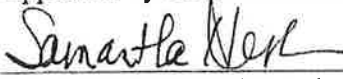
2/15/2024
Date

Approved by W. Lee palmer, Interim Town Administrator:


W. Lee Palmer, Interim Town Administrator

2/15/24
Date

Approved by First Selectwoman, Samantha Nestor:


Samantha Nestor, First Selectwoman

2/15/24
Date

ROAD PAVING EXPENDITURE HISTORY

	<u>2023-24</u>	<u>2022-23</u>	<u>2021-22</u>	<u>2020-21</u>	<u>2019-20</u>	<u>2018-19</u>	<u>2017-18</u>	<u>2016-17</u>
OPERATING BUDGET	638,116	564,839	560,378	624,427	550,000	500,872	522,513	467,996
SUPPLEMENTAL					362,815			
CAPITAL BUDGET	592,795	294,175	360,000			210,000		
SUPPLEMENTAL		329,775	160,225					
ARPA	-	575,313						
TOTAL FISCAL YEAR	1,230,911	1,764,102	1,080,603	624,427	912,815	710,872	522,513	467,996

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