

**Town of Needham, Massachusetts
Department of Public Works**

**Proposal
February 7, 2013**

**Preliminary Plan Development
Needham Streetscape Improvements
Needham Center
Contract No. FY13-XX-XX**

Attachment A

A. PROJECT DESCRIPTION

Needham Center is at the geographic and symbolic center of the town. The Town has had and continues to have community based initiatives to revitalize the Center for enhancement of its appearance, land use composition and transportation functions.

This effort is focused on the development of streetscape concepts within the Needham Center Project area. The process will apply and balance road diet principles and contest design solutions with the needs of the various kinds of user and the transportation functionality of the Center including reasonable traffic flow. Potential future developments will be factored into this process to the degree possible. The overall intent will be to make the Center roadways "Complete Streets". The project area includes the following roadways:

Great Plain Avenue:	From Warren St. to Washburn Ave.	2,200lf
Highland Avenue:	From Great Plain Ave. to May St.	900lf
Dedham Avenue:	From Great Plain Ave to about the mid-point between Grant St. and Lincoln St.	500lf
Chapel Street:	May St. to Lewando's Drycleaners	500lf
Chestnut Street:	From Great Plain Ave to Oak St	800lf
Total		4,900lf

Services will be implemented under auspices the Downtown Streetscape Working Group, which has been formed to provide oversight and guidance to the Design Team, as well as coordination with other Town Boards/Committees. The effort will culminate in a preliminary streetscape plan by the end of 2013, inclusive of budgetary costs and recommended phasing plan. The process will follow an incremental design development approach as outlined below.

B. SCOPE OF SERVICES

The following presents the Technical Approach.

B.1 Data Collection / Research

B.1.1 Conduct Kick off Meeting with the Town's Project Team to officially initiate services, overview the project, obtain initial guidance and to re-affirm project goals and protocols. Lines of communication will be established.

B.1.2 Conduct Research and review available information including past initiatives and undertakings (plans, reports) in the project area, as well as known public and private projects/developments identified by the Town that would influence the effort. This will include data collected as part of the 2009 Needham Center Development Plan effort. Also, compile historical information provided by the Town, such as photographs. Information collected will be cataloged and summarized in a Technical Memorandum.

B.1.3 Compile Base Plan from available GIS / Aerial Mapping for use during the Conceptual design.

B.1.4 Collect Traffic Volume Data for the key project locations. The count program is anticipated to include two 11- hour Manual Turning Movement (MTM) weekday counts at:

Great Plain Ave/Dedham Ave/Highland Ave
Great Plain Ave/Chestnut St/Chapel St

The count program will also include four 4-hour (peak hour) MTM weekday counts at:

May St/Chapel St/Highland Ave
Chestnut St/ School St
Chestnut St / Oak St
School St / Dedham Ave

Machine Counts (48 hour directional ATR's) will be taken at four locations.

MTM counts will include vehicle classification, as well as Pedestrian and Bicycle volume at the above noted MTM count locations. Available traffic count data from other sources will be compiled and incorporated into data base for the Project.

B.1.5 Perform Auxiliary Counts/Observations. The effort includes a combination of several mini counts and/or observations, such as at the Post Office parking lot/ exit onto Great Plain Avenue, the Great Plain Commuter Rail Crossing and general observations of on-street parking (this effort is not intended to be a detailed parking study). Also make observations on the operation/coordination of the existing Great Plain Avenue traffic signals at Dedham Avenue / Highland Avenue and at Chapel Street/ Chestnut Street.

Lastly, a license plate survey (total 4 hours) will be conduct to determine how many vehicles traveling northbound on Dedham Avenue (just south of School Street) turn left from Dedham Avenue onto Great Plain Avenue. This will be

done to help assess the possible reassignment of this movement to School Street and then to Chestnut Street.

B.1.6 Prepare Existing (2013) Traffic Volume Diagrams (AM / PM Peaks) to facilitate subsequent operational analysis.

B.1.7 Collect Historical Accident Data from the Needham Police Department and/or MassDOT for key locations and the corridor, in general. It is anticipated that detailed accident information will be provided for the most recent 3-year period.

B.1.8 Perform Initial Field Reconnaissance to record prevailing roadway features (lanes, crosswalks, turn lanes, loading zones) and generally observe the nature of traffic conditions along the project corridor. Planned effort includes the obtainment of current signal timing at the five signalized intersections.

B.2 Traffic Operations Analysis – Present Year

B.2.1 Perform Level of Service (LOS) Analysis for the five key signalized intersections based existing volumes. Analysis will be performed for AM and PM Peak Hours using Synchro / SimTraffic. Vehicle delays and queuing will be calculated. Follow up field observations will be made to calibrate the model, as may be needed to incorporate the rail gate closures.

B.2.3 Categorize Accident History by location, occurrence type and severity in a tabular format. Findings will be evaluated to identify apparent contributing roadway and/or intersection deficiencies.

B.2.5 Summarize Findings in a Technical Memorandum

B.3 Traffic Operations Analysis – Future No Build / Build

B.3.1 Modify Volume Diagrams to reflect the Future Year (2018). Adjustments to be applied will reflect background growth, as well as planned developments or other initiatives identified by the Town that would likely contribute traffic volume at study locations. The network model will be updated with 2018 volumes.

B.3.2 Conduct Future Year No Build Analysis for AM and PM Peak hours at the five signalized locations (LOS, Delay, Queuing).

B.3.3 Assess Roadway Alternatives. Analysis and Modeling various alternative designs such as geometric reconfigurations, number of lanes, lane usages and on street parking along with enhancements to signal operations. The study of roadway alternatives will be limited to the two Great Plain signalized locations. The process may include some redistribution of the volume of certain traffic movements to reflect various configurations. Key traffic issues to be assessed: LOS, Vehicle Delay, Queuing, and Pedestrian Phasing.

B.3.4 Summarize Analysis Findings in a Technical Memorandum.

B.4 Conceptual Roadway Layout

B.4.1 Make Recommendations with regard to roadway / sidewalk widths and lane use within the project area within the available right of way. The process will consider observations made and operational analyses performed, as well as apply “Complete Streets” principles to the project area. Key objectives will be to balance traffic operations, pedestrian mobility, bicycle accommodations and opportunities for streetscape and visual enhancement.

Possible measures include increases in sidewalk widths, provision sidewalk curb extensions for improve pedestrian safety, improve turning radii at corners, geometric reconfigurations, driveway openings and the like.

B.4.2 Make Recommendations with regard to Great Plain Traffic Signals, including preliminary phasing, coordination strategies and layout of signal equipment (latter to be done mostly to support the location of ramps and other sidewalk features. Also, make recommendations on the coordination of the other three signals noted above with the Great Plan Signals, as well as other traffic related improvements, such as key signing and markings.

B.4.3 Prepare Graphic(s) depicting recommendations using available GIS and / or aerial mapping. This plan will be used to support streetscape development.

B.5 Conceptual Streetscape Design

B.5.1 Identify Opportunities for Streetscape and Enhancement based on the proposed sidewalk areas identified by the traffic evaluations. These opportunities could range from actual locations, to overarching themes for different districts within the project area and unifying elements for the Center.

B.5.2 Investigate and Present General Streetscape and Landscape Treatments. Palette boards will be prepared on possible treatments for sidewalks, crosswalks, focal points, alternatives for trees and plantings, street furniture, street lighting and other elements to enhance the visual impact of the Center.

B.5.3 Develop Initial Concept(s) (3 options) applying the preferred themes and treatments identified in prior tasks. Concepts/options will be presented to the Town for discussion, comment and input. Concepts will be presented using available GIS or aerial mapping.

B.5.4 Identify Potential Issues to be reconciled during the preliminary design phase, when detailed field survey will be available. Key issues to be more thoroughly investigated are location of utilities relative to the placement of trees and lighting and the like, grading related to doorways and ADA Compliance and, the possible issues with curb extensions (slope and curb reveal)

B.5.5 Develop Illustrative Graphics to depict proposed improvements. These will include a combination of plan renderings, photo-shop images, perspectives, hand sketches and the like. (Budget: 3 Eye Level Perspectives, 2 Aerial Perspectives and 3 Sections)

B.5.6 Prepare Overall Master Conceptual Plan based on preferred options/alternatives and treatments.

B.5.7 Develop Budgetary Construction Cost Estimates for the approved Master Concept Plan.

B.6 Field Survey and Base Plans

B.6.1 Compile Right-of-Way Information. Research will include Town and County Engineering records for roadway layout lines. It is anticipated that formal, public layouts exist for Project roadways. Information will be taken from available plan records. Property Owners and parcel lines will be obtained from assessor files / plans.

B.6.2 Collect Underground Utilities information from the Town, involved state agencies and private companies on their respective facilities. Also, locate service lines to the extent possible from available record information.

B.6.3 Establish Control. Survey will be tie into layout/property monuments (where visible). Vertical Control will be established. .

B.6.4 Perform Detailed Field Survey to locate existing physical surface features within and adjacent to Project Streets. Limits of survey along Great Plain Avenue will be will extend 100 feet beyond the project limits noted above, The exception will be on Chapel Street, where it will extend 200 feet beyond Great Plain Avenue.

Detail coverage will include such items as: doorways, curb, edge of pavement, walks, driveways, utility castings, utility poles, utility markings, walls, fences, trees, planting, signs, street furniture, sidewalk material and signals. Topographical survey coverage will extend up to the back of sidewalk or up to 25 feet beyond the back of sidewalk at driveways and paved areas.

B.6.5 Obtain/Develop Cross-Sections at 50-foot intervals to the extent of topographical survey. In addition, elevations will be taken at key points, such as significant break points, doorways, driveway openings, centerline grades at drives, as well as pipe and rim elevations at drainage structures.

B.6.6 Perform Office Calculations and electronically plot survey information. The work will include the development of a TIN.

B.6.7 Prepare Base Plans - scale 1"=20'. Record information obtained from utility owners, as well as roadway layout and abutting property parcel lines will be compiled on the base plans.

B.7 Preliminary Design Plan

Following the approval of the preferred concept plan and completion of the field survey / base plan, the preliminary design will be undertaken. The purpose of this phase will be to apply the Conceptual design to a more detail base plan and modify its layout as may be necessary. The effort will review utility locations, general grading issues for ADA compliance, pavement thickness at key locations such as proposed curb extensions and location and vertical features of building doorways.

- B.7.1 Perform Subsurface Explorations.** This program will consist of taking pavement cores at selected to determine the depth of existing pavement. (budget for 4 locations) These are intended to be done at locations of proposed changes in the curb line, such as curb extensions, to determine the best way to re-grade the area: depth of milling.
- B.7.1 Set Horizontal Alignment and Intersection Geometrics** based on the approved Concept Plan. It is anticipated the proposed work will generally be within the existing roadway right of way.
- B.7.3 Review Sidewalk Cross slopes and Gutter Gradients.** It is anticipated that roadway rehabilitation work will be limited to milling and overly, except in localized areas of work where more substantial roadway work is required to meet the design. Changes to the center line profile are not anticipated at this time. Also under this task, generally review sidewalk cross slopes for locations where improvements will be required to meet ADA requirements.
- B.7.4 Identify / Layout Modifications** to existing drainage collection facilities to meet with the proposed design. It is anticipated that this will primarily focus on additional catch basins and lateral piping at say curb extensions for collection of runoff. No drainage design is included in the effort, but can be added by amendment.
- B.7.5 Depict Traffic Improvement Measures** including pavement markings, signing: regulatory, guide, advisory, and the signal layouts at Dedham Avenue /Highland Avenue and Chapel Street/Chestnut Street.
- B.7.6 Apply Master Concept Plan** and advance the layout of streetscape elements including period lighting to the base plan. Also, look for opportunities for the development of focal points or creation distinctive features. Update the Palette of recommended elements, furniture surface treatments with options, where appropriate.
- B.7.7 Perform Preliminary Lighting Layout.** A primary objective of the layout will be to integrate light placements with the other project elements, including streetscape.
- B.7.8 Prepare Preliminary Plans.** Plans will depict the general nature of proposed improvements, such as proposed geometry, curb layout, lane assignments, minor roadway and drainage work, streetscape layout and materials, signage, pavement markings, and street lighting. The plan set will include details on the selected materials and equipment.
- B.7.9 Prepare Budgetary Estimate** of probable construction cost with a breakdown by major elements.
- B.7.10 Make Phasing Recommendations** for the project based on operational, funding and traffic management considerations. Prepare an overall phasing plan with associated budgetary costs.

B.8 Project Meetings / Working Sessions / Public Meetings

- B.8.1 Attend Periodic Project Status Meetings** with Town Staff, generally anticipated to be monthly. (Budget: 12)
- B.8.2 Attend Monthly Meetings of the Downtown Streetscape Working Group** (Budget: 12 meetings) Effort includes meeting preparation and attendance by two or three design team members depending upon topics to be discussed.
- B.8.3 Conduct Public Meetings** (Budget: 2). Effort will include one public meeting following the completion of the Concept Plan Development process and one following the completion of the Preliminary Plan.
- B.8.4 Make Presentations at Town Meeting or Town Department/Board Meetings.** (Budget: 3)

A. SCOPE /FEE ASSUMPTIONS

The following assumptions have been made:

Town will provide for police details for coring and field survey if needed.

Town will provide bucket truck/crew for the ENGINEER's use in taking photographs to be used in preparing project graphics.

Field Survey fee is an allowance.