

TRAFFIC SAFETY ADVISORY COMMITTEE MEETING
Wednesday, February 16, 2022 1:30pm
Stow Town Building
380 Great Road, Stow, MA 01775

**Town Building and
On-line**

Topic: TSAC
Time: February 16, 2022 01:30pm PM Eastern Time (US and Canada)

Join Zoom Meeting
<https://us06web.zoom.us/j/81756295320?pwd=am4zQVZCZXM0NVBUUGxEeGpGVFIQdz09>

Meeting ID: 817 5629 5320
Passcode: 364920

1.	1:00 PM	Call to Order
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Traffic Safety Advisory Committee Administrative Items

2.		Public Input
3.		Review Minutes
4.		Member Updates

Appointments/Discussion/Action Items

5.		Letters to Select Board -25 MPH Throughout/Sudbury Road Safety Zone -Harvard Road at Gardner Stop Sign
6.		ARPA Requests 1) Hudson Road 2) School Lights 3) 25 MPH Signage 4) FY 23 Policy Implementation
7.		Support Letter for Complete Streets
8.		Sudbury Bridge Truck Restriction
9.		Traffic Delineator Post 1) Wheeler Rd 2) State Rd 3) Sudbury Rd 4) Hastings/White Pond Rd
10.		Heights St Complaint
11.		New Complaints/Correspondence

Posted 2/11/2022 at 2:30pm

TOWN OF STOW
TRAFFIC SAFETY ADVISORY COMMITTEE

Minutes of February 2, 2022 Traffic Safety Advisory Committee Meeting

Committee Members Present: Chief Michael Sallese; Fire Chief John Paul Benoit; Steven Nadeau; Jesse Steadman

Chief Sallese called the meeting to order at 1:05 pm.

Review of Minutes

December 22, 2021

Chief Benoit moved to approve the minutes of December 2, 2021.

Jesse Steadman seconded.

VOTED: 4-0 Unanimously in favor (Chief Sallese – Yea; Chief Benoit – Yea; Jesse Steadman – Yea; Steve Nadeau)

January 12, 2022

Chief Benoit moved to approve the minutes of January 12, 2021.

Jesse Steadman seconded.

VOTED: 4-0 Unanimously in favor (Chief Sallese – Yea; Chief Benoit – Yea; Jesse Steadman – Yea; Steve Nadeau)

Member Updates

Chief Sallese noted that he informed the Crescent Street resident that had noted speed signs on that road were in the wrong location, that the issue has been resolved, and that come spring, the Highway Department will be adjusting the speed limit signs to be located in their approved locations.

Town Wide 25MPH Recommendation

Members discussed what authority the Select Board would have to act upon the Committee's proposed adjustment of the speed zone length along Sudbury Road, in the vicinity of Pine Bluff Recreation Area. The Committee agreed that further research is needed before providing the recommendation and that the item should be struck from the previously approved letter.

Jesse Steadman moved to send the letter of recommendation to the Select Board as amended.

Chief Sallese seconded.

VOTED: 4-0 Unanimously in favor (Chief Sallese – Yea; Chief Benoit – Yea; Jesse Steadman – Yea; Steve Nadeau)

Harvard Road / Garner Road Stop Sign

The Committee discussed that three items should be prepared prior to submission of a recommendation to add a southbound lane stop sign at Garner Road, as it approaches the Finn Road/Harvard Road intersection:

- A Legal Notice of Traffic Regulation signed by the Highway Superintendent;
- A cover letter to the Select Board describing the recommendation;
- A map from the Planning Department showing the location.

Committee members agreed to take the item up again at the next meeting.

Capital Articles

Jesse Steadman noted that he is working to advance an Request for Proposals for signalization of the Hudson Road/Route 117 intersection, as well as an American Rescue Plan Act proposal to the Select Board for design funding. Jesse Steadman said he hopes to have that prepared by the next meeting.

Chief Sallese noted that it would be helpful for the TSAC to prepare a joint letter of support for the Complete Streets Committee's forthcoming Annual Town Meeting article to prepare engineering plans for sidewalk installation and repair along the northside of Crescent Street, from Hartley Road to Warren Road.

Route 117/Town Building Crosswalk

The Committee discussed the final plans for the installation of a pedestrian signal at Town Building and Route 117, agreeing that the plans were what the Committee had requested in the RFP and that it was OK to have them stamped and dated.

Enforcement Update

Chief Sallese provided updated figures on enforcement, including tickets issued and stops on priority roads in Stow.

School Zone Lights at Center School

Chief Sallese noted that the existing flashing school zone lights at both approaches to Center School are outdated, making them time consuming to manually control and program. Chief Sallese noted that one idea is to have the lights run throughout the day, which Committee members agreed with, especially given the existence of half day kindergarten and activity in and around the school throughout the day.

The Committee further discussed the relatively low cost of updating the lights with Bluetooth enabled lights that could be remotely programmed, saving time and labor. Highway Superintendent, Steve Nadeau, indicated the cost could be in the vicinity of \$10k, similar to the cost of a pair of rapid flashing beacons, recently procured for other areas in Town. The Committee agreed that it may be worthwhile to seek funding for the installation of new school zone lights through Town Meeting or an ARPA request.

Chief Sallese motioned to adjourn

Jesse Steadman seconded.

VOTED: 4-0 Unanimously in favor (Chief Sallese – Yea; Chief Benoit – Yea; Jesse Steadman – Yea; Steve Nadeau)

Respectfully Submitted,

Jesse Steadman



Town of Stow
Traffic Safety Advisory Committee
380 Great Road
Stow, Massachusetts 01775

February 9th, 2022

To: Town of Stow, MA Select Board

Via: Denise Demboski, Town Administrator

From: Traffic Safety Advisory Committee

Re: Traffic Signage – Harvard Road @ Garner Road

Per the Manual on Uniform Traffic Control Devices (MUTCD) Chapter 2B, the guidance for implementation of stop signs are as follows:

STOP signs should be used if engineering judgment indicates that one or more of the following conditions exist:

- A. Intersection of a less important road with a main road where application of the normal right-of-way rule would not be expected to provide reasonable compliance with the law;
- B. Street entering a through highway or street;
- C. Unsignalized intersection in a signalized area; and/or
- D. High speeds, restricted view, or crash records indicate a need for control by the STOP sign.

For the intersection of Garner Road and Harvard Road, implementation of a stop sign under 2B.05.A would certainly apply, as Harvard Road makes a sweeping left-hand turn for northbound traffic heading from Stow into Harvard where drivers could not reasonably be expected to yield the right-of-way to southbound traffic coming off of Garner Road.

Additionally, implementation of a stop sign under 2B.05.D would also apply as the line-of-sight of southbound traffic on Garner Road is restricted by trees in the Delany Wildlife Management Area. It is nearly impossible for commuters on Garner Road to see southbound traffic from Harvard Road until they are already in the intersection in question.

Thank you for your consideration and support on this matter,

Traffic Safety Advisory Committee



TOWN OF STOW, MA
SELECT BOARD

NOTICE OF TRAFFIC REGULATION

By virtue of the authority vested in the Select Board of the Town of Stow,
it is hereby

VOTED: In accordance with the provisions of Chapter 89, Section 9 of the General
Laws, the following street is designated as a stop street at the intersection
and in the direction indicated:

South-eastbound drivers on GARNER ROAD must stop at the
intersection of HARVARD ROAD.

SELECT BOARD

Date of Passage _____

Attest of Town Clerk _____



TOWN OF STOW

American Rescue Plan Act Project Funding Request

Submitter: Traffic Safety Advisory Committee
(Print Name or Board/Committee Name)

Department to Oversee/Maintain the Project: Planning/Highway

Date: 02/17/2022

Amount Requested: \$ 100,000.00

Project being Requested: Hudson Road/Route 117 Intersection Improvements (Provide a full description below)

FUNDING CATEGORY

- Support Public Health
- Address COVID-19 Negative Economic Impacts
- Provide premium pay for essential workers
- Investments in water, sewer, and broadband infrastructure
- None of the Above (Would fall under Revenue Replacement funds)

Priority Ranking (Check One):

- Very High (Needed ASAP)
- High (Needed in 1 year)
- Medium (Needed in the next 2 years)
- Was Planned for in the next 10 years

Does this project meet the bylaw requirements for Capital Planning?

Yes

No

(Acquisition of land and any expenditure of \$10,000 or more having a useful life of at least three years)

Has this project been on a Department or Board's priority list? (ie. Master Plan, OSRP, Established Goals)

Yes

No

Have you received an estimate as a basis for cost? Yes

No If Yes, please provide estimate

Are grant or other funds available to offset this cost? Yes

No If Yes, please specify source of funds

Will this require annual maintenance or ongoing costs? Yes

No If Yes, please articulate below

Project Description:

Provide project description and articulate funding category, include an overview of proposed timeline, location(s), and supporting detail. If requested equipment is a replacement, please provide the age (based on first in service date) and condition of current item. Be as specific as possible; attach all backup supporting material.

See attached project narrative.

Benefits of Project/Requested Equipment:

Highlight project benefits, including efficiencies created, service enhancements, etc. Be as specific as possible; attach all backup supporting material.

See attached narrative

Ongoing maintenance costs of project or equipment:

Describe any expected ongoing costs associated with this request. Be as specific as possible; attach all backup supporting material.

See attached narrative

Signature of Submitter

Signature of Department Representative or
Town Administrator

2.16.2022

Traffic Safety Advisory Committee

ARPA Request Narrative | Hudson Road / Route 117 Intersection Improvements

Project Overview

The intersection at Great Road (Route 117) and Hudson Road is a top priority for traffic safety improvements in Stow. After the Gleasondale Bridge was partially closed due to safety concerns, the Planning Department obtained a 2016 grant from the Metropolitan Planning Organization (MPO), Boston's regional transportation planning agency, to study the expected increase in traffic due to the partial closure of the bridge. The report by the MPO's Community Transportation Planning Staff cited numerous safety and functionality concerns with the intersection. Today those concerns have even greater relevance given the proposed development of a ~140 unit mixed income housing development along Hudson Road, a proposed boarding school at the former Bose facility, and 189 units of mixed income housing proposed at the Stow Acres Country Club.

The MPO report of the intersection revealed several issues that have assisted the Traffic Safety Advisory Committee in drafting a Scope of Service for the intersection improvements. Specifically, the report found that certain approaches of the intersection operate at level D and F, a rating that is considered unacceptable by MassDOT standards. Further, the intersection meets three applicable signal warrants, suggesting the need for a signalized intersection. Additionally, analysis of crash data provided by the Stow Police Department suggests that a left-hand turn lane, as well as management of the curb-cuts to the adjacent gas station are priority measures for consideration.

The Traffic Safety Advisory Committee is seeking approval for the use of American Rescue Plan Act (ARPA) funding for engineering, design and construction administration services for signalization and related improvements to the Hudson Road/Route 117 Intersection. The funds will be used to obtain the following services:

Engineering / Design

1. Signalization of the intersection, including signal timing and design;
2. Upgrades to Hudson Road and Route 117 intersection approaches, including addition of turning lanes, pedestrian and bike enhancements, striping, signage and other updates consistent with recommendations from prior planning documents and in accordance with findings of relevant traffic studies;
3. Conceptual design upgrades to the circulation pattern for the adjacent gas station and liquor store, including but not limited to potential use of inter-lot connections, curb-cut design and limitations on entering or exiting existing curb-cuts.

Construction Administration and Bidding/Awarding Services

1. Administration of the owner/contractor contract in accordance with the Project Manual
2. On-site personnel for monitoring construction activity and resident engineering services;
3. Provision of bidding and awarding services.

Project Benefits

Using ARPA funding for the improvements to the Hudson Road / Route 117 intersection will aim to provide the Town with several tangible and process related improvements and efficiencies:

Tangible improvements:

- Increased traffic safety through reduced crash incidents;

- Improved pedestrian signalization and enhanced ADA accessibility;
- Potential for working with adjacent landowners to improve internal traffic circulation patterns that have a large impact on the safety and functionality of the intersection.

Financial Efficiencies:

- Obtaining shovel ready plans and construction estimates will assist the Town in negotiating improvements with private developers that may be required to make certain improvements based upon findings from their respective traffic studies and permitting requirements;
- Including construction/admin and bidding/awarding services ensures that the designer will be responsible for communicating their plans to the chosen construction contractor;
- Expertise of Stow's Superintendent of Streets can further reduce the cost of construction administration services;
- The Planning Department can utilize 100% Design and Construction plans to seek state infrastructure funding, which can further support a public/private partnership to improve the intersection.

Financial Impact

The proposed intersection improvements have been preliminarily scoped by Green International Affiliates, Inc., the same firm that assisted in the re-design of Route 117 in Lower Village. As part of their conceptual estimate of ~\$90,000.00, Green International indicated that the previous planning and study of the intersection by the MPO should further reduce the amount of additional analysis needed prior to design. The Town is expecting even more recent data to come available through the submission of several traffic studies as part of proposed developments in the area.

Aside from sourcing the required construction funding, which has been estimated at ~\$1 million, the Town of Stow will be tasked with maintenance and repair of the traffic signal, any associated pedestrian signals, as well as ongoing utility costs to Hudson Light and Power for signal operation.

Limit of Work

The project will encompass:

- A portion of Route 117 at the intersection of Hudson Road, extending approximately 400' feet to the west of the Hudson Road centerline along Route 117; 200' feet to the east of the Hudson Road centerline to approximately the bridge over Elizabeth Brook and approximately 400' feet south along Hudson Road (see attached plan);
- Areas outside of the Town's Right-of-Way which may be reasonably assumed to contribute to drainage or design considerations of the Improvements, including areas subject to potential permanent or temporary construction/Right-of-way easements or agreements as well as parcels containing Gulf gas station and adjacent liquor store.

Conclusion

The Traffic Safety Advisory Committee believes ARPA funding for the design of the Hudson Road/Route 117 intersection signalization will mitigate one of the top priority traffic safety concerns in Stow, and provide the Town with a construction estimate and shovel ready design to better negotiate public/private investments with the State of Massachusetts and developers in the process of building out significant projects that will impact the intersection.



Town of Stow
Planning Department
380 Great Road
Stow, Massachusetts 01775
(978) 897-5098
FAX (978) 897-2321

2. .2022

Request for Proposals

Consulting Services

—

Great Road / Hudson Road Intersection Improvements

Due Date: March 15, 2022

Due Time: 1:00 p.m.

Town of Stow

380 Great Road
Stow, MA 01775

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February __, 2022 | Town of Stow Notice of Request for Proposals

Consulting Services for Great Road / Hudson Road Intersection Improvements

Description: The Town of Stow Planning Department is seeking qualified civil and transportation engineering firms to provide engineering, design and construction plans and specifications, and construction administration/bid/award services for proposed signalization and associated intersection improvements at Hudson Road and Great Road (Route 117 – a state numbered town owned road) in Stow.

RFP Packages: RFP Packages will be available beginning **February __, 2022 at 1:00 PM**. Packages are available via email by contacting planning@stow.ma.gov. Packages are also available for download at <https://www.stow-ma.gov/highway-department/pages/bids-and-proposals>.

Due Date & Time: Proposals are due by **1:00 PM on March 15, 2022**.

Place: RFP's are to be submitted to:
Town of Stow Planning Department
380 Great Road
Stow MA 01775

and in digital format to:

planning@stow-ma.gov

Pre-Proposal Conference: A pre-proposal conference will be held on **March __, 2022** at 10:00 AM via Zoom video conference at <https://us04web.zoom.us/j/327513598> and accessed via phone at **1-646-558-8656**, with a Meeting ID of **327513598#**. The purpose of the conference is to assist prospective Proposers in the interpretation of the RFP, and other technical and contractual matters. This conference is not mandatory.

Questions/RFP's: If you have questions about this RFP or have a request for information or clarification, please contact Town Planner Jesse Steadman at planning@stow-ma.gov. All questions and requests for clarification must be received *in writing* by **12:00 PM on March __, 2022**. It is anticipated that a compilation of all questions and responses will be distributed via email to prospective Proposers by **12:00 PM on March 13, 2022**.

Contract Info: The Town of Stow will negotiate an industry standard contract with the successful proposer. Any contract issued in response to a successful proposal must be approved by the Town's Chief Procurement Officer.

Project Period: The Town endeavors to expedite all contracts within a timely fashion. Typically a contract will be awarded within sixty (60) days of the proposal opening if not sooner, and services under the contract will commence immediately thereafter. **The Term of the awarded Contract shall be for one (1) year.** The Town, at its sole election, may renew this contract for two additional one-year terms.

SECTION I. RFP TIMELINE

April 29, 2020	RFP legal notice appears in the <i>Stow Independent</i> .
April 29, 2020	RFP available at 10:00 AM
May 7, 2020	Pre-proposal conference at 10:00 AM.
May 11, 2020	Last day to submit questions or requests for clarification. All questions must be submitted in writing via email to planning@stow-ma.gov by 12:00 PM.
May 13, 2020	Compilation of all questions and responses will be distributed via email to prospective Proposers
May 13, 2020	Last Addendum issued
May 15, 2020	Proposal due date. Deadline for proposals is 1:00 PM EST.
May 18 – May 22 , 2020	Planning Board and Staff review proposals and select most highly advantageous proposal; commences interview of Proposer providing most advantageous proposal as necessary.
On or Before June 8, 2020	Notification of Award
May – June 2020 (Exact date TBD)	Project kick-off meeting with Planning Board.

SECTION II. PROJECT OVERVIEW

A. Description

The Town of Stow Planning Department is seeking qualified civil and transportation engineering firms to provide engineering, design and construction plans and specifications, and construction administration/bid/award services for proposed signalization and associated intersection improvements at Hudson Road and Great Road (Route 117 – a state numbered town owned road) in Stow.

The project scope of services includes:

- Site Visit and Coordination with Highway and Planning Department;
- Existing Conditions Survey;
- Draft Base and Concept Plans;
- 25% Design Plans and Technical Memo
- 100% Design and Construction Plans;
- Construction specifications and preparation of documents for Bid Administration;
- Construction Administration and Bidding/Award Services.

The construction of the described project is anticipated to be the subject of a MassWorks Infrastructure Program Grant Application. It is expected that the design for each corresponding *Part* will conform to all relevant standards, including but not limited to: The Massachusetts Department of Transportation Project Design and Development Guidebook; the United States Department of Transportation Federal Highway Administration's Manual of Uniform Traffic Design Controls; the Architectural Access Board 521 CMR Rules and Regulations; and/or the AASHTO Highway Manual.

Part 1: Engineering and Design | Great Road/ Hudson Road Intersection Improvements

The intersection at Great Road and Hudson Road is a top priority for traffic safety improvements in Stow. A 2016 Metropolitan Planning Organization (MPO) report by the Community Transportation Planning Staff found that aspects of the intersection operate at level D and F; the intersection meets applicable signal warrants 1,2 and 7 and the crash data suggests that a left-hand turn lane, as well as management of the curb-cuts to the adjacent gas station are priority measures for consideration. These issues are expected to be exacerbated by proposed development of a ~140 unit mixed income housing development along Hudson Road, that is anticipated to create an additional 794 vehicle trips per day, as well as a proposed 700 student boarding school at the former Bose facility, approximately ¼ mile to the west of the intersection and 189 unit mixed income neighborhood at the Stow Acres Country Club.

The Town seek engineering and design services to reach 100% design plans for the signalization and related improvements to the Great Road/Hudson Road Intersection. The plans shall address the following design considerations:

1. Signalization of the intersection, including signal timing and design;
2. Upgrades to Hudson Road and Route 117 intersection approaches, including addition of turning lanes, pedestrian and bike enhancements, striping, signage and other updates consistent with recommendations from prior planning documents and in accordance with findings of relevant traffic studies;
3. Conceptual design upgrades to the circulation pattern for the adjacent gas station and liquor store, including but not limited to potential use of inter-lot connections, curb-cut design and limitations on entering or exiting existing curb-cuts.

The Town anticipates that previous MPO study by the Community Transportation Planning Staff and recent traffic studies submitted on behalf of proposed developments will satisfy the traffic analysis needs of the project. Further, the MPO study provided information on signal warrant analysis that the Town anticipates to be satisfactory for the design of the intersection improvements.

Part 2: Construction Administration and Bidding/Awarding Services

The Town of Stow seeks services necessary to administer the owner/contractor contract in accordance with the Project Manual, including on-site personnel for monitoring construction activity and resident engineering services, as well as providing bidding and awarding services. It is anticipated that the work could be performed on a part – time basis.

B. Limit of Work

Part 1: Great Road/ Hudson Road Intersection Improvements

The project will encompass:

- A portion of Route 117 / Great Road at the intersection of Hudson Road, extending approximately 200’ feet to the west of the Hudson Road centerline along Route 117; 200’ feet to the east of the Hudson Road centerline to approximately the bridge over Elizabeth Brook and approximately 400’ feet south along Hudson Road (see attached plan);
- Areas outside of the Town’s Right-of-Way which may be reasonably assumed to contribute to drainage or design considerations of the Improvements, including areas subject to potential permanent or temporary construction/Right-of-way easements or agreements as well as parcels containing Gulf gas station and adjacent liquor store.

Existing county layout and survey plans are attached for reference.

C. Project Period

The term of the contract is for one (1) year, with provisions for renewal if deemed necessary.

SECTION III. SCOPE OF SERVICES SEQUENCE

Part 1: ENGINEERING & DESIGN | INTERSECTION IMPROVEMENTS

The following services and activities are anticipated to be performed by the Consultant in the following sequence proposed. In the event the Consultant believes an alternative sequence would more accurately reflect the goals of the project, an amended sequence shall be proposed.

A. SITE VISIT / COORDINATION / TRAFFIC ANALYSES

The Town anticipates that previous Metropolitan Planning Organization study by the Community Transportation Planning Staff and recent traffic studies submitted on behalf of proposed developments will satisfy the traffic analysis needs of the project. Further, the MPO study provided information on signal warrant analysis that the Town anticipates to be satisfactory for the design of the intersection improvements. The goal of Task A is to flag for the project team any gaps in data that may be necessary prior to advancing concepts/25% design plans.

1. Determine gaps in necessary traffic analyses, such as turning counts, vehicle trip data, and other traffic data necessary based upon review of existing plans on file, including but not limited to relevant county layout and survey plans, Complete Streets Tier 3 Project Application forms, estimates and project descriptions, private traffic studies relating to

proposed developments in the area, past intersection assessments by the Metropolitan Planning Organization, as well as updated crash data from the Stow Police Department. (Information to be provided by the Planning Department in RFP package);

2. Determine necessity/extent of field survey;
3. Perform additional traffic analysis as applicable;
4. Submit Design Schedule.
5. Initial site visit and Meeting #1 with the Town of Stow Superintendent of Streets, Planning Department Staff and applicable members of relevant Boards and Committees to discuss findings of Task A.

B. UPDATE FIELD SURVEY

If it is determined, upon review of the plans provided herein, that there is additional survey work required to perform the scope of work as outlined in Section 1(a-b) the survey engineer shall review and update existing survey data to create a topographic survey within the project limits defined in this Request for Proposals. The proposal provided shall include the rationale for the additional survey, as well as a description of the areas within the project area that require further study. Any necessary survey shall be based on the Massachusetts State Plane Coordinate System in compliance with the most recent edition of the MassDOT Survey Manual. The specific tasks to be performed by the survey engineer may include, but are not necessarily limited to:

1. Boundary Research - Research shall be based on Town of Stow, Middlesex South Registry of Deeds, MassDOT and the Massachusetts Land Court.
2. Survey Traverse – Establish random traverse(s) to locate right of way monumentation, and existing conditions within the limits of work described above, and re-establish any recorded State County or Town record baselines.
3. Location of all physical features within the survey limits including, but not limited to all visible utilities, edge of roads, stone walls, tree lines, trees over 9” diameter at breast height; and topographic conditions at one foot contours intervals with spot elevations to the nearest 1/100th of a foot at all low points and high points, or any large expanse of level land requiring spot elevation detail in the absence of reasonable contour representation. Topographic limits of work shall extend to the right-of-way bounds. In the event proposed work requires grading or construction easements on private property outside of the Town right-of-way, the consultant shall prepare an additional services request for review and approval of the Complete Streets Committee.
4. Highway layout lines, Town layout lines, and abutting property lines will be plotted as accurately as possible based on record information and monumentation acquired by the surveyor at state and local offices and the registry of deeds.
5. Owners information taken from Assessor’s records will be shown on the plans for all lots within and abutting the limit of work. The plotted information will include the owner’s name(s) and Book/Page references along with the lot legal address of the property.
6. The surveyor shall prepare and provide digital files of the base survey in current AutoCAD format including a Triangular Irregular Network (TIN) file. Base survey plans will be on the Mass State Plane Coordinate system and NGVD 88. Plans shall conform to MassDOT Survey Manual and provide the appropriate detail and drafting standards for future project development as required by the MassDOT Project Development and Design Guidelines found in the latest edition of the Highway Design Manual relative to accuracy, content and presentation.
7. Obtain plans for private and public utilities within the project limits from the various utility purveyors and plot the information on the existing condition base plans. For subsurface utilities that cannot be directly accessed, the utility layout on the existing conditions plan will be compiled from record plans, fit to the most reasonable level of evidence that can be

found within the limit of work, and noted so on the base plan. For drainage systems, the surveyor shall open and record the invert and pipe sizes of all pipes visible within each structure. The surveyor will be responsible for coordinating with the Stow Highway Department to access structures that are full of debris or that have covers that cannot be removed with hand tools.

8. The Surveyor will be required to coordinate their field survey activities with the Town of Stow Police Department and make necessary arrangements for police detail support when working within existing travel ways. The surveyor will provide proper safety signing and devices.
9. Base plans shall be prepared such that they can be plotted at a scale of 1" = 20' for future construction plan preparation.
10. Presentation of a draft base plan and concept plans to the Superintendent of Streets, based upon Complete Streets project description and input from the kickoff meeting. The plan shall tie into State Plane Coordinates, North American Datum 1983 (NAD 83) for horizontal and North American Vertical Datum 1988 (NAVD 88) for vertical. Proposer will coordinate with Mass DOT District #3 Survey Section to provide GPS coordinates to establish the survey.
11. Identify all environmental issues and assessment of the need for preparation of permits including NPDES, Notice of Intent with DEP and Town of Stow Conservation Commission and others as may be applicable.

C. CONCEPTUAL PLANS

Prepare and submit conceptual plans and Preliminary Design Memo for review and feedback by the Project Team based upon assessment of existing data, any additional traffic analyses performed and existing conditions survey. The Conceptual Plans and Preliminary Design Memo shall include but not be limited to:

1. Summary of findings of applicable traffic analyses;
2. Description of preliminary design rationale, including recommendations for managing traffic and circulation patterns at adjacent gas station/businesses and summary of existing traffic analyses;
3. Identification of design alternatives related to managing the proximity of Elizabeth Brook, adjacent resource areas or other variables that may affect applicable design alternatives.
4. Submission of preliminary construction cost estimates reflecting the latest MassDOT Weighted Average Fee Proposal Unit Prices;
5. Presentation at public meeting to present conceptual design plans and associated design rationale;
6. Attendance at Meeting #2 of project team to finalize feedback and advance to 25% design.

D. SUBMISSION OF TECHNICAL MEMORANDUM AND 25% Design Plans

It is the Consultants responsibility to review the information requested for submission of 25% Design Plans and note in the submitted Proposal any items that may be missing from this RFP that would be otherwise relevant to the specific intersection improvements requested, in accordance with all relevant design standards noted in Section I of this RFP. The consultant shall further identify any plan or design request

that may not be practical or relevant for the type of improvement requests outlined in this RFP. The Consultant shall update the Preliminary Design Memo to add any additional information for the purpose of providing a 25% Design Technical Memorandum.

The 25% shall include, but not be limited to the following:

1. Completion of draft existing condition base plan, based upon input from the initial meetings. The plan shall tie into State Plane Coordinates, North American Datum 1983 (NAD 83) for horizontal and North American Vertical Datum 1988 (NAVD 88) for vertical. Proposer will coordinate with Mass DOT District #3 Survey Section to provide GPS coordinates to establish the survey;
2. Submittal of a Technical Memorandum and 25% Design Plan consistent with MassDOT standards and specification format, and in compliance with DEP Stormwater Management and National Pollution Discharge Elimination System Permit (NPDES) guidelines. The consultant may update the The Plans shall consist of:
 - a. Typical Sections;
 - b. Construction Plans and specifications, including all signal hardware and associated pedestrian signals as appropriate;
 - c. Preliminary Drainage and Utility Plans;
 - d. Conceptual Traffic Management Plans;
 - e. Pavement Marking and Signage Plans;
 - f. Coordination Plan for managing utilities;
 - g. Right-of-way plans showing temporary and/or permanent easement locations;
3. Identification of all environmental permitting requirements, including but not limited to approvals under the Wetlands Protection Act and Stow Wetlands Bylaw, and the National Pollution Discharge and Elimination System;
4. Wetland/Riverfront resource area delineations in accordance with the Wetlands Protection Act and Stow Wetlands Bylaw;
5. Construction Cost Estimates reflecting the latest MassDOT Weighted Average Fee Proposal Unit Prices.
6. Attendance at Meeting #3 with the Project Team to gain feedback for incorporation into 100% Design Plans.

E. 100% DESIGN PLANS

Submittal of 100% Design and Construction Plans and Specifications in MassDOT format in compliance with DEP Stormwater Management and National Pollution Discharge Elimination System Permit (NPDES) guidelines. Similar to Task D, it is the Consultants responsibility to review the information requested for submission of 100% Design Plans and note in the submitted Proposal any items that may be missing from this RFP that would be otherwise relevant to the specific intersection improvements requested, in accordance with all relevant design standards noted in Section I of this RFP. The consultant shall further identify any plan or design request that may not be practical or relevant for the type of improvement requests outlined in this RFP.

100% Design Plans shall be tied to County Road Layouts where applicable and shall include the following:

- a. Construction Plan and specifications showing pedestrian improvements, sidewalk and roadway features such as sidewalks, curbing, pavement, vehicular and pedestrian signals, drainage, utility work, etc.
- b. Utility Plans
- c. Pavement Markings and Signage plan
- d. Traffic Control Design Plan
- e. Traffic Management Plan
- f. Erosion Control and sedimentation Plan

The Consultant shall indicate the need for the following plans as applicable and necessary to the nature of the work proposed.

- a. Profiles
- b. Plan of temporary and permanent takings or easements
- c. Curb Tie and Grading Plans
- d. Drainage and Stormwater Pollution Prevention/Management Plan
- e. Any other items required to accomplish the task

F. SUBMITTAL OF CONSTRUCTION DOCUMENTS

It is the Town's intention to utilize the Stow Highway Department's "front end" bid documentation for the purpose of advertising the project for construction.

1. Updated Construction Cost Estimates reflecting the latest MassDOT Weighted Average Fee Proposal Unit Prices.
2. Construction specifications and bid documents

Part 2: CONSTRUCTION ADMINISTRATION / BIDDING & AWARDING SERVICES

The Town of Stow is seeking qualified civil and transportation engineering firms to provide construction administration, resident engineering, bidding and awarding services for proposed Complete Streets pedestrian improvements at the intersection of Harvard Road and Great Road (Route 117 – a state numbered town owned road) in Stow and intersection improvements at the intersection of Old Bolton Road and Great Road in Stow.

A. Construction Administration

1. Resident Engineering;
2. Perform scheduled site visits;
3. Confirm correct drainage installation methods as necessary;
4. Ensure compliance with Americans with Disability Act requirements
5. Ensure compliance with the Stormwater Pollution Prevention Plan as necessary;
6. Verify asphalt mix design and quality assurance;
7. Verify asphalt quantities applied;
8. Ensure roadway compaction requirements are met;
9. Keep records of workforce levels and police detail presence;
10. Quantify work performed;
11. Maintain adherence of work to contract documents and bid specifications;
12. Provide written status/field reports on a weekly basis that include, but are not limited to updates on the pace of construction scheduling and the identification of any risks or potential overages.

B. Management of Contract Administration

1. Interpret contract documents to contractor
2. Process and approve shop drawings, requests for information, claims reviews, change orders, schedule extensions, etc.
3. Monitor adherence to and progress toward budget and cost thresholds
4. Review and maintain schedule of operations
5. Review and approve contractor pay applications/requisitions

C. Project Closeout

1. Establish criteria for reaching substantial completion and perform final inspection of work performed
2. Generate and maintain project punch list
3. Provide assistance in procuring bond release approval
4. Coordinate final contractor payment
5. Provide assistance with final Complete Streets grant walk-through as necessary

D. Construction advice and pre-construction meeting

1. Provide advice relative to shop drawing review and attendance at the pre-construction meeting as needed.

Part 3: Bidding and Awarding Services

- A. Central Register Notification
- B. Response to Bidder Questions
 - 1. Review and respond to bidder questions during the bid phase of the project, including issuance of addenda as necessary;
 - 2. Manage pre-bid conference and attend bid opening;
- C. Tabulation and evaluation of all bids in accordance with MGL c.30b;
- D. Provision of Contractor Recommendation;
- E. Review of Surety Information;
- F. Written Review of Reference Checks;

The Town of Stow will be responsible for completing the following tasks:

- Newspaper advertisement of project
- Pre-Qualified Contractor Request
- Prevailing Wage Rate Request
- Hosting of bidding documents, plans, and addenda for download on consultant website

SECTION IV. PROPOSAL SUBMISSION

A. Minimum Requirements

At a minimum, Proposers must submit all materials requested in accordance with the exact specifications of this request for proposals. Proposers who meet these minimum criteria will have their proposals reviewed. Meeting minimum requirements does not mean that a Consultant will be selected for the project.

B. Proposal Contents

One (1) original bound copy and one (1) digital copy of the Proposal marked "Proposal - Professional Engineering Services for Stow Great Road" must be received per the time frame outlined in **Section II**. It is the sole responsibility of the proposer to insure that the Proposal arrives on time and at the designated place.

C. Preparation of Proposal

1. General proposal elements

- a. Periods of time, stated as a number of days, shall be calendar days unless otherwise indicated.
- b. It is the responsibility of all Proposers to examine the entire RFP packet and seek clarification of any item or requirement that may not be clear and to check all responses for accuracy before submitting a proposal. Negligence in preparing an offer confers no right of withdrawal after due time and date.
- c. All proposals must contain Exhibits A - F: the Proposal Signature page, Price Proposal Signature page, and all applicable Certifications provided.
- d. Any exceptions to this RFP stated on a separate page of the proposal.
- e. The proposal document must be submitted with an original ink signature by the person authorized to sign the proposal.
- f. Erasures, interlineations or other modifications in the proposal shall be initialed in original ink by the authorized person signing the offer.

- g. Submit one (1) unbound original and 4 bound copies of the non-price proposal.
- h. Submit one (1) electronic copy of the non-price proposal on a CD, using a widely accessible software format.
- i. Submit one (1) copy of the price proposal in a signed, sealed envelope.

2. *Qualifications Narrative*

The Proposal shall detail the firm's or individuals' qualifications, experience and expertise. Proposal evaluation will include an examination of the Proposer's qualifications, experience, project action plan and expertise in conducting similar work.

- a. Proposer shall provide a brief history of their firm, organization or relevant professional experience;
- b. Proposer shall list the number of current personnel that it employs, if applicable;
- c. Proposer shall detail the firm's or their own experience with similar projects completed during the past three (3) or more years;
- d. Proposer shall provide a list of specific qualifications the Consultant has in supplying the services listed in this proposal, including professional degrees, designations, affiliations, certifications and/or licenses;
- e. Proposer shall submit the names and resumes and level of participation of staff particularly staff assigned as the lead coordinator to this engagement and their respective experience in these types of engagements if applicable;
- f. Identification of any and all sub-consultants and/or subcontractors who will work with the Proposer
- g. Proposer shall provide a list of a minimum of three (3) references from current and/or former clients for projects of similar size and scope. List shall include current contact information including client contact name, agency, address and phone number.
- h. Certificates of insurance.

3. *Scope of Services and Approach to Work*

The proposal must confirm the Proposer's understanding of the RFP. The narrative portion and the materials presented in response to this RFP must contain the following information:

- a. A cover acknowledging addenda, if any, which includes a statement that the Proposal is in accordance with this RFP, and that the Proposer understands all sections and provisions therein. Any exceptions must be clearly stated.
- b. A clear outline of the recommended approach to the project. Proposer shall provide a proposed plan for performing the overall work, including a timeline for major activities. Proposer shall provide a written scope of work schedule of deliverables, which should conform to the work items, timelines, tasks and deliverables identified in the RFP;
- a. Explain how the Proposer's administrative process will ensure that appropriate levels of attention are given and that the work is properly performed;
- b. Proposer shall submit three (3) samples of its most relevant and recent work product;
- c. Proposer shall affirm financial stability of Proposer's firm or organization, as applicable.

4. *Price Proposal Elements*

Fee Proposals for the various items shall be stated both in figures and words in the appropriate spaces shown on the proposal form, and all proposals will be considered informal which contain items not specified in said form.

- a. Consultant shall provide the Town with a lump sum fee itemized to correspond to specific tasks and deliverables included in Section III, Part 1.
- b. For Tasks associated with Section III, Part 2, the Consultant shall provide a lump sum fee itemized to correspond to specific deliverables, and as necessary for certain Tasks and activities, an hourly rate with an estimate-not-to-exceed fee proposal for those items that correspond to work in the field. Materials and incidental costs shall be included.

SECTION V. EVALUATION AND ACCEPTANCE

A. Proposer minimum qualifications:

1. Proposer must be an individual or an organization that has experience Civil Engineering practice;
2. Proposer should have experience working with municipalities and the Department of Transportation;
3. If the Proposer is an individual, he/she must propose a team with depth and expertise to complete the required tasks;
4. Proposers must have demonstrated ability to be an effective communicator both orally and in writing and possess the capacity to conduct presentations.

B. Education and Qualifications

The Proposer is responsible for ensuring the timely completion of all project objectives. The ideal candidate should have the demonstrated knowledge and background in the field of Civil and Traffic Engineering and a minimum of five years of relevant experience.

C. Competency of Proposers

Only those Proposers who submit all forms and materials as required will be considered responsive and responsible.

No proposal will be considered unless the Proposer submitting the same shall furnish evidence satisfactory to the Town that they have the necessary equipment, ability, and financial resources to fulfill the conditions of the contract and specifications. Previous experience and responsibility of the Proposer will be considered in awarding the contract. No contract will be awarded to any Proposer who is in arrears to the Town upon debt or contract, or who is a defaulter as to surety or otherwise upon any obligation to the Town of Stow.

D. Withdrawal of Proposal

Permission will not be given to withdraw or modify any proposal after the RFP deadline.

E. Acceptance or Rejection of Proposal

The Town reserves the right to accept proposals at any time within thirty-five (35) days after the same are received as provided. The Proposer shall submit their proposal on the proposal-contract forms if such are provided.

The Town reserves the right to reject any or all proposals and waive informalities. Any proposal deemed incomplete will be rejected outright for non-responsiveness to the requirements of the RFP.

F. Names of Proposers

Each proposal must contain the full name and address of each person or company interested therein. In the case of a partnership, the name and address of each partner must be stated on the proposal form. The firm, corporate, or individual name must be signed by the Proposer in the

space provided for signature on the forms. In the case of a corporation, the title of the officer signing must be stated and the corporate seal must be affixed. In the case of a partnership, the signature of at least one of the partners must follow the firm name using the term “members of firm”. Individuals use the term “doing business as _____,” or “Sole Owner.”

G. Determination of Best Price

The Selection Committee will open the fee proposals once the general qualification review has been completed. Once the fee proposals are included in the evaluation the Selection Committee will make a recommendation to the Chief Procurement Officer.

All proposals shall remain valid and acceptable for ninety (90) days from the last proposal due date. This time may be extended by mutual consent of selected Proposer and the Town. Upon award, the engagement must commence within ten (10) days of the executed contract.

H. Exceptions

Any exceptions taken to the conditions or specifications cited herein must be clearly stated on a separate page of the proposal.

SECTION VI. AMENDMENTS

If any changes are made to this Request for Quote, an addendum will be issued. Addenda will be mailed or faxed to firms invited to quote.

The Town may cancel this Request for Quote, or reject in whole or in part any and all quotes, if the Town determines that cancellation or rejection serves the best interests of the Town.

SECTION VII. AWARD and CONTRACT:

The Town anticipates awarding the contract to the responsive and responsible Proposer offering the lowest price for all required services. If necessary, in order to distinguish the qualifications and clarifications between finalists, firms may be invited to make a presentation before the Planning Board.

The Town of Stow reserves the right to reject any Proposal or to waive any informality in the process if it is in the best interest of the Town.

The project and services provided by the successful candidate will comply with all Stow and Commonwealth of Massachusetts standards and codes, and with MGL Chapter 30.

All Proposal prices submitted in response to this Request for Proposal shall remain firm for ninety (90) days following the Proposal opening.

If, at the time of the scheduled Proposal opening, Town Building is closed due to unforeseen events, the quote opening will be postponed until 12 noon on the next business day.

SECTION VIII. CONTACT INFORMATION

Please contact the Town of Stow for clarification of this Request for Proposal, and direct all inquiries regarding the Request for Proposal to:

Jesse Steadman – Town Planner
Stow Planning Department
Stow, MA 01775
978-897-8071
978-897-5682 (Fax)

planning@stow-ma.gov

The Town of Stow is an equal opportunity employer.

SECTION IX. REQUIRED FORMS AND EXHIBITS

The following pages contain forms that *must* be included with the proposals.

- Exhibit A.....Proposal Signature Page
- Exhibit B.....Price Proposal Signature Page
- Exhibit C.....Certificate of Non-Collusion
- Exhibit D.....Certificate of Tax Compliance
- Exhibit E.....Certificate of Authority
- Exhibit F.....Equal Opportunity Certification

EXHIBIT A - Proposal Signature Page

Complete this page and return as a cover sheet for the completed non-price proposal.

Town of Stow RFP to Provide Design and Engineering Services

Company Name	Contact Person (Please Print)
Street	Phone
City, State, Zip	Fax

Email

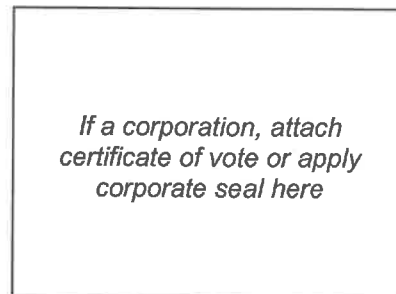
Submit the attached proposal for this Request for Proposals to the Town of Stow on the authority of the undersigned and as dated below. I confirm and pledge to abide by and be held to the requirements of this RFP and its resulting contract, to perform any tasks and deliver any documents required, and to execute a Contract with the Town of Stow.

Proposer acknowledges receipt of the following addenda.*

1. _____	2. _____
3. _____	4. _____

Authorized Agent of the Contractor:

Signature (blue ink please)
Printed Name
Title
Date



Form must be signed by a duly authorized officer(s) eligible to sign contract documents for the firm. Consortiums, joint ventures, or teams submitting proposals will not be considered responsive unless it is established that all contractual responsibility rests solely with one contractor or one legal entity. The Proposal must indicate the responsible entity.

Contractor should be aware that joint responsibility and liability will attach to any resulting contract and failure of one party in a joint venture to perform will not relieve the other party or parties of total responsibility for performance.

* to be filled in by Proposer, if addenda are issued.

EXHIBIT B - Price Proposal Signature Page

Complete the following pages and submit with any attachments in a separate, sealed envelope from non-price proposal.

Town of Stow RFP to Provide Design and Engineering Services

The undersigned proposes to provide services to the Stow in accordance with the response to its Request for Proposals (RFP). This price includes all services and out of pocket expenses as per the terms and specifications stated in the non-price proposal.

Price includes but is not limited to all deliverables listed in the RFP.

**Include Estimated hourly worksheets & rate charts as applicable.*

Signature *(blue ink please)*

Date

Printed Name

Title

Company Name

Email

Street

Phone

City, State, Zip

Fax

EXHIBIT C – Certificate of Non-Collusion

The undersigned certifies under the penalties of perjury that this quote has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, club, or other organization, entity, or group of individuals.

(Signature of individual submitting Quote)

EXHIBIT D - Certificate of Tax Compliance

Pursuant to Massachusetts General Law Chapter 62C, § 49A, I hereby certify under penalties of perjury that I have, to the best of my knowledge and belief, filed all state tax returns and paid all state taxes required under law.

Social Security or Federal I.D. Number

Signature: Individual or Corporate Officer

Title

Date

Please Print:

Corporate Name (as used for tax filing)

Address

P.O. Box

City, State, Zip Code

* Your Social Security Number or Federal Identification Number will be furnished to the Massachusetts Department of Revenue to determine whether you have met tax filing or tax payment obligations. Proposers who fail to correct their nonfiling or delinquency will not have a contract or other agreement issued, renewed or extended. This request is made under the authority of M.G.L. Ch. 62C, § 48A.

Form must be signed by a duly authorized officer(s) eligible to sign contract documents for the firm. Consortiums, joint ventures, or teams submitting proposals will not be considered responsive unless it is established that all contractual responsibility rests solely with one contractor or one legal entity. The Proposal must indicate the responsible entity.

Contractors should be aware that joint responsibility and liability will attach to any resulting contract and failure of one party in a joint venture to perform will not relieve the other party or parties of total responsibility for performance.

EXHIBIT E - Certificate of Authority

Meeting of Board of Directors

At a meeting of the Directors of the _____ duly called and held at
(Corporation)

_____ on the _____ day of _____,
in the _____ year at

which a quorum was present and acting, it was voted, that _____ the

_____ of this Corporation is hereby authorized and empowered to
make,

(Name) (Title/position)

enter into, sign, seal and deliver, on behalf of this Corporation a Proposal and subsequent Contract
for:

(brief description) with the Town of Stow, and any performance and payment bonds (each in the amount
of the contract) in connection with such Contract, if applicable.

I hereby certify that the above is a true and correct copy of the record, that said vote has not been

amended or repealed and is in full force and effect as of this date, and that _____

is a duly elected _____ of this Corporation.

Clerk or Secretary of the Corporation

If a corporation, attach certificate of vote or
apply corporate seal here)

1376 US Route 1
 Cape Neddick, ME 03902
 207-351-8673
 www.coastaltrafficinc.com



Quote

ADDRESS
 Steve Nadeau
 Town of Stow
 Stow Town Building
 380 Great Road
 Stow, MA 01774

SHIP TO
 Steve Nadeau
 Town of Stow
 Stow Town Building
 380 Great Road
 Stow, MA 01774

QUOTE # DATE
 21127 02/08/2022

QTY	DESCRIPTION	AMOUNT
2	R829-G AC School Zone Beacons and Signs	9,038.00
Included:		
2	R829-G Solar Cabinet, With Powder Coat, Yellow	
2	Standard Battery, 35 Ahr	
2	Solar Panel, 80 W	
2	Side of Pole Mount, 80 W	
2	Solar Panel Harness MC4 to Spade Terminals, 8'(Std.)	
4	LED module incl. 12 vdc Yellow	
4	Poly Signal Head and Visor, 12" Yellow	
4	Signal Head Mount Kit (Yellow), 2 Arms and 2 Hub Plates	
2	Calendar Communication Kit, 16' Serial to USB Harness	
2	Calendar Upload / Override Switch Kit, Yellow, Housing, Switch, 16' Switch Harness - SKU 84347	
2	School Zone Sign	
4	Sign Bracket	
2	Shipping	
1	Calendar Programming Kit and Software, 32' USB Extension Harness	95.00

NOTE:
 -Existing Poles and bases to be reused
 -Shipping Included
 -Supply Only

TOTAL **\$9,133.00**

Accepted By

Accepted Date

RECOMMENDED SYSTEM:

To meet the performance requirements at 391 Great Rd, Stow, MA, Carmanah recommends the R829-G system.

Key Parameters Considered:

- Hours flashing per day, and number of days per week
- Worst month** (month with least sunlight, coldest temp, and highest energy consumption over 24 hours)

**See glossary of terms on page 4 for clarification

Recommended System: R829-G
Location: 391 Great Rd, Stow, MA

System Configuration:

Solar Panel (Watts)	80
Solar Panel Orientation	South
Battery Capacity (Amp-Hours)	35
Fixture 1 Color and Type:	Yellow 12" Beacon
Number of Fixtures	2
EMS Intensity Setting	340mA
Per-Fixture Output Intensity	942cd
Fixture Flash Pattern	0.5A
Hours Per Day	4
Days Per Week	5


System Activation Method:

Time Switch Model	RTC AP22 Modem
Other Devices:	None

Weather Data:

Worst Month	December
Peak Sun Hours (during month)	2.75
Minimum Temperature	29.8°F / -1.22°C

Additional Notes:

Adjusted Battery Capacity due to Cold Temperature	81%
Sunlight Available after Shading is Applied	30%

Performance Summary for Worst Month

Energy In (Watt-Hours)	43.8
Hours Per Day	4.0
Energy Out (Watt-Hours)	26.1
Autonomy (Days)	11.7
Array-to-load Ratio (ALR)	1.7
24-Hour Battery Usage - Depth of Discharge (%)	2.4%

*See page 3 for in-depth system details

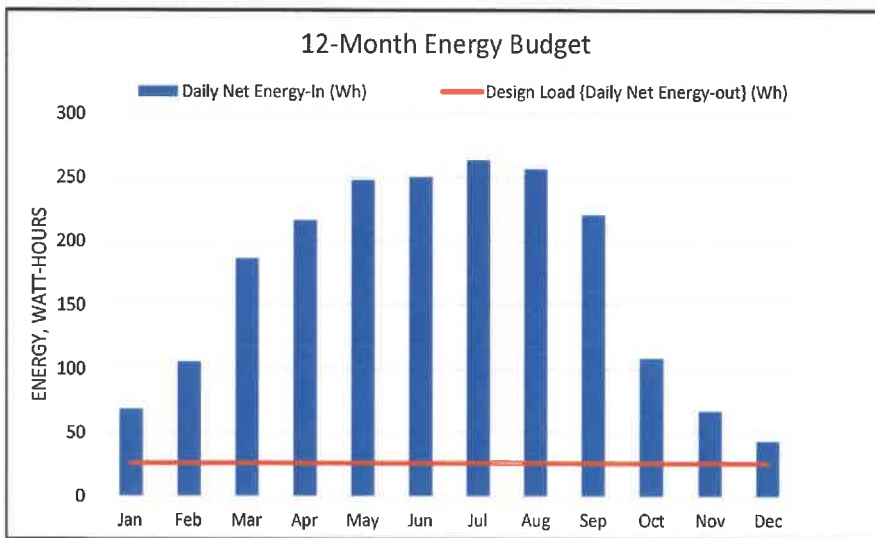


Sun Path and Shading

"The image on the left depicts the sun's path during the worst month*. Both the sun's path and shading affect the amount of available energy and determines the size and performance of the system.

Solid objects such as buildings block most light, while the effect of other objects – like trees, depending on their type and time of year– varies."

Location Shade De-rating: 70%



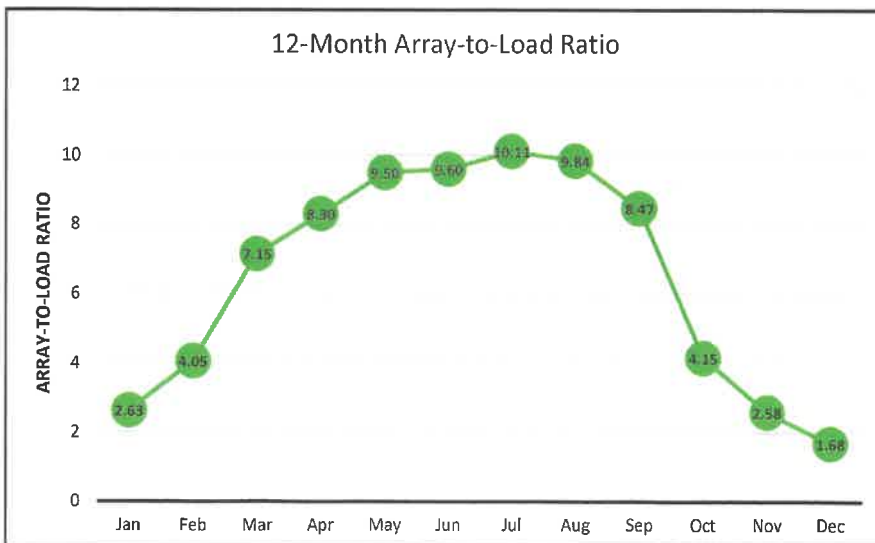
12-Month Energy Budget:

Blue bars: Energy available to run the system and charge the batteries (energy-in*).

Red line: system load (energy-out*) due to pedestrian or other system activation.

Minimum Array-to-Load Ratio: 1.7

System: R829-G
Hours Per Day: 4
Days Per Week: 5



12-Month Array-to-Load Ratio:

Green line: The monthly array-to-load ratio.

The chart to the left illustrates the the ratio of ""net energy"" collected by the solar panel and available to charge the battery divided by the system energy consumption over 24 hours.

The recommended industry standard minimum value for array-to-load ratio is 1.2

ENERGY-IN CALCULATION:

Rated Panel Wattage (W)	80	
Worst Month Peak Sun Hours (h)	2.75	Sun Hours at 45° tilt angle worst month = December
Effective Shading (%)	30%	100% is full sun. Based on worst month = December
Peak Sun Hours Adjusted for Shading (h)	0.83	
Solar Panel Energy Pre-Battery Charger (Wh)	66.09	
Solar Panel Charge Efficiency (%)	92%	Operating specification
Battery Charge Acceptance	72%	Value based on battery manufacturer's specifications
Energy Into the Battery (Watt-Hours)	43.8	

ENERGY-OUT CALCULATION:

Average Fixture Power Day Operation (W)	2.67	Operating specification
Ambient Auto-Adjust Maximum (%)	100%	Operating specification
Night Dimming (%)	30%	User-adjustable setting
Percentage of Operation During Daytime (%)	100%	Input variable
Average Fixture Power w/ Night Dim (W)	0.80	Calculated operating specification
Number of Fixtures	2	Input variable
LED Driver Efficiency (%)	95%	Lab-measured driver efficiency
Average Hours Operation per Day (h)	2.9	Input variable per specification
Total Fixture Consumption (Wh)	14.474	Calculated operating specification
EMS Quiescent Current (Amps)	0.00051	Operating specification
24-hour Quiescent Energy Consumption (Wh)	0.15	24 hours x 12V battery voltage x sum of quiescent currents
Total 24-hour Energy Consumption (Wh)	26.1	Quiescent, fixture(s) and other loads

SYSTEM AUTONOMY:

Battery Capacity (Ah)	35	Operating specification - room temperature
Battery Low Voltage Disconnect (%)	10%	Operating specification
Battery Capacity (Wh)	378	Battery capacity (Ah) X 12 Volts X (1 - Battery LVD %)
Battery Capacity Temperature De-rate Amount	81%	Reduced capacity due to temperature effects
Temperature-Adjusted Battery Capacity (Wh)	305.4	Battery capacity X temperature de-rating factor
Total Daily Energy Consumption (Wh)	26.08	Restated from above
Autonomy (Days)	11.7	Adjusted battery capacity / daily energy consumption

ARRAY TO LOAD RATIO:

Energy Into the Battery (Wh)	43.78	Energy-in through the solar panel and EMS
Total Daily Energy Consumption (Wh)	26.08	Energy-out through the system
ALR (Energy In / Energy Out)	1.7	Recommended minimum = 1.2

DAILY DEPTH OF DISCHARGE:

Nominal Battery Capacity (Wh)	420	Battery capacity (Ah) x battery voltage (12V)
Daytime Energy drawn from Battery (Wh)	0.00	Energy-out through the system - daytime activations
Nighttime Energy drawn from Battery (Wh)	0.00	Energy-out through the system - nighttime activations
Total Energy Provided by Battery Only (Wh)	0.00	Total energy battery supplies system during a 24-hr cycle
24-Hour Battery Usage - Depth of Discharge %	0.0%	Daily Cyclical Battery Capacity Used

Glossary

12-Month Energy Budget: The amount of daily energy available during any month to run the system and charge the batteries plotted against the amount of daily energy used for a specified usage model - the "design load".

Hours per Day: The number of hours during the day that the beacons are flashing in response to a control signal from a time switch or other device.

Array-to-Load Ratio (ALR): Defined as the total system energy consumption (Energy-Out) divided into the net energy available to the system (Energy In) on a day during the worst month. It is an accepted industry practice to specify a minimum ALR of 1.2:1 in order to account for variability of sunlight energy over time. Providing a sufficient ALR will help ensure that the batteries will return to a full-state of charge at the end of each charging day.

Autonomy: The length of time (in days) that a system can function without sunlight (insolation). For autonomy calculations, net battery capacity is adjusted for the effect of temperature (during the worst month of sunlight) and low-voltage-disconnect (LVD) (see LVD definition below).

Battery Depth of Discharge: The percentage of battery capacity used on a daily basis. This value considers times when sunlight can power LED fixtures directly, eliminating the need to draw from the battery. For lead-acid batteries, reducing the depth of discharge dramatically improves battery life. **Note:** For a system activated during the daytime only, the battery will power the system during dawn and dusk when insolation levels are lowest.

Daily Quiescent Energy: The passive energy drawn (measured in watt-hours) by a system when it is idle. This includes the power draw of the main circuit board (EMS), LED beacon loads, and a time switch (if present).

Energy-In: The total amount of useable energy collected by the solar panel during a 24-hour period. This value accounts for efficiencies between the solar panel and the battery, as well as shade de-rating. Efficiencies related to the charge controller and battery-charge acceptance are also factors.

Energy-Out: The total energy used by a system in a 24-hour period based on the stated number of activations per day. It includes Daily Quiescent Energy (see definition above)

Low-Voltage-Disconnect (LVD): The voltage at which the system will not flash when activated. LVD is a temporary state and is the result of too little sunlight or too many activations. LVD ensures that a minimal charge is retained in the battery to enable system recovery and to protect against permanent battery damage.

Location Shade De-Rating: Percentage of available sunlight blocked by buildings, trees and other objects. This factor is specific to the end user's site, which is why a system is always optimally sized when its exact final installation location is known or can be simulated.

Worst Month: The month with the least sunlight, coldest temperatures, and highest system load over 24 hours.

Energy Management System (EMS): The control module inside the Carmanah Solar Traffic Product responsible for all aspects of energy management and system control.

Maximum Power Point Tracking (MPPT): MPPT dynamically maximizes the amount of power the solar panel can produce by allowing the solar panel voltage to operate at its optimal point independent of the battery voltage.

Disclaimer:

Access to Carmanah's solar sizing tool and the Solar Power Report is provided to you for informational purposes only. Carmanah expressly disclaims all representations and warranties with respect to such tool and report, including, without limitation, that they will meet your requirements, achieve any intended results, or be error-free. By using such tool and report, you agree and understand that solar simulations are estimates based on historical data only and cannot be relied upon as representations of future performance. Factors such as (without limitation): the presence of buildings, trees, and other obstacles; the direction of the installed solar panel; added third-party equipment; and any improper maintenance of solar panels and batteries, may dramatically affect our product's performance and lifespan. Your use of the solar sizing tool, Carmanah's website, and the report and other material generated by them, are subject to our Terms of Use, which can be found at <https://carmanah.com/policies/website-terms-of-use/>

RECOMMENDED SYSTEM:

To meet the performance requirements at 414 Great Rd, Stow, MA, Carmanah recommends the R829-G system.

Key Parameters Considered:

- Hours flashing per day, and number of days per week
- Worst month** (month with least sunlight, coldest temp, and highest energy consumption over 24 hours)

**See glossary of terms on page 4 for clarification

Recommended System: R829-G
Location: 414 Great Rd, Stow, MA

System Configuration:

Solar Panel (Watts)	80
Solar Panel Orientation	South
Battery Capacity (Amp-Hours)	35
Fixture 1 Color and Type:	Yellow 12" Beacon
Number of Fixtures	2
EMS Intensity Setting	340mA
Per-Fixture Output Intensity	942cd
Fixture Flash Pattern	0.5A
Hours Per Day	4
Days Per Week	5

System Activation Method:

Time Switch Model	RTC AP22 Modem
Other Devices:	None

Weather Data:

Worst Month	December
Peak Sun Hours (during month)	2.75
Minimum Temperature	29.8°F / -1.22°C

Additional Notes:

Adjusted Battery Capacity due to Cold Temperature	81%
Sunlight Available after Shading is Applied	30%

Performance Summary for Worst Month

Energy In (Watt-Hours)	43.8
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*See page 3 for in-depth system details

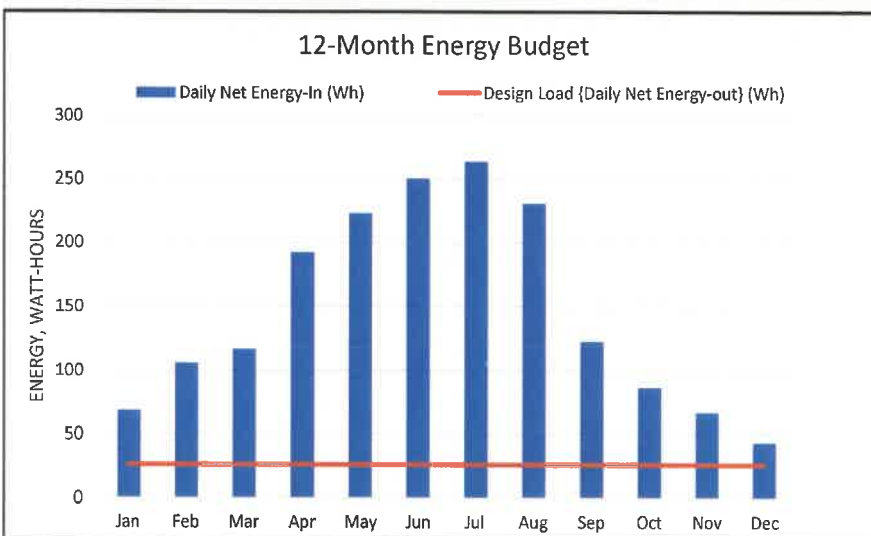


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Solid objects such as buildings block most light, while the effect of other objects – like trees, depending on their type and time of year– varies."

Location Shade De-rating: 70%



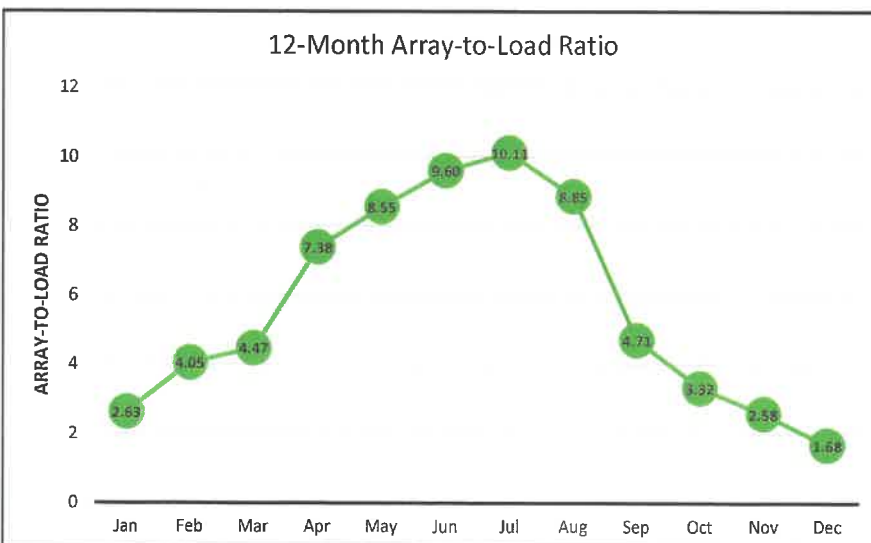
12-Month Energy Budget:

Blue bars: Energy available to run the system and charge the batteries (energy-in*).

Red line: system load (energy-out*) due to pedestrian or other system activation.

Minimum Array-to-Load Ratio: 1.7

System: R829-G
Hours Per Day: 4
Days Per Week: 5



12-Month Array-to-Load Ratio:

Green line: The monthly array-to-load ratio.

The chart to the left illustrates the the ratio of "net energy" collected by the solar panel and available to charge the battery divided by the system energy consumption over 24 hours.

The recommended industry standard minimum value for array-to-load ratio is 1.2

ENERGY-IN CALCULATION:

Rated Panel Wattage (W)	80	
Worst Month Peak Sun Hours (h)	2.75	Sun Hours at 45° tilt angle worst month = December
Effective Shading (%)	30%	100% is full sun. Based on worst month = December
Peak Sun Hours Adjusted for Shading (h)	0.83	
Solar Panel Energy Pre-Battery Charger (Wh)	66.09	
Solar Panel Charge Efficiency (%)	92%	Operating specification
Battery Charge Acceptance	72%	Value based on battery manufacturer's specifications
Energy Into the Battery (Watt-Hours)	43.8	

ENERGY-OUT CALCULATION:

Average Fixture Power Day Operation (W)	2.67	Operating specification
Ambient Auto-Adjust Maximum (%)	100%	Operating specification
Night Dimming (%)	30%	User-adjustable setting
Percentage of Operation During Daytime (%)	100%	Input variable
Average Fixture Power w/ Night Dim (W)	0.80	Calculated operating specification
Number of Fixtures	2	Input variable
LED Driver Efficiency (%)	95%	Lab-measured driver efficiency
Average Hours Operation per Day (h)	2.9	Input variable per specification
Total Fixture Consumption (Wh)	14.474	Calculated operating specification
EMS Quiescent Current (Amps)	0.00051	Operating specification
24-hour Quiescent Energy Consumption (Wh)	0.15	24 hours x 12V battery voltage x sum of quiescent currents
Total 24-hour Energy Consumption (Wh)	26.1	Quiescent, fixture(s) and other loads

SYSTEM AUTONOMY:

Battery Capacity (Ah)	35	Operating specification - room temperature
Battery Low Voltage Disconnect (%)	10%	Operating specification
Battery Capacity (Wh)	378	Battery capacity (Ah) X 12 Volts X (1 - Battery LVD %)
Battery Capacity Temperature De-rate Amount	81%	Reduced capacity due to temperature effects
Temperature-Adjusted Battery Capacity (Wh)	305.4	Battery capacity X temperature de-rating factor
Total Daily Energy Consumption (Wh)	26.08	Restated from above
Autonomy (Days)	11.7	Adjusted battery capacity / daily energy consumption

ARRAY TO LOAD RATIO:

Energy Into the Battery (Wh)	43.78	Energy-in through the solar panel and EMS
Total Daily Energy Consumption (Wh)	26.08	Energy-out through the system
ALR (Energy In / Energy Out)	1.7	Recommended minimum = 1.2

DAILY DEPTH OF DISCHARGE:

Nominal Battery Capacity (Wh)	420	Battery capacity (Ah) x battery voltage (12V)
Daytime Energy drawn from Battery (Wh)	0.00	Energy-out through the system - daytime activations
Nighttime Energy drawn from Battery (Wh)	0.00	Energy-out through the system - nighttime activations
Total Energy Provided by Battery Only (Wh)	0.00	Total energy battery supplies system during a 24-hr cycle
24-Hour Battery Usage - Depth of Discharge %	0.0%	Daily Cyclical Battery Capacity Used

Glossary

12-Month Energy Budget: The amount of daily energy available during any month to run the system and charge the batteries plotted against the amount of daily energy used for a specified usage model - the "design load".

Hours per Day: The number of hours during the day that the beacons are flashing in response to a control signal from a time switch or other device.

Array-to-Load Ratio (ALR): Defined as the total system energy consumption (Energy-Out) divided into the net energy available to the system (Energy In) on a day during the worst month. It is an accepted industry practice to specify a minimum ALR of 1.2:1 in order to account for variability of sunlight energy over time. Providing a sufficient ALR will help ensure that the batteries will return to a full-state of charge at the end of each charging day.

Autonomy: The length of time (in days) that a system can function without sunlight (insolation). For autonomy calculations, net battery capacity is adjusted for the effect of temperature (during the worst month of sunlight) and low-voltage-disconnect (LVD) (see LVD definition below).

Battery Depth of Discharge: The percentage of battery capacity used on a daily basis. This value considers times when sunlight can power LED fixtures directly, eliminating the need to draw from the battery. For lead-acid batteries, reducing the depth of discharge dramatically improves battery life. **Note:** For a system activated during the daytime only, the battery will power the system during dawn and dusk when insolation levels are lowest.

Daily Quiescent Energy: The passive energy drawn (measured in watt-hours) by a system when it is idle. This includes the power draw of the main circuit board (EMS), LED beacon loads, and a time switch (if present).

Energy-In: The total amount of useable energy collected by the solar panel during a 24-hour period. This value accounts for efficiencies between the solar panel and the battery, as well as shade de-rating. Efficiencies related to the charge controller and battery-charge acceptance are also factors.

Energy-Out: The total energy used by a system in a 24-hour period based on the stated number of activations per day. It includes Daily Quiescent Energy (see definition above)

Low-Voltage-Disconnect (LVD): The voltage at which the system will not flash when activated. LVD is a temporary state and is the result of too little sunlight or too many activations. LVD ensures that a minimal charge is retained in the battery to enable system recovery and to protect against permanent battery damage.

Location Shade De-Rating: Percentage of available sunlight blocked by buildings, trees and other objects. This factor is specific to the end user's site, which is why a system is always optimally sized when its exact final installation location is known or can be simulated.

Worst Month: The month with the least sunlight, coldest temperatures, and highest system load over 24 hours.

Energy Management System (EMS): The control module inside the Carmanah Solar Traffic Product responsible for all aspects of energy management and system control.

Maximum Power Point Tracking (MPPT): MPPT dynamically maximizes the amount of power the solar panel can produce by allowing the solar panel voltage to operate at its optimal point independent of the battery voltage.

Disclaimer:

Access to Carmanah's solar sizing tool and the Solar Power Report is provided to you for informational purposes only. Carmanah expressly disclaims all representations and warranties with respect to such tool and report, including, without limitation, that they will meet your requirements, achieve any intended results, or be error-free. By using such tool and report, you agree and understand that solar simulations are estimates based on historical data only and cannot be relied upon as representations of future performance. Factors such as (without limitation): the presence of buildings, trees, and other obstacles; the direction of the installed solar panel; added third-party equipment; and any improper maintenance of solar panels and batteries, may dramatically affect our product's performance and lifespan. Your use of the solar sizing tool, Carmanah's website, and the report and other material generated by them, are subject to our Terms of Use, which can be found at <https://carmanah.com/policies/website-terms-of-use/>



Town of Stow
PLANNING BOARD

380 Great Road
Stow, Massachusetts 01775-1122
(978) 897-5098
FAX (978) 897-2321

February 15, 2022

Ellen Sturgis
Stow Select Board
380 Great Road
Stow, MA 01775

Re: Letter of Support for Crescent Street Sidewalk Design Funds

Dear Ms. Sturgis and members of the Select Board,

The Traffic Safety Advisory Committee (TSAC) strongly support the Complete Streets Committee's ARPA request for 100% Design Plans for pedestrian improvements on Crescent Street.

Over the past several months the TSAC, Complete Streets Committee and Planning Board have been working to advance conceptual traffic plans in the greater Town Center area of Stow. However, the Crescent Street pedestrian network between Hartley Road and Warren Road requires more immediate attention than the likely 5+ year timeframe the Town Center design and construction will require. Today, the sidewalk between Pilot Grove Apartments and the Town Center does not meet ADA accessibility requirements, is crumbling in several areas, and missing key connections, most notably on the curve where Crescent Street turns onto West Acton Road. This is despite its heavy use by school children and other residents. For this reason, the project remains near the top (ranked #7) of the Town's Complete Streets Prioritization Plan.

The TSAC believes the ARPA request positions the Town well to leverage up to \$400,000 in *Complete Streets Program* funding - the same grant program that allowed for improvements to the Old Bolton Road and Harvard Road improvements along Route 117 this past summer.

Thank you for your consideration.

Sincerely,

Michael Sallese
Chief of Police
Chair of Traffic Safety Advisory Committee

stowpolice

From: Stow MA via Stow MA <cmsmailer@civicplus.com>
Sent: Monday, February 7, 2022 1:05 PM
To: stowpolice
Subject: Form submission from: Traffic Safety Advisory Committee Request Submittal Form

Follow Up Flag: Follow up
Flag Status: Flagged

Submitted on Monday, February 7, 2022 - 1:05pm
Submitted by anonymous user: [68.163.100.140](#)
Submitted values are:

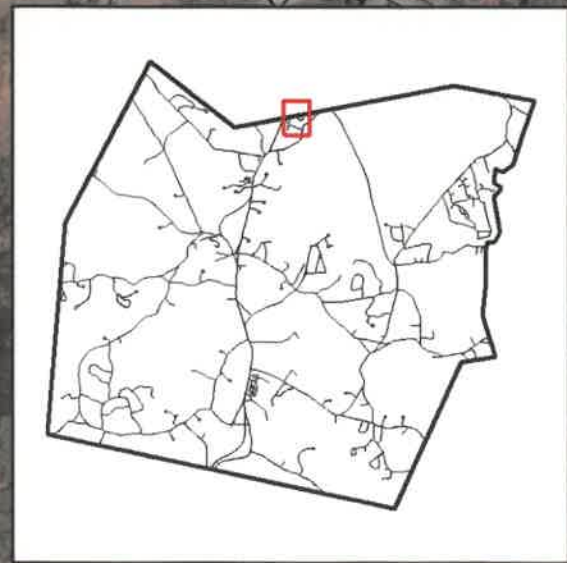
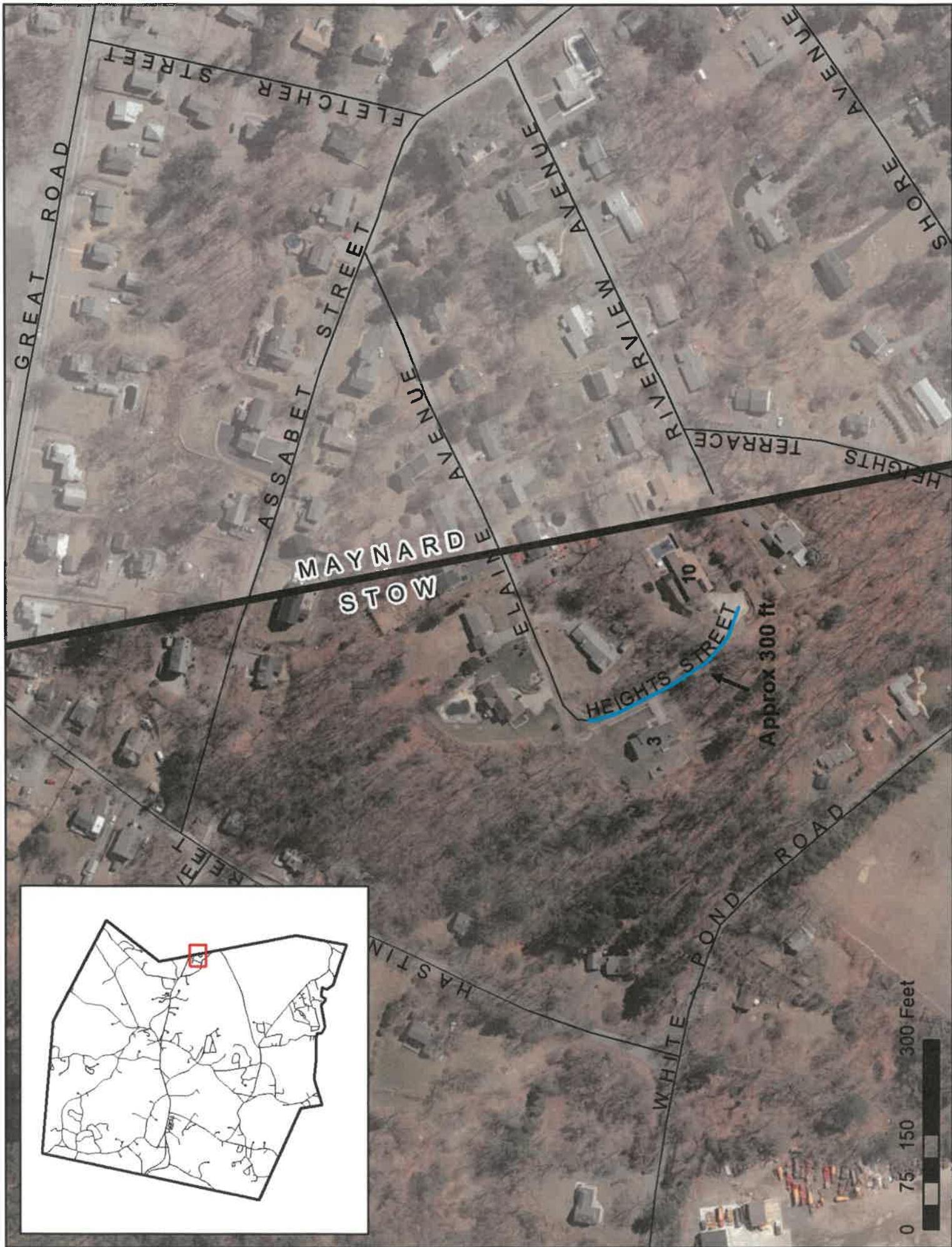
First Name: Katharine
Last Name: Clark
Street Address: 10 Heights St
Address Line 2:
City, State, Zip (if other than Stow): Stow, MA 01775
E-Mail Address: cosmikc8@gmail.com

Please describe the location of the traffic concern: The whole of Heights St.
Please describe the nature of the neighborhood traffic problem you are concerned with :
Safety and services.
Ice and snow.

Please list possible solutions to the problem that you would like the Town of Stow to consider:
Keeping the road trimmed back.
Adding a barrel of sand and salt at the intersection of Elaine and Heights.

Please attach any documents you would like the Committee to review here:

The results of this submission may be viewed at:
<https://www.stow-ma.gov/node/143221/submission/2591>



0 75 150 300 Feet