

NEEDHAM PLANNING BOARD

Tuesday December 21, 2021

7:15 p.m.

Virtual Meeting using Zoom

Meeting ID: **826-5899-3198**

(Instructions for accessing below)

To view and participate in this virtual meeting on your phone, download the “Zoom Cloud Meetings” app in any app store or at www.zoom.us. At the above date and time, click on “Join a Meeting” and enter the following Meeting ID: **826-5899-3198**

To view and participate in this virtual meeting on your computer, at the above date and time, go to www.zoom.us click “Join a Meeting” and enter the following ID: **826-5899-3198**

Or to Listen by Telephone: Dial (for higher quality, dial a number based on your current location):

US: +1 312 626 6799 or +1 646 558 8656 or +1 301 715 8592 or +1 346 248 7799 or +1 669 900 9128 or +1 253 215 8782 Then enter ID: **826-5899-3198**

Direct Link to meeting: <https://us02web.zoom.us/j/82658993198>

1. Board Deliberation and Decision: Amendment to Major Project Site Plan Special Permit No. 2009-06: Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, Petitioner. (Property located at 1471 Highland Avenue, Needham, Massachusetts).
2. Board Deliberation: Major Project Site Plan: Needham Enterprises, LLC, 105 Chestnut Street, Suite 28, Needham, MA, Petitioner. (Property located at 1688 Central Avenue, Needham, MA). Regarding proposal to construct a new child-care facility of 9,966 square feet and 30 parking spaces, that would house an existing Needham child-care business, Needham Children's Center (NCC).
3. Consideration of zoning to allow brewery uses in Needham.
4. Minutes.
5. Correspondence.
6. Report from Planning Director and Board members.

(Items for which a specific time has not been assigned may be taken out of order.)

The following testimony related to the proposal at the Needham Town Common was received before the close of the hearing and shared with the Board, but not added to the December 8, 2021 packet due to the late arrival, and is therefore included in this packet.

From: [Rosie King](#)
To: [Planning](#)
Subject: Town Common
Date: Wednesday, December 8, 2021 10:58:54 AM

In brief - I am opposed to the redesign of the commons which seems to be a solution in search of a problem. I feel it is a low priority project at a time when some of our schools are in such bad shape.

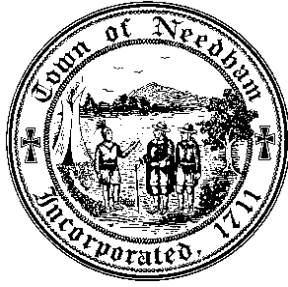
The proposed redesign does not seem well thought out as to how it would actually work with the population of Needham. People will always walk the shortest distance between points (i.e. a straight line) and so the circular walk around the perimeter seems a waste of natural space. People will continue to walk diagonally across the commons and wear paths in the grass. Why not keep the diagonal paths which now logically end at the crosswalks? Google pictures of other town commons or campus quadrangles and the vast majority show diagonal paths - for a reason.

I believe that swinging benches are an accident waiting to happen considering the space will be shared by the elderly, teenagers, adults and toddlers. Without supervision, someone is sure to be banged into or knocked over. We have parks for swings.

Metal benches and tables are cold in the winter and hot in the summer and uncomfortably hard surfaces for sitting.

I urge you to reconsider this project or at least seek more public input.

50 Laurel Drive



**MAJOR PROJECT SITE PLAN REVIEW SPECIAL PERMIT
AMENDMENT TO DECISION
Application No. 2009-06**

**Town of Needham
December 21, 2021**

(Original Decision dated November 17, 2009,
amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012,
April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021)

DECISION of the Planning Board (hereinafter referred to as the Board) on the petition of Town of Needham, 1471 Highland Avenue, Needham, MA, (hereinafter referred to as the Petitioner) for property located at 1471 Highland Avenue, Needham, Massachusetts. Said property is shown on Assessors Plan No. 51 as Parcel 1 containing 59,221, square feet in the Center Business District.

This Decision is in response to an application submitted to the Board on October 5, 2021 by the Petitioner for: (1) a Major Project Site Plan Review Special Permit amendment under Section 7.4 of the Needham Zoning By-Law (hereinafter the By-Law) and Section 4.2 of Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009.

The requested Major Project Site Plan Review Special Permit Amendment would permit the comprehensive redesign and renovation of the Town Common at 1471 Highland Avenue. The complete redesign includes replacement of the lawn, landscaping, pedestrian pathways, seating areas, lighting, and other amenities as discussed in the application materials and shown on the submitted plans. The property is the subject of Major Project Site Plan Special Permit No. 2009-06, issued to Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, dated November 17, 2009 and amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012, April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021.

After causing notice of the time and place of the public hearing and of the subject matter thereof to be published, posted and mailed to the Petitioner, abutters and other parties in interest as required by law, the hearing was called to order by the Chair, Paul S. Alpert, on Tuesday, November 2, 2021 at 7:20 p.m. by Zoom Web ID Number 826-5899-3198. The hearing was continued to November 16, 2021 with no testimony taken on November 2, 2021. Board members Paul S. Alpert, Adam Block, Jeanne S. McKnight, Martin Jacobs and Natasha Espada were present throughout the November 16, 2021 proceedings. The hearing was continued to December 8, 2021. Board members Paul S. Alpert, Adam Block, Jeanne S. McKnight and Martin Jacobs were present throughout the December 8, 2021 proceedings. Pursuant to Massachusetts General Laws Chapter 39, Section 23D, Adjudicatory Hearing, adopted by the Town of Needham in May of 2009, Ms. Espada examined all evidence received at the missed session and listened to an audio recording of the meeting. The record of the

proceedings and the submission upon which this Decision is based may be referred to in the office of the Town Clerk or the office of the Board.

Submitted for the Board's deliberation prior to the close of the public hearing were the following exhibits:

- Exhibit 1** Application for the Amendment to Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 to allow the renovation of the Town Common, dated October 5, 2021.
- Exhibit 2** Memorandums from Attorney Christopher Heep, dated September 30, 2021, October 28, 2021, November 5, 2021, and December 2, 2021.
- Exhibit 3** Plan set entitled "Town of Needham, Massachusetts, Department of Public Works, Needham Town Common Renovation, August 2021" prepared by BETA-Inc., consisting of 16 sheets: Sheet 1, Cover Sheet, dated September 2, 2021; Sheet 2, entitled "General notes," dated August, 2021; Sheet 3, entitled "Existing Conditions & Site Preparation Plan," dated August, 2021; Sheet 4, entitled "Layout and Materials Plan," dated August, 2021; Sheet 5, entitled "Grading and Drainage Plan," dated August, 2021; Sheet 6, entitled "Electrical Plan," dated August, 2021; Sheet 7, entitled "Planting Plan," dated August, 2021; Sheet 8, entitled "Details," dated August, 2021; Sheet 9, entitled "Details," dated August, 2021; Sheet 10, entitled "Details," dated August, 2021; Sheet 11, entitled "Electrical Details," dated August, 2021; Sheet 12, entitled "Electrical Details," dated August, 2021; Sheet 13, entitled "Electrical Details," dated August, 2021; Sheet 14, entitled "Electrical Details," dated August, 2021; Sheet 15, entitled "Details," dated August, 2021; and Sheet 16, entitled "Details," dated August, 2021.
- Exhibit 4** Plan set entitled "Town of Needham, Massachusetts, Department of Public Works, Needham Town Common Renovation, October 2021, Rev. November, 2021" prepared by BETA-Inc., consisting of 18 sheets: Sheet 1, Cover Sheet, dated November 4, 2021; Sheet 2, entitled "General notes," dated November 4, 2021; Sheet 3, entitled "Existing Conditions & Site Preparation Plan," dated November 4, 2021; Sheet 4, entitled "Layout and Materials Plan," dated November 4, 2021; Sheet 5, entitled "Grading and Drainage Plan," dated November 4, 2021; Sheet 6, entitled "Electrical Plan," dated November 4, 2021; Sheet 7, entitled "Irrigation Layout Plan," dated August, 2021; Sheet 8, entitled "Irrigation Details," dated August, 2021; Sheet 9, entitled "Planting Plan," dated November 4, 2021; Sheet 10, entitled "Details," dated November 4, 2021; Sheet 11, entitled "Details," dated November 4, 2021; Sheet 12, entitled "Details," dated November 4, 2021; Sheet 13, entitled "Electrical Details," dated November 4, 2021; Sheet 14, entitled "Electrical Details," dated November 4, 2021; Sheet 15, entitled "Electrical Details," dated November 4, 2021; Sheet 16, entitled "Electrical Details," dated November 4, 2021; Sheet 17, entitled "Details," dated November 4, 2021; and Sheet 18, entitled "Details," dated November 4, 2021.
- Exhibit 5** Email from Attorney Christopher Heep, dated November 16, 2021.
- Exhibit 6** Email from Michael Ruddy, 69 Melrose Ave, dated November 13, 2021.
- Exhibit 7** Email from Nancy Louca, dated November 20, 2021.

- Exhibit 8** Email from Lisa Cherbuliez, dated November 28, 2021.
- Exhibit 9** Conceptual Plans, prepared by BETA, consisting of 15 sheets, dated December, 2021.
- Exhibit 10** Email from Heather Kortenkaemper, 275 Broad Meadow Rd, dated December 4, 2021.
- Exhibit 11** Email from Oscar Mertz, dated December 6, 2021 with attached revisions to plans to show possible location and capacity of persons accommodated at public gatherings.
- Exhibit 12** Email from Rosie King, 50 Laurel Drive, dated December 8, 2021.
- Exhibit 13** Interdepartmental Communication (IDC) to the Board from Chief Dennis Condon, Needham Fire Department, dated October 8, 2021; IDC to the Board from Chief John Schlittler, Police Department, dated October 7, 2021; IDC to the Board from Tara Gurge, Needham Health Department, dated October 26, 2021; and IDC to the Board from Thomas Ryder, Assistant Town Engineer, dated November 9, 2021.

EXHIBITS 1, 2, 4 and 5 are referred to hereinafter as the Plan.

FINDINGS AND CONCLUSIONS

- 1.1 The subject property is located in the Center Business zoning district at 1471 Highland Avenue, Needham, MA, 02492, owned by Town of Needham. Said property is shown on Needham Town Assessors Plan No. 51 as Parcel 1 containing 1.23 acres.
- 1.2 The property is the subject of Major Project Site Plan Special Permit No. 2009-06, issued to Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, dated November 17, 2009 and amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012, April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021.
- 1.3 On November 17, 2009, under Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009, issued to the Town of Needham, the Board approved the expansion of the existing Town Hall by approximately 13,836 square feet, and the renovation of approximately 20,989 square feet of the existing facility for a total of 34,825 square feet.
- 1.4 The Town of Needham now proposes a comprehensive redesign and renovation of the Town Common at 1471 Highland Avenue. The complete redesign includes replacement of the lawn, landscaping, pedestrian pathways, seating areas, lighting, and other amenities as discussed in the application materials and shown on the submitted plans. The proposal does not include any new buildings, does not involve any structural changes to Town Hall, and does not alter the established vehicular circulation or parking spaces that the Planning Board has previously approved.
- 1.5 The key features of the proposed new Common include the following:
 - a) Based on the health and long-term viability of the trees and accumulated wear and tear on the existing Common, all existing trees, except the new 'Blue Tree' and lawn areas will be removed. Existing topsoil will be excavated and stockpiled onsite for reuse.

Landscaping installed as part of the Phase 1 Streetscape project will be retained. A planting plan for the new Common is included in the plan set.

- b) The Common as proposed will feature a large, oval-shaped lawn area within the center of the site. Within this center lawn area, nearer to the Town Hall side, there will be a circular area constructed of pavers. This area will be covered by a tent seasonally, with in-ground tent supports built in to allow for ready installation and removal. This tent area was regarded as a key feature of the new Town Common during the Petitioner's design work, based on the popularity of the temporary tent that the Town installed at the beginning of the COVID-19 pandemic to encourage outdoor dining and patronage of surrounding restaurants.
 - c) The site will feature wood and metal shade structures with picnic tables and bench swings along both Highland Avenue and Chapel Street. There will also be additional picnic tables installed near the southeast and southwest corners of the Common along Great Plain Avenue. Details of these structures and improvements are shown on the Plan.
 - d) The site will feature a new walkway across from the front entrance of Town Hall into the Common, and a new masonry wall, similar in style to those along Great Plain Avenue at this location that will double as a seating area.
 - e) The existing MBTA bus stop on Chapel Street will be replaced with a new one, which will be located in the same spot as the existing. Details of the new bus stop are shown on the Plan.
 - f) The existing Circle of Peace sculpture featuring dancing children and the sculpture of the children on the bench will be preserved and relocated slightly, as shown on the Plan. The existing dedication plaque will similarly be preserved and moved within the Common.
 - g) The project will include upgrading the existing globe-top lights to LED and painting, installing flush-mounted up lighting within the main pedestrian pathway, and providing temporary festoon poles to allow for decorative lights to be strung over the central lawn area. Power and connections for a public address system will also be provided at the shade structures and at the masonry wall. Additionally, exterior lighting of the Town Hall is being designed for construction by others.
- 1.6 Adjoining premises will be protected against seriously detrimental uses on the site by provision of surface water drainage, sound and site buffers, and preservation of views, light and air. The redesigned Town Common will have no detrimental impacts on adjoining premises. The site is already in use as the Town Common, and the redesign of the site does not create any detrimental impacts on the surrounding area. The Planning Board previously found, with respect to the renovation of Town Hall, that no sound and light buffers are required (see Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p. 5, Finding 1.15), and in terms of the views, light and air that will be offered, the site had been designed to enhance this property's role as the cornerstone of the vibrant downtown Needham Center.
- 1.7 Convenience and safety of vehicular and pedestrian movement within the site and on adjacent streets, the location of driveway openings in relation to traffic or to adjacent streets and, when necessary, compliance with other regulations for the handicapped, minors and the elderly has been assured. There will be no vehicular movement within the Town Common, and there will

be no new driveway openings or changes to established traffic circulation on the streets surrounding the site. Garrity's Way will be used as a material laydown area during construction and the existing curb will be reset, but the existing traffic flow will not be altered in any way and the existing parking spaces contained within Garrity's Way will remain in their current, previously-approved configuration. The Planning Board has previously found that "the design of the proposed driveways and location and design of the parking areas are adequate, safe and convenient for vehicular movement." See Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p.6, Finding 1.18. In addition, the pedestrian movement within the Town Common has been redesigned in a manner that will encourage its use. The new design features pedestrian entries at the northeast, southeast, southwest and northwest corners of the Common and will allow for pedestrians to travel safely and conveniently throughout the site.

- 1.8 Adequate methods for disposal of refuse and waste will be provided. Parking spaces have been arranged adequately, pursuant to the prior approvals of the Planning Board. As noted above, the use of the Property is not being changed, and no new parking spaces are required as a result of the proposed renovation of the Common. Accordingly, the Petitioner is not proposing any changes to the existing parking spaces associated with the Town Hall, which have previously been reviewed and approved by the Planning Board in the original Decision. As noted above, the Planning Board has previously found that "the design of the proposed driveways and location and design of the parking areas are adequate, safe and convenient for vehicular movement." See Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p.6, Finding 1.18.
- 1.9 Relationship of structures and open spaces to the natural landscape, existing buildings and other community assets in the area and compliance with other requirements of this By-law has been assured. The site plans include solar powered waste and recycling receptacles spaced throughout the Common. The volume of refuse generated is not anticipated to increase relative to the current use of the Common. The proposed receptacles will provide for enough disposal for the users of the Common, and the Department of Public Works will continue to be attend to the receptacles, as it has historically done in the ordinary course of operation.
- 1.10 The proposed project will not have any adverse impacts on the Town's resources, including the Town's water supply and distribution system, sewer collection and treatment, fire protection and streets. The Town Common was redesigned with careful consideration of existing structures and open space. In particular, the new common features an improved relationship with the Town Hall, including: A wider pedestrian entrance into the Common directly accessible from Garrity's Way, and a decorative masonry wall that also serves as a seating area directly in front of that entrance to Town Hall. The open space within the Common has been redesigned to encourage use by those who visit the common, with a large oval-shaped lawn area in the center of the Common and picnic tables and benches placed throughout the entire site.
- 1.11 Under Section 7.4 of the By-Law, a Major Project Site Plan Special Permit amendment may be granted within the Center Business District provided the Board finds that the proposed development will be in compliance with the goals and objectives of the Master Plan, and the provisions of the By-Law. On the basis of the above findings and conclusions, the Board finds the proposed development Plan, as conditioned and limited herein, for the site plan review, to be in harmony with the purposes and intent of the By-Law and Town Master plans,

to comply with all applicable By-Law requirements, to have minimized adverse impact, and to have promoted a development which is harmonious with the surrounding area.

THEREFORE, the Board voted 5-0 to GRANT: (1) the requested Major Project Site Plan Special Permit amendment under Section 7.4 of the By-Law and Section 4.2 of Major Project Site Plan Special Permit No. 2009-06, dated November 17, 2009, subject to and with the benefit of the following Plan modifications, conditions and limitations.

PLAN MODIFICATIONS

Prior to the issuance of a building permit or the start of any construction on the site, the Petitioner shall cause the Plan to be revised to show the following additional, corrected, or modified information. The Building Inspector shall not issue any building permit, nor shall he permit any construction activity on the site to begin on the site until and unless he finds that the Plan is revised to include the following additional corrected, or modified information. Except where otherwise provided, all such information shall be subject to the approval of the Building Inspector. Where approvals are required from persons other than the Building Inspector, the Petitioner shall be responsible for providing a written copy of such approvals to the Building Inspector before the Inspector shall issue any building permit or permit for any construction on the site. The Petitioner shall submit nine copies of the final Plans as approved for construction by the Building Inspector to the Board prior to the issuance of a Building Permit.

2.1 No Plan Modifications.

CONDITIONS

- 3.0 The following conditions of this approval shall be strictly adhered to. Failure to adhere to these conditions or to comply with all applicable laws and permit conditions shall give the Board the rights and remedies set forth in Section 3.16 hereof.
- 3.1 The conditions and limitations set forth in Major Project Site Plan Special Permit No. 2009-06, issued to Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, dated November 17, 2009 and amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012, April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021, as further amended by this Amendment are ratified and confirmed.
- 3.2 The Board approves the redesign and renovation by the Town of Needham of the Town Common as shown on the Plan. The design of the Town Common shall be as described in Section 1.5 of this Decision and as further described under the support materials provided under Exhibits 1, 2, 4 and 5 of this Decision. Any changes, revision or modifications to the Plan shall require approval by the Board.
- 3.3 All new utilities, including telephone and electrical service, shall be installed underground from the street line.
- 3.4 The maintenance of the site and associated infrastructure and landscaping shall be the responsibility of the Petitioner and the site, infrastructure and landscaping shall be maintained in good condition.

- 3.5 A signed and stamped Storm Water Management Policy form shall be submitted to the Town of Needham, together with a construction mitigation and an operation and maintenance plan as described in the policy.
- 3.6 Excavation material and debris, other than rock used for walls and ornamental purposes and fill suitable for placement elsewhere on the site, shall be removed from the site.
- 3.7 All construction staging shall be on-site. No construction parking shall be on public streets. Construction parking shall be all on site or a combination of on-site and off-site parking at locations in which the Petitioner can make suitable arrangements. If required by the Building Inspector, construction staging plans shall be included in the final construction documents prior to the filing of a Building Permit and shall be subject to the review and approval of the Building Inspector.
- 3.8 The Petitioner shall seal all abandoned drainage connections and other drainage connections where the developer cannot identify the sources of the discharges.
- 3.9 The Petitioner shall secure from the Needham Department of Public Works a Street Opening Permit, if applicable.
- 3.10 In constructing and operating the proposed Town Common on the locus pursuant to this Special Permit, due diligence be exercised, and reasonable efforts be made at all times to avoid damage to the surrounding areas or adverse impact on the environment.
- 3.11 That the following interim safeguards shall be implemented during construction:
- a. The hours of construction shall be 7:00 a.m. to 8:00 p.m. Monday through Saturday unless otherwise authorized by approval of the Board of Selectmen pursuant to the Needham General By-Laws, Section 3.8.1.
 - b. The Petitioner's contractor shall provide temporary security chain-link or similar type fencing around the portions of the project site which require excavation or otherwise pose a danger to public safety.
 - c. The Petitioner's contractor shall designate a person who shall be responsible for the construction process. That person shall be identified to the Police Department, the Department of Public Works, the Building Inspector, and the abutters and shall be contacted if problems arise during the construction process. The designee shall also be responsible for assuring that truck traffic and the delivery of construction material does not interfere with or endanger traffic flow on Highland Avenue, Great Plain Avenue, Chapel Street or the adjacent roads.
 - d. The Petitioner shall take the appropriate steps to minimize, to the maximum extent feasible, dust generated by the construction including, but not limited to, requiring subcontractors to place covers over open trucks transporting construction debris and keeping Highland Avenue, Great Plain Avenue and Chapel Street clean of dirt and debris.
- 3.12 No portion of the newly renovated Town Common shall be constructed until:
- a. The final plans shall be in conformity with those approved by the Board, and a statement certifying such approval shall have been filed by this Board with the Building Inspector.

- b. A construction management and staging plan shall have been submitted to the Police Chief and Building Inspector for their review and approval.
 - c. The Petitioner shall have recorded with the Norfolk County Registry of Deeds a certified copy of this decision granting this Special Permit and Site Plan Approval with the appropriate reference to the book and page number of the recording of the Petitioner's title deed or notice endorsed thereon.
- 3.13 No portion of the newly renovated Town Common shall be made available for public use until the following conditions are met:
- a. An as-built plan, supplied by the engineer of record certifying that the on-site and off-site project improvements were built according to the approved documents, has been submitted to the Board and Department of Public Works. The as-built plan shall show the building, all finished grades and final construction details of the driveways, parking areas, drainage systems, utility installations, and sidewalk and curbing improvements on-site and off-site, in their true relationship to the lot lines. In addition to the engineer of record, said plan shall be certified by a Massachusetts Registered Land Surveyor.
 - b. That there shall be filed with the Building Inspector and Board a statement by the Department of Public Works certifying that the finished grades and final construction details of the driveways, parking areas, drainage systems, utility installations, and sidewalks and curbing improvements on site, have been constructed to the standards of the Town of Needham Department of Public Works and in accordance with the approved Plan.
 - c. That there shall be filed with the Board and Building Inspector an as-built Landscaping Plan showing the final location, number and type of plant material, final landscape features, parking areas, and lighting installations. Said plan shall be prepared by the landscape architect of record and shall include a certification that such improvements were completed according to the approved documents.
- 3.14 In addition to the provisions of this approval, the Petitioner must comply with all requirements of all state, federal, and local boards, commission or other agencies, including, but not limited to the Building Inspector, Fire Department, Department of Public Works, Conservation Commission, Police Department, and Board of Health.
- 3.15 The Petitioner, by accepting this Approval, warrants that the Petitioner has included all relevant documentation, reports, and information available to the Petitioner in the application submitted, and that this information is true and valid to the best of the Petitioner's knowledge.
- 3.16 Violation of any of the conditions of this Approval shall be grounds for revocation of any building permit or certificate of occupancy granted hereunder as follows: In the case of violation of any conditions of this Approval, the Town will notify the owner of such violation and give the owner reasonable time, not to exceed thirty (30) days, to cure the violation. If, at the end of said thirty (30) day period, the Petitioner has not cured the violation, or in the case of violations requiring more than thirty (30) days to cure, has not commenced the cure and prosecuted the cure continuously, the permit granting authority may, after notice to the Petitioner, conduct a hearing in order to determine whether the failure to abide by the conditions contained herein should result in a recommendation to the Building Inspector to revoke any building permit or certificate of occupancy granted hereunder. This provision is

not intended to limit or curtail the Town's other remedies to enforce compliance with the conditions of this Approval including, without limitation, by an action for injunctive relief before any court of competent jurisdiction. The Petitioner agrees to reimburse the Town for its reasonable costs in connection with the enforcement of the conditions of this Approval if the Town prevails in such enforcement action.

LIMITATIONS

- 4.0 The authority granted to the Petitioner by this permit is limited as follows:
- 4.1 This permit applies only to the site improvements, which are the subject of this petition. All construction to be conducted on site shall be conducted in accordance with the terms of this permit and shall be limited to the improvements on the Plan, as modified by this decision.
- 4.2 There shall be no further development of this site without further site plan approval as required under Section 7.4 of the By-Law. The Board, in accordance with M.G.L., Ch. 40A, S.9 and said Section 7.4, hereby retains jurisdiction to (after hearing) modify and/or amend the conditions to, or otherwise modify, amend or supplement, this decision and to take other action necessary to determine and ensure compliance with the decision.
- 4.3 This decision applies only to the requested Special Permits and Site Plan Review. Other permits or approvals required by the By-Law, other governmental boards, agencies or bodies having jurisdiction shall not be assumed or implied by this decision.
- 4.4 No approval of any indicated signs or advertising devices is implied by this Decision.
- 4.5 The foregoing restrictions are stated for the purpose of emphasizing their importance but are not intended to be all-inclusive or to negate the remainder of the By-Law.
- 4.6 This Site Plan Special Permit shall lapse on December 21, 2023 if substantial use thereof has not sooner commenced, except for good cause. Any requests for an extension of the time limits set forth herein must be in writing to the Board at least 30 days prior to December 21, 2023. The Board herein reserves its rights and powers to grant or deny such extension without a public hearing. The Board, however, shall not grant an extension as herein provided unless it finds that the use of the property in question or the construction of the site has not begun, except for good cause.
- 4.7 This decision shall be recorded in the Norfolk District Registry of Deeds and shall not become effective until the Petitioner has delivered a certified copy of the document to the Board. In accordance with G.L. Chapter 40A, Section 11, this Major Site Plan Special Permit shall not take effect until a copy of this decision bearing the certification of the Town Clerk that twenty (20) days have elapsed after the decision has been filed in the office of the Town Clerk and either that no appeal has been filed or the appeal has been filed within such time is recorded in the Norfolk District Registry of Deeds and is indexed in the grantor index under the name of the owner of record or is recorded and noted on the owner's certificate of title. The person exercising rights under a duly appealed Special Permit does so at the risk that a court will reverse the permit and that any construction performed under the permit may be ordered undone.

The provisions of this Special Permit shall be binding upon every owner or owner of the lots and the executors, administrators, heirs, successors and assigns of such owners, and the obligations and

restrictions herein set forth shall run with the land, as shown on the Plan, as modified by this decision, in full force and effect for the benefit of and enforceable by the Town of Needham.

Any person aggrieved by this decision may appeal pursuant to the General Laws, Chapter 40A, Section 17, within twenty (20) days after filing of this decision with the Needham Town Clerk.

Witness our hands this 21st day of December 2021.

NEEDHAM PLANNING BOARD

Paul S. Alpert, Chairman

Adam Block, Vice Chairman

Natasha Espada

Martin Jacobs

Jeanne S. McKnight

COMMONWEALTH OF MASSACHUSETTS

_____2021

On this ____ day of December, 2021, before me, the undersigned notary public, personally appeared _____, one of the members of the Planning Board of the Town of Needham, Massachusetts, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the proceeding or attached document, and acknowledged the foregoing to be the free act and deed of said Board before me.

Notary Public

My Commission Expires: _____

TO WHOM IT MAY CONCERN: This is to certify that the 20-day appeal period on the Amendment to Decision of the project proposed by the Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, for property located at 1471 Highland Avenue, Needham, Massachusetts, has passed,

____ and there have been no appeals filed in the Office of the Town Clerk or
____ there has been an appeal filed.

Date

Theodora K. Eaton, Town Clerk

Copy sent to:

Petitioner - Certified Mail #
Town Clerk

Board of Selectmen
Engineering

Building Inspector
Director, PWD
Board of Health
Conservation Commission

Fire Department
Police Department
Christopher Heep
Parties in Interest



**MAJOR PROJECT SITE PLAN REVIEW SPECIAL PERMIT
AMENDMENT TO DECISION
Application No. 2009-06**

**Town of Needham
December 21, 2021**

(Original Decision dated November 17, 2009,
amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012,
April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021)

DECISION of the Planning Board (hereinafter referred to as the Board) on the petition of Town of Needham, 1471 Highland Avenue, Needham, MA, (hereinafter referred to as the Petitioner) for property located at 1471 Highland Avenue, Needham, Massachusetts. Said property is shown on Assessors Plan No. 51 as Parcel 1 containing 59,221, square feet in the Center Business District.

This Decision is in response to an application submitted to the Board on October 5, 2021 by the Petitioner for: (1) a Major Project Site Plan Review Special Permit amendment under Section 7.4 of the Needham Zoning By-Law (hereinafter the By-Law) and Section 4.2 of Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009.

The requested Major Project Site Plan Review Special Permit Amendment would permit the comprehensive redesign and renovation of the Town Common at 1471 Highland Avenue. The complete redesign includes replacement of the lawn, landscaping, pedestrian pathways, seating areas, lighting, and other amenities as discussed in the application materials and shown on the submitted plans. The property is the subject of Major Project Site Plan Special Permit No. 2009-06, issued to Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, dated November 17, 2009 and amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012, April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021.

After causing notice of the time and place of the public hearing and of the subject matter thereof to be published, posted and mailed to the Petitioner, abutters and other parties in interest as required by law, the hearing was called to order by the Chair, Paul S. Alpert, on Tuesday, November 2, 2021 at 7:20 p.m. by Zoom Web ID Number 826-5899-3198. The hearing was continued to November 16, 2021 with no testimony taken on November 2, 2021. Board members Paul S. Alpert, Adam Block, Jeanne S. McKnight, Martin Jacobs and Natasha Espada were present throughout the November 16, 2021 proceedings. The hearing was continued to December 8, 2021. Board members Paul S. Alpert, Adam Block, Jeanne S. McKnight and Martin Jacobs were present throughout the December 8, 2021 proceedings. Pursuant to Massachusetts General Laws Chapter 39, Section 23D, Adjudicatory Hearing, adopted by the Town of Needham in May of 2009, Ms. Espada examined all evidence received at the missed session and listened to an audio recording of the meeting. The record of the

proceedings and the submission upon which this Decision is based may be referred to in the office of the Town Clerk or the office of the Board.

Submitted for the Board's deliberation prior to the close of the public hearing were the following exhibits:

- Exhibit 1** Application for the Amendment to Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 to allow the renovation of the Town Common, dated October 5, 2021.
- Exhibit 2** Memorandums from Attorney Christopher Heep, dated September 30, 2021, October 28, 2021, November 5, 2021, and December 2, 2021.
- Exhibit 3** Plan set entitled "Town of Needham, Massachusetts, Department of Public Works, Needham Town Common Renovation, August 2021" prepared by BETA-Inc., consisting of 16 sheets: Sheet 1, Cover Sheet, dated September 2, 2021; Sheet 2, entitled "General notes," dated August, 2021; Sheet 3, entitled "Existing Conditions & Site Preparation Plan," dated August, 2021; Sheet 4, entitled "Layout and Materials Plan," dated August, 2021; Sheet 5, entitled "Grading and Drainage Plan," dated August, 2021; Sheet 6, entitled "Electrical Plan," dated August, 2021; Sheet 7, entitled "Planting Plan," dated August, 2021; Sheet 8, entitled "Details," dated August, 2021; Sheet 9, entitled "Details," dated August, 2021; Sheet 10, entitled "Details," dated August, 2021; Sheet 11, entitled "Electrical Details," dated August, 2021; Sheet 12, entitled "Electrical Details," dated August, 2021; Sheet 13, entitled "Electrical Details," dated August, 2021; Sheet 14, entitled "Electrical Details," dated August, 2021; Sheet 15, entitled "Details," dated August, 2021; and Sheet 16, entitled "Details," dated August, 2021.
- Exhibit 4** Plan set entitled "Town of Needham, Massachusetts, Department of Public Works, Needham Town Common Renovation, October 2021, Rev. November, 2021" prepared by BETA-Inc., consisting of 18 sheets: Sheet 1, Cover Sheet, dated November 4, 2021; Sheet 2, entitled "General notes," dated November 4, 2021; Sheet 3, entitled "Existing Conditions & Site Preparation Plan," dated November 4, 2021; Sheet 4, entitled "Layout and Materials Plan," dated November 4, 2021; Sheet 5, entitled "Grading and Drainage Plan," dated November 4, 2021; Sheet 6, entitled "Electrical Plan," dated November 4, 2021; Sheet 7, entitled "Irrigation Layout Plan," dated August, 2021; Sheet 8, entitled "Irrigation Details," dated August, 2021; Sheet 9, entitled "Planting Plan," dated November 4, 2021; Sheet 10, entitled "Details," dated November 4, 2021; Sheet 11, entitled "Details," dated November 4, 2021; Sheet 12, entitled "Details," dated November 4, 2021; Sheet 13, entitled "Electrical Details," dated November 4, 2021; Sheet 14, entitled "Electrical Details," dated November 4, 2021; Sheet 15, entitled "Electrical Details," dated November 4, 2021; Sheet 16, entitled "Electrical Details," dated November 4, 2021; Sheet 17, entitled "Details," dated November 4, 2021; and Sheet 18, entitled "Details," dated November 4, 2021.
- Exhibit 5** Email from Attorney Christopher Heep, dated November 16, 2021.
- Exhibit 6** Email from Michael Ruddy, 69 Melrose Ave, dated November 13, 2021.
- Exhibit 7** Email from Nancy Louca, dated November 20, 2021.

- Exhibit 8** Email from Lisa Cherbuliez, dated November 28, 2021.
- Exhibit 9** Conceptual Plans, prepared by BETA, consisting of 15 sheets, dated December, 2021.
- Exhibit 10** Email from Heather Kortenkaemper, 275 Broad Meadow Rd, dated December 4, 2021.
- Exhibit 11** Email from Oscar Mertz, dated December 6, 2021 with attached revisions to plans to show possible location and capacity of persons accommodated at public gatherings.
- Exhibit 12** Email from Rosie King, 50 Laurel Drive, dated December 8, 2021.
- Exhibit 13** Interdepartmental Communication (IDC) to the Board from Chief Dennis Condon, Needham Fire Department, dated October 8, 2021; IDC to the Board from Chief John Schlittler, Police Department, dated October 7, 2021; IDC to the Board from Tara Gurge, Needham Health Department, dated October 26, 2021; and IDC to the Board from Thomas Ryder, Assistant Town Engineer, dated November 9, 2021.

EXHIBITS 1, 2, 4 and 5 are referred to hereinafter as the Plan.

FINDINGS AND CONCLUSIONS

- 1.1 The subject property is located in the Center Business zoning district at 1471 Highland Avenue, Needham, MA, 02492, owned by Town of Needham. Said property is shown on Needham Town Assessors Plan No. 51 as Parcel 1 containing 1.23 acres.
- 1.2 The property is the subject of Major Project Site Plan Special Permit No. 2009-06, issued to Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, dated November 17, 2009 and amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012, April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021.
- 1.3 On November 17, 2009, under Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009, issued to the Town of Needham, the Board approved the expansion of the existing Town Hall by approximately 13,836 square feet, and the renovation of approximately 20,989 square feet of the existing facility for a total of 34,825 square feet.
- 1.4 The Town of Needham now proposes a comprehensive redesign and renovation of the Town Common at 1471 Highland Avenue. The complete redesign includes replacement of the lawn, landscaping, pedestrian pathways, seating areas, lighting, and other amenities as discussed in the application materials and shown on the submitted plans. The proposal does not include any new buildings, does not involve any structural changes to Town Hall, and does not alter the established vehicular circulation or parking spaces that the Planning Board has previously approved.
- 1.5 The key features of the proposed new Common include the following:
 - a) Based on the health and long-term viability of the trees and accumulated wear and tear on the existing Common, all existing trees, except the new 'Blue Tree' and lawn areas will be removed. Existing topsoil will be excavated and stockpiled onsite for reuse.

Landscaping installed as part of the Phase 1 Streetscape project will be retained. A planting plan for the new Common is included in the plan set.

- b) The Common as proposed will feature a large, oval-shaped lawn area within the center of the site. Within this center lawn area, nearer to the Town Hall side, there will be a circular area constructed of pavers. This area will be covered by a tent seasonally, with in-ground tent supports built in to allow for ready installation and removal. This tent area was regarded as a key feature of the new Town Common during the Petitioner's design work, based on the popularity of the temporary tent that the Town installed at the beginning of the COVID-19 pandemic to encourage outdoor dining and patronage of surrounding restaurants.
- c) The site will feature wood and metal shade structures with picnic tables and bench swings along both Highland Avenue and Chapel Street. There will also be additional picnic tables installed near the southeast and southwest corners of the Common along Great Plain Avenue. Details of these structures and improvements are shown on the Plan.
- d) The site will feature a new walkway across from the front entrance of Town Hall into the Common, and a new masonry wall, similar in style to those along Great Plain Avenue at this location that will double as a seating area.
- e) The existing MBTA bus stop on Chapel Street will be replaced with a new one, which will be located in the same spot as the existing. Details of the new bus stop are shown on the Plan.
- f) The existing Circle of Peace sculpture featuring dancing children and the sculpture of the children on the bench will be preserved and relocated slightly, as shown on the Plan. The existing dedication plaque will similarly be preserved and moved within the Common.

~~g) The project will include upgrading the existing globe-top lights to LED and painting, installing flush-mounted up lighting within the main pedestrian pathway, and decorative catenary lights suspended on cables between the two shade structures, over the central lawn area, and providing temporary festoon poles to allow for decorative lights to be strung over the central lawn area. Power and connections for a public address system will also be provided at the shade structures and at the masonry wall. Additionally, exterior lighting of the Town Hall is being designed for construction by others.~~

~~g)~~

- 1.6 Adjoining premises will be protected against seriously detrimental uses on the site by provision of surface water drainage, sound and site buffers, and preservation of views, light and air. The redesigned Town Common will have no detrimental impacts on adjoining premises. The site is already in use as the Town Common, and the redesign of the site does not create any detrimental impacts on the surrounding area. The Planning Board previously found, with respect to the renovation of Town Hall, that no sound and light buffers are required (see Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p. 5, Finding 1.15), and in terms of the views, light and air that will be offered, the site had been designed to enhance this property's role as the cornerstone of the vibrant downtown Needham Center.
- 1.7 Convenience and safety of vehicular and pedestrian movement within the site and on adjacent streets, the location of driveway openings in relation to traffic or to adjacent streets and, when

Formatted: Indent: Left: 0", First line: 0", Tab stops: 0.56", Left + 0.75", Left

necessary, compliance with other regulations for the handicapped, minors and the elderly has been assured. There will be no vehicular movement within the Town Common, and there will be no new driveway openings or changes to established traffic circulation on the streets surrounding the site. Garrity's Way will be used as a material laydown area during construction and the existing curb will be reset, but the existing traffic flow will not be altered in any way and the existing parking spaces contained within Garrity's Way will remain in their current, previously-approved configuration. The Planning Board has previously found that "the design of the proposed driveways and location and design of the parking areas are adequate, safe and convenient for vehicular movement." See Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p.6, Finding 1.18. In addition, the pedestrian movement within the Town Common has been redesigned in a manner that will encourage its use. The new design features pedestrian entries at the northeast, southeast, southwest and northwest corners of the Common and will allow for pedestrians to travel safely and conveniently throughout the site.

1.8 Adequacy of the arrangement of parking and loading spaces in relation to the proposed uses of the premises. -As noted above, the use of the Property is not being changed, and no new parking spaces are required as a result of the proposed renovation of the Common. Accordingly, the Petitioner is not proposing any changes to the existing parking spaces associated with the Town Hall, which have previously been reviewed and approved by the Planning Board in the original Decision. As noted above, the Planning Board has previously found that "the design of the proposed driveways and location and design of the parking areas are adequate, safe and convenient for vehicular movement." See Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p.6, Finding 1.18.

1.98 Adequate methods for disposal of refuse and waste will be provided. Parking spaces have been arranged adequately, pursuant to the prior approvals of the Planning Board. The site plans include solar powered waste and recycling receptacles spaced throughout the Common. The volume of refuse generated is not anticipated to increase relative to the current use of the Common. The proposed receptacles will provide for enough disposal for the users of the Common, and the Department of Public Works will continue to be attend to the receptacles, as it has historically done in the ordinary course of operation. As noted above, the use of the Property is not being changed, and no new parking spaces are required as a result of the proposed renovation of the Common. Accordingly, the Petitioner is not proposing any changes to the existing parking spaces associated with the Town Hall, which have previously been reviewed and approved by the Planning Board in the original Decision. As noted above, the Planning Board has previously found that "the design of the proposed driveways and location and design of the parking areas are adequate, safe and convenient for vehicular movement." See Major Project Site Plan Review Special Permit No. 2009-06, dated November 17, 2009 at p.6, Finding 1.18.

1.109 Relationship of structures and open spaces to the natural landscape, existing buildings and other community assets in the area and compliance with other requirements of this By-law has been assured. The Town Common was redesigned with careful consideration of existing structures and open space. In particular, the new common features an improved relationship with the Town Hall, including: A wider pedestrian entrance into the Common directly accessible from Garrity's Way, and a decorative masonry wall that also serves as a seating area directly in front of that entrance to Town Hall. The open space within the Common has been redesigned to encourage use by those who visit the common, with a large oval-shaped lawn area in the center of the Common and picnic tables and benches placed throughout the

~~entire site. The site plans include solar powered waste and recycling receptacles spaced throughout the Common. The volume of refuse generated is not anticipated to increase relative to the current use of the Common. The proposed receptacles will provide for enough disposal for the users of the Common, and the Department of Public Works will continue to be attend to the receptacles, as it has historically done in the ordinary course of operation.~~

- 1.119 The proposed project will not have any adverse impacts on the Town's resources, including the Town's water supply and distribution system, sewer collection and treatment, fire protection and streets. ~~The site is already in use as the Town Common, and the interior redesign and renovation of the space will not create any new impacts, and includes a new and improved drainage system. The Town Common was redesigned with careful consideration of existing structures and open space. In particular, the new common features an improved relationship with the Town Hall, including: A wider pedestrian entrance into the Common directly accessible from Garrity's Way, and a decorative masonry wall that also serves as a seating area directly in front of that entrance to Town Hall. The open space within the Common has been redesigned to encourage use by those who visit the common, with a large oval shaped lawn area in the center of the Common and picnic tables and benches placed throughout the entire site.~~
- 1.124 Under Section 7.4 of the By-Law, a Major Project Site Plan Special Permit amendment may be granted within the Center Business District provided the Board finds that the proposed development will be in compliance with the goals and objectives of the Master Plan, and the provisions of the By-Law. On the basis of the above findings and conclusions, the Board finds the proposed development Plan, as conditioned and limited herein, for the site plan review, to be in harmony with the purposes and intent of the By-Law and Town Master plans, to comply with all applicable By-Law requirements, to have minimized adverse impact, and to have promoted a development which is harmonious with the surrounding area.

THEREFORE, the Board voted 5-0 to GRANT: (1) the requested Major Project Site Plan Special Permit amendment under Section 7.4 of the By-Law and Section 4.2 of Major Project Site Plan Special Permit No. 2009-06, dated November 17, 2009, subject to and with the benefit of the following Plan modifications, conditions and limitations.

PLAN MODIFICATIONS

Prior to the issuance of a building permit or the start of any construction on the site, the Petitioner shall cause the Plan to be revised to show the following additional, corrected, or modified information. The Building Inspector shall not issue any building permit, nor shall he permit any construction activity on the site to begin on the site until and unless he finds that the Plan is revised to include the following additional corrected, or modified information. Except where otherwise provided, all such information shall be subject to the approval of the Building Inspector. Where approvals are required from persons other than the Building Inspector, the Petitioner shall be responsible for providing a written copy of such approvals to the Building Inspector before the Inspector shall issue any building permit or permit for any construction on the site. The Petitioner shall submit nine copies of the final Plans as approved for construction by the Building Inspector to the Board prior to the issuance of a Building Permit.

- 2.1 No Plan Modifications.

CONDITIONS

- 3.0 The following conditions of this approval shall be strictly adhered to. Failure to adhere to these conditions or to comply with all applicable laws and permit conditions shall give the Board the rights and remedies set forth in Section 3.16 hereof.
- 3.1 The conditions and limitations set forth in Major Project Site Plan Special Permit No. 2009-06, issued to Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, dated November 17, 2009 and amended March 2, 2010, November 16, 2010, November 16, 2010, June 21, 2011, May 1, 2012, April 25, 2017, May 1, 2018, May 20, 2020 and March 2, 2021, as further amended by this Amendment are ratified and confirmed.
- 3.2 The Board approves the redesign and renovation by the Town of Needham of the Town Common as shown on the Plan. The design of the Town Common shall be as described in Section 1.5 of this Decision and as further described under the support materials provided under Exhibits 1, 2, 4 and 5 of this Decision. Any changes, revision or modifications to the Plan shall require approval by the Board.
- 3.3 All new utilities, including telephone and electrical service, shall be installed underground from the street line.
- 3.4 The maintenance of the site and associated infrastructure and landscaping shall be the responsibility of the Petitioner and the site, infrastructure and landscaping shall be maintained in good condition.
- 3.5 A signed and stamped Storm Water Management Policy form shall be submitted to the Town of Needham, together with a construction mitigation and an operation and maintenance plan as described in the policy.
- 3.6 Excavation material and debris, other than rock used for walls and ornamental purposes and fill suitable for placement elsewhere on the site, shall be removed from the site.
- 3.7 All construction staging shall be on-site. No construction parking shall be on public streets. Construction parking shall be all on site or a combination of on-site and off-site parking at locations in which the Petitioner can make suitable arrangements. If required by the Building Inspector, construction staging plans shall be included in the final construction documents prior to the filing of a Building Permit and shall be subject to the review and approval of the Building Inspector.
- 3.8 The Petitioner shall seal all abandoned drainage connections and other drainage connections where the developer cannot identify the sources of the discharges.
- 3.9 The Petitioner shall secure from the Needham Department of Public Works a Street Opening Permit, if applicable.
- 3.10 In constructing and operating the proposed Town Common on the locus pursuant to this Special Permit, due diligence be exercised, and reasonable efforts be made at all times to avoid damage to the surrounding areas or adverse impact on the environment.
- 3.11 That the following interim safeguards shall be implemented during construction:

a. The hours of construction shall be 7:00 a.m. to 8:00 p.m. Monday through Saturday unless otherwise authorized by approval of the Board of Selectmen pursuant to the Needham General By-Laws, Section 3.8.1.

b. The Petitioner's contractor shall provide temporary security chain-link or similar type fencing around the portions of the project site which require excavation or otherwise pose a danger to public safety.

c. The Petitioner's contractor shall designate a person who shall be responsible for the construction process. That person shall be identified to the Police Department, the Department of Public Works, the Building Inspector, and the abutters and shall be contacted if problems arise during the construction process. The designee shall also be responsible for assuring that truck traffic and the delivery of construction material does not interfere with or endanger traffic flow on Highland Avenue, Great Plain Avenue, Chapel Street or the adjacent roads.

d. The Petitioner shall take the appropriate steps to minimize, to the maximum extent feasible, dust generated by the construction including, but not limited to, requiring subcontractors to place covers over open trucks transporting construction debris and keeping Highland Avenue, Great Plain Avenue and Chapel Street clean of dirt and debris.

3.12 No portion of the newly renovated Town Common shall be constructed until:

a. The final plans shall be in conformity with those approved by the Board, and a statement certifying such approval shall have been filed by this Board with the Building Inspector.

b. A construction management and staging plan shall have been submitted to the Police Chief and Building Inspector for their review and approval.

c. The Petitioner shall have recorded with the Norfolk County Registry of Deeds a certified copy of this decision granting this Special Permit and Site Plan Approval with the appropriate reference to the book and page number of the recording of the Petitioner's title deed or notice endorsed thereon.

3.13 No portion of the newly renovated Town Common shall be made available for public use until the following conditions are met:

a. An as-built plan, supplied by the engineer of record certifying that the on-site and off-site project improvements were built according to the approved documents, has been submitted to the Board and Department of Public Works. The as-built plan shall show the building, all finished grades and final construction details of the driveways, parking areas, drainage systems, utility installations, and sidewalk and curbing improvements on-site and off-site, in their true relationship to the lot lines. In addition to the engineer of record, said plan shall be certified by a Massachusetts Registered Land Surveyor.

b. That there shall be filed with the Building Inspector and Board a statement by the Department of Public Works certifying that the finished grades and final construction details of the driveways, parking areas, drainage systems, utility installations, and sidewalks and curbing improvements on site, have been constructed to the standards of the Town of Needham Department of Public Works and in accordance with the approved Plan.

c. That there shall be filed with the Board and Building Inspector an as-built Landscaping Plan showing the final location, number and type of plant material, final landscape features, parking areas, and lighting installations. Said plan shall be prepared by the landscape architect of record and shall include a certification that such improvements were completed according to the approved documents.

- 3.14 In addition to the provisions of this approval, the Petitioner must comply with all requirements of all state, federal, and local boards, commission or other agencies, including, but not limited to the Building Inspector, Fire Department, Department of Public Works, Conservation Commission, Police Department, and Board of Health.
- 3.15 The Petitioner, by accepting this Approval, warrants that the Petitioner has included all relevant documentation, reports, and information available to the Petitioner in the application submitted, and that this information is true and valid to the best of the Petitioner's knowledge.
- 3.16 Violation of any of the conditions of this Approval shall be grounds for revocation of any building permit or certificate of occupancy granted hereunder as follows: In the case of violation of any conditions of this Approval, the Town will notify the owner of such violation and give the owner reasonable time, not to exceed thirty (30) days, to cure the violation. If, at the end of said thirty (30) day period, the Petitioner has not cured the violation, or in the case of violations requiring more than thirty (30) days to cure, has not commenced the cure and prosecuted the cure continuously, the permit granting authority may, after notice to the Petitioner, conduct a hearing in order to determine whether the failure to abide by the conditions contained herein should result in a recommendation to the Building Inspector to revoke any building permit or certificate of occupancy granted hereunder. This provision is not intended to limit or curtail the Town's other remedies to enforce compliance with the conditions of this Approval including, without limitation, by an action for injunctive relief before any court of competent jurisdiction. The Petitioner agrees to reimburse the Town for its reasonable costs in connection with the enforcement of the conditions of this Approval if the Town prevails in such enforcement action.

LIMITATIONS

- 4.0 The authority granted to the Petitioner by this permit is limited as follows:
- 4.1 This permit applies only to the site improvements, which are the subject of this petition. All construction to be conducted on site shall be conducted in accordance with the terms of this permit and shall be limited to the improvements on the Plan, as modified by this decision.
- 4.2 There shall be no further development of this site without further site plan approval as required under Section 7.4 of the By-Law. The Board, in accordance with M.G.L., Ch. 40A, S.9 and said Section 7.4, hereby retains jurisdiction to (after hearing) modify and/or amend the conditions to, or otherwise modify, amend or supplement, this decision and to take other action necessary to determine and ensure compliance with the decision.
- 4.3 This decision applies only to the requested Special Permits and Site Plan Review. Other permits or approvals required by the By-Law, other governmental boards, agencies or bodies having jurisdiction shall not be assumed or implied by this decision.
- 4.4 No approval of any indicated signs or advertising devices is implied by this Decision.

- 4.5 The foregoing restrictions are stated for the purpose of emphasizing their importance but are not intended to be all-inclusive or to negate the remainder of the By-Law.
- 4.6 This Site Plan Special Permit shall lapse on December 21, 2023 if substantial use thereof has not sooner commenced, except for good cause. Any requests for an extension of the time limits set forth herein must be in writing to the Board at least 30 days prior to December 21, 2023. The Board herein reserves its rights and powers to grant or deny such extension without a public hearing. The Board, however, shall not grant an extension as herein provided unless it finds that the use of the property in question or the construction of the site has not begun, except for good cause.
- 4.7 This decision shall be recorded in the Norfolk District Registry of Deeds and shall not become effective until the Petitioner has delivered a certified copy of the document to the Board. In accordance with G.L. Chapter 40A, Section 11, this Major Site Plan Special Permit shall not take effect until a copy of this decision bearing the certification of the Town Clerk that twenty (20) days have elapsed after the decision has been filed in the office of the Town Clerk and either that no appeal has been filed or the appeal has been filed within such time is recorded in the Norfolk District Registry of Deeds and is indexed in the grantor index under the name of the owner of record or is recorded and noted on the owner's certificate of title. The person exercising rights under a duly appealed Special Permit does so at the risk that a court will reverse the permit and that any construction performed under the permit may be ordered undone.

The provisions of this Special Permit shall be binding upon every owner or owner of the lots and the executors, administrators, heirs, successors and assigns of such owners, and the obligations and restrictions herein set forth shall run with the land, as shown on the Plan, as modified by this decision, in full force and effect for the benefit of and enforceable by the Town of Needham.

Any person aggrieved by this decision may appeal pursuant to the General Laws, Chapter 40A, Section 17, within twenty (20) days after filing of this decision with the Needham Town Clerk.

Witness our hands this 21st day of December 2021.

NEEDHAM PLANNING BOARD

Paul S. Alpert, Chairman

Adam Block, Vice Chairman

Natasha Espada

Martin Jacobs

Jeanne S. McKnight

COMMONWEALTH OF MASSACHUSETTS

_____2021

On this ____ day of December, 2021, before me, the undersigned notary public, personally appeared _____, one of the members of the Planning Board of the Town of Needham, Massachusetts, proved to me through satisfactory evidence of identification, which was _____, to be the person whose name is signed on the proceeding or attached document, and acknowledged the foregoing to be the free act and deed of said Board before me.

Notary Public

My Commission Expires: _____

TO WHOM IT MAY CONCERN: This is to certify that the 20-day appeal period on the Amendment to Decision of the project proposed by the Town of Needham, 1471 Highland Avenue, Needham, Massachusetts, for property located at 1471 Highland Avenue, Needham, Massachusetts, has passed,

____ and there have been no appeals filed in the Office of the Town Clerk or
____ there has been an appeal filed.

Date

Theodora K. Eaton, Town Clerk

Copy sent to:

Petitioner - Certified Mail #
Town Clerk

Board of Selectmen
Engineering

Building Inspector
Director, PWD
Board of Health
Conservation Commission

Fire Department
Police Department
Christopher Heep
Parties in Interest

Exhibits received for 1688 Central Avenue

All testimony received between March 1, 2021 and December 20, 2021

(hearing closed on December 8, 2021 with the exception of allowing specific limited information to be received as detailed in the vote to close the hearing)

Applicant submittals. Application, Memos, Plans, Traffic Studies, Drainage. Etc.

1. Properly executed Application for Site Plan Review for: (1) A Major Project Site Plan under Section 7.4 of the Needham By-Law, dated May 20, 2021.
2. Letter from Matt Borrelli, Manager, Needham Enterprises, LLC, dated March 16, 2021.
3. Letter from Attorney Evans Huber, dated March 11, 2021.
4. Letter from Attorney Evans Huber, dated March 12, 2021.
5. Letter from Attorney Evans Huber, dated March 16, 2021.
6. Architectural plans entitled "Needham Enterprises, Daycare Center, 1688 central Avenue," prepared by Mark Gluesing Architect, 48 Mackintosh Avenue, Needham, MA, consisting of 4 sheets: Sheet 1, Sheet A1-0, entitled "1st Floor Plan, dated March 8, 2021; Sheet 2, Sheet A1-1, entitled "Roof Plan," dated March 8, 2021; Sheet 3, Sheet A2-1 showing "Longitudinal Section," "Nursery/Staff Room Section," "Toddler 1/ Craft Section at Dormer," and "Playspace/Lobby Section," dated March 8, 2021; and Sheet 4, Sheet A3-0, showing "North Elevation," "West Elevation," "East Elevation," and "South Elevation," dated March 8, 2021.
7. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 10 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020; Sheet 3, entitled "Site Plan," dated June 22, 2020; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020; Sheet 5, entitled "Landscaping Plan," dated June 22, 2020; Sheet 6, entitled "Construction Details," dated June 22, 2020; Sheet 7, entitled "Construction Details," dated June 22, 2020; Sheet 8, entitled "Sewer Extension Plan and Profile," dated November 19, 2020; Sheet 9, entitled "Construction Period Plan," dated June 22, 2020; Sheet 10, entitled "Appendix, Photometric and Site Lighting," dated June 22, 2021, **all plans stamped January 21, 2021.**
8. Traffic Impact Assessment, prepared by Gillon Associates, Traffic and Parking Specialists, dated March 2021.
9. Stormwater Report prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, dated June 22, 2020, stamped January 26, 2021.
10. Traffic Impact Assessment, prepared by Gillon Associates, Traffic and Parking Specialists, revised March 2021.

11. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021; Sheet 5, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021; Sheet 7, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021; Sheet 8, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021; Sheet 9, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021, **all plans stamped April 15, 2021.**
12. Architectural plans entitled "Needham Enterprises, Daycare Canter, 1688 central Avenue," prepared by Mark Gluesing Architect, 48 Mackintosh Avenue, Needham, MA, consisting of 2 sheets: Sheet 1, Sheet A3-0, showing "North Elevation," "West Elevation," "East Elevation," and "South Elevation," dated March 8, 2021, revised March 30, 2021; Sheet 2, Sheet A1-0, entitled "1st Floor Plan, dated March 8, 2021, revised March 30, 2021.
13. Letter from Attorney Evans Huber, dated April 21, 2021.
14. Memorandum from Attorney Evans Huber, dated May 5, 2021.
15. Letter from Attorney Evans Huber, dated May 14, 2021.
16. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 5, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 7, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 8, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021 and June 2, 2021; Sheet 9, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021 and June 2, 2021, **all plans stamped June 2, 2021.**
17. Architectural plans entitled "Needham Enterprises, Daycare Canter, 1688 central Avenue," prepared by Mark Gluesing Architect, 48 Mackintosh Avenue, Needham, MA, consisting of 2 sheets: Sheet 1, Sheet A1-0, entitled "1st Floor Plan, dated March 8, 2021, revised March 30, 2021 and May 30, 2021; Sheet 2, Sheet A3-0, showing "North Elevation," "West Elevation," "East Elevation," and "South Elevation," dated March 8, 2021, revised March 30, 2021 and May 30, 2021.
18. Traffic Impact Assessment, prepared by Gillon Associates, Traffic and Parking Specialists, revised June 2021.
19. Letter from Attorney Evans Huber, dated June 14, 2021.

20. Presentation shown at the July 20, 2021 hearing.
21. Memorandum from Attorney Evans Huber, dated August 4, 2021.
22. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 5, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021 and June 2, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 7, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 8, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021; Sheet 9, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021 and July 28, 2021, **all plans stamped July 28, 2021.**
23. Traffic Impact Assessment, prepared by Gillon Associates, Traffic and Parking Specialists, dated August 11, 2021.
24. Technical Memorandum, from John Gillon, prepared by Gillon Associates, Traffic and Parking Specialists, dated September 2, 2021.
25. Letter from Attorney Evans Huber, dated September 30, 2021.
26. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 5, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 7, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 8, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021; Sheet 9, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021, **all plans stamped September 29, 2021.**
27. Plan entitled "Appendix, Photometric and Site Lighting Plan, 1688 Central Ave in Needham," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 and September 28, 2021.
28. Memorandum from Attorney Evans Huber, dated October 13, 2021.

29. Email from Evans Huber, dated October 14, 2021 with two attachments: Vehicle Count for September 2019 and Vehicle Count for February 2020.
30. Memorandum from Attorney Evans Huber, dated October 28, 2021.
31. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, , September 28, 2021 and October 28, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021; Sheet 5, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 , September 28, 2021 and October 28, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021; Sheet 7, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021; Sheet 8, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021; Sheet 9, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021, **all plans stamped October 28, 2021.**
32. Plan entitled "Appendix, Photometric and Site Lighting Plan, 1688 Central Ave in Needham," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021 and October 28, 2021.
33. Technical Memorandum, from John Gillon, prepared by Gillon Associates, Traffic and Parking Specialists, dated October 27, 2021.
34. Email from Evans Huber, dated November 8, 2021, regarding "1688 Central Ave request for additional peer review fees."
35. Memorandum from Attorney Evans Huber, dated November 10, 2021.
36. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, , September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 5, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 , September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 7, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June

2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 8, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 9, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021; Sheet 10, entitled "Appendix, Photometric and Site Lighting Plan, 1688 Central Ave in Needham," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021 and November 8, 2021, **all plans stamped November 8, 2021.**

37. Plan entitled "1688 Central Turning Radius," consisting of 3 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032: sheet 1, showing "20' Delivery Van," dated October 6, 2021; Sheet 2, showing "30' Trash Truck," dated October 6, 2021; sheet 3, showing "30' Trash Truck," dated October 6, 2021.
38. Email from Evans Huber, dated November 11, 2021, regarding "Traffic Peer Review: 1688 Central Avenue."
39. Letter from Attorney Evans Huber, dated December 2, 2021 with attached minutes from Canton Zoning Board of Appeals from March 25, 2021.
40. Memorandum from Attorney Evans Huber, dated December 2, 2021.
41. Plans entitled "Site Development Plans, Daycare, 1688 Central Avenue, Needham, MA," consisting of 9 sheets, prepared by Glossa Engineering, Inc., 46 East Street, East Walpole, MA, 02032, Sheet 1, Cover Sheet, dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 2, entitled "Existing Conditions Plan of Land in Needham, MA," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, , September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 3, entitled "Site Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 4, entitled "Grading and Utilities Plan of Land," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 5, entitled "Landscaping Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 6, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021 , September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 7, entitled "Construction Details," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 8, entitled "Sewer Extension Plan and Profile," dated November 19, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 9, entitled "Construction Period Plan," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021; Sheet 10, entitled "Appendix, Photometric and Site Lighting Plan, 1688 Central Ave in Needham," dated June 22, 2020, revised April 15, 2021, June 2, 2021, July 28, 2021, September 28, 2021, October 28, 2021, November 8, 2021 and November 22, 2021, **all plans stamped November 22, 2021.**
42. Letter from Attorney Evans Huber, dated December 16, 2021, with two attachments: (1) Letter from Attorney Evans Huber dated September 30, 2021; and (2) estimated cost to relocate daycare provided by Glossa Engineering, dated December 15, 2021.

Peer Review on Traffic

43. Letter from John W. Diaz, Greenman-Pedersen, Inc., dated July 15, 2021, regarding traffic impact peer review.
44. Memo prepared by John T. Gillon, Gillon Associates, Traffic and Parking Specialists, dated August 21, 2021, transmitting Response to Greenman-Pedersen, Inc. peer review.
45. Letter from John W. Diaz, Greenman-Pedersen, Inc., dated August 26, 2021, regarding traffic impact peer review.
46. Letter from John W. Diaz, Greenman-Pedersen, Inc., dated October 18, 2021, regarding traffic impact peer review.
47. Email thread between John Glossa and John Diaz, most recent email dated October 28, 2021.
48. Letter from John W. Diaz, Greenman-Pedersen, Inc., dated November 1, 2021, regarding traffic impact peer review, with accompanying marked up site plans from October 28, 2021.
49. Email from John Diaz, dated November 16, 2021.
50. Letter from John W. Diaz, Greenman-Pedersen, Inc., dated November 16, 2021, regarding traffic impact peer review.
51. Letter from John W. Diaz, Greenman-Pedersen, Inc., dated December 17, 2021, regarding traffic impact peer review.

Staff/Board Comments.

52. Memorandum from the Design Review Board, dated March 22, 2021.
53. Memorandum from the Design Review Board, dated May 14, 2021.
54. Memorandum from the Design Review Board, dated August 13, 2021.
55. Interdepartmental Communication (IDC) to the Board from Tara Gurge, Health Department, dated March 24, 2021, April 27, 2021, August 9, 2021, August 16, 2021 (with attachment – “Environmental Risk Management Review,” prepared by PVC Services, LLC dated March 17, 2021), November 18, 2021 (with attachment of Board of Health 11/16/21 agenda), November 18, 2021 and December 16, 2021 (with attached Board of Health 12/14/21 agenda).
56. IDC to the Board from David Roche, Building Commissioner, dated March 22, 2021.

- 57. IDC to the Board from Chief Dennis Condon, Fire Department, dated March 29, 2021, April 27, 2021 and August 9, 2021
- 58. IDC to the Board from Chief John J. Schlittler, Police Department, dated May 6, 2021.
- 59. IDC to the Board from Thomas Ryder, Assistant Town Engineer, dated March 31, 2021, May 12, 2021, August 12, 2021, September 3, 2021, November 16, 2021 and December 6, 2021.

Abutter Comments.

- 60. Neighborhood Petition Regarding Development of 1688 Central Avenue in Needham, submitted by email from Holly Clarke, dated March 22, 2021, with excel spreadsheet of signatories.
- 61. Email from Robert J. Onofrey, 49 Pine Street, Needham, MA, dated March 26, 2021.
- 62. Email from Norman MacLeod, Pine Street, dated March 31, 2021.
- 63. Letter from Holly Clarke, 1652 Central Avenue, Needham, MA, dated April 3, 2021, transmitting “Comments of Neighbors of 1688 Central Avenue for Consideration During the Planning Board’s Site Review Process for that Location,” with 3 attachments.
- 64. Email from Meredith Fried, dated Sunday April 4, 2021.
- 65. Letter from Michaela A. Fanning, 853 Great Plain Avenue, Needham, MA, dated April 5, 2021.
- 66. Email from Maggie Abruzese, dated April 5, 2021.
- 67. Letter from Sharon Cohen Gold and Evan Gold, dated April 5, 2021.
- 68. Email from Matthew Heidman, dated May 10, 2021.
- 69. Email from Matthew Heidman, dated May 11, 2021 with attachment Letter directed to members of the Design Review Board, from Members of the Neighborhood of 1688 Central Avenue, undated.
- 70. Email from Rob DiMase, sated May 12, 2021.
- 71. Email from Eileen Sullivan, dated May 12, 2021.
- 72. Two emails from Eric Sockol, dated May 11 and May 12.
- 73. Email from Rob DiMase, sated May 13, 2021.
- 74. Email from Sally McKechnie, dated May 13, 2021.
- 75. Letter from Holly Clarke, dated May 13, 2021, transmitting “Response of Abutters and Neighbors of 1688 Central Avenue Project to the Proponent’s Letter of April 16, 2021,” with Attachment 1.
- 76. Email from Joseph and Margaret Abruzese dated May 17, 2021 transmitting the following:

Letter from Joseph and Margaret Abruzese, titled “Objection to Any Purported Agreement to Waive Major Project Review and/or Special Permit requirements with Regard to Proposed Construction at 1688 Central Avenue,” undated.

77. Letter directed to Kate Fitzpatrick, Town Manager, from Joseph and Margaret Abruzese, dated April 5, 2021.
78. Email from Lee Newman, Director of Planning and Community Development, dated May 17, 2021, replying to email from Sharon Cohen Gold, dated May 15, 2021.
79. Email from Meredith Fried, dated May 18, 2021.
80. Email from Lori Shaer, Bridle Trail Road, dated May 18, 2021.
81. Email from Sandra Jordan, 219 Stratford Road, dated May 18, 2021.
82. Email from Khristy J. Thompson, 50 Windsor Road, dated May 18, 2021.
83. Email from Henry Ragin, dated May 18, 2021.
84. Email from David G. Lazarus, 115 Oxbow Road, dated May 18, 2021.
85. Email from John McCusker, 248 Charles River Street, dated May 18, 2021.
86. Email from Laurie and Steve Spitz, dated May 18, 2021.
87. Email from Randy Hammer, dated May 18, 2021.
88. Letter from Holly Clarke, dated May 24, 2021, transmitting comments concerning the Planning Board meeting of May 18, 2021.
89. Email from Robert Onofrey, 49 Pine Street, dated May 25, 2021, with attachment (and follow up email May 26, 2021).
90. Email from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated June 8, 2021, transmitting document entitled “Needham Enterprise, LLC Application for Major Site Review Must be Rejected Because the Supporting Architectural Drawings are Filed in Violation of the State Ethics Code,” with Exhibit A.
91. Email from Barbara Turk, 312 Country Way, dated April 3, 2021, forwarded from Holly Clarke on June 14, 2021.
92. Email from Patricia Falacao, 19 Pine Street, dated April 4, 2021, forwarded from Holly Clarke on June 14, 2021.
93. Email from Leon Shaigorodsky, Bridle Trail Road, dated April 4, 2021, forwarded from Holly Clarke on June 14, 2021.
94. Letter from Peter F. Durning, Mackie, Shae, Durning, Counselors at Law, dated June 11, 2021.

95. Revised list of signatories to earlier submitted petition, received on June 11, 2021.
96. Email from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated June 11, 2021.
97. Email from Karen and Alan Langsner, Windsor Road, dated June 13, 2021.
98. Email from Stanley Keller, 325 Country Way, dated June 13, 2021. Email from Sean and Marina Morris, 48 Scott Road, dated June 14, 2021.
99. Letter from Holly Clarke, dated June 14, 2021, transmitting "Comments of Neighbors of 1688 Central Avenue for Consideration During the Planning Board's Site Review Process for that Location Concerning the Traffic Impact Assessment Reports."
100. Email from Pete Lyons, 1689 Central Avenue, dated June 14, 2021.
101. Email from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated June 14, 2021.
102. Email from Ian Michelow, Charles River Street, dated June 13, 2021.
103. Email from Nikki and Greg Cavanagh, dated June 14, 2021.
104. Email from Patricia Falacao, 19 Pine Street, dated June 14, 2021.
105. Email from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated July 6, 2021.
106. Email from David Lazarus, Oxbow Road, dated July 12, 2021.
107. Email from Maggie Abruzese, dated July 12, 2021.
108. Letter directed to Marianne Cooley, Select Board, and Attorney Christopher Heep, from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated July 12, 2021.
109. Email from Barbara and Peter Hauschka, 105 Walker Lane, dated July 13, 2021.
110. Email from Rob DiMase, dated July 14, 2021.
111. Email from Lee Newman, Director of Planning and Community Development, dated July 14, 2021, replying to email from Maggie Abruzese, dated July 14, 2021.
112. Email from Leon Shaigorodsky, dated July 17, 2021.
113. Letter directed to Members of the Planning Board, from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated July 28, 2021, regarding "Suspending Hearings Pending a Resolution of the Ethics Questions."
114. Letter directed to Members of the Planning Board, from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated July 28, 2021, regarding "Objection to the Hearing of July 20, 2021."

115. Letter from Holly Clarke, dated August 12, 2021, transmitting “The Planning Board Must Deny the Application as the Needham Zoning Bylaws Prohibit More than One Non-Residential Use or Building On a Lot in Single Residence A.”
116. Email directed to the Planning Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated August 12, 2021, transmitting “The Authority of the Planning Board to Address Ethical Issues in the 1688 Central Matter.”
117. Email directed to the Select Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated August 13, 2021, transmitting “The Power and Duty of the Select Board to Address Ethical Issues in the 1688 Central Matter.”
118. Letter from Holly Clarke, dated August 13, 2021, transmitting “The Planning Board’s Authority to Regulate the Proposed Development of 1688 Central Avenue Includes the Authority to Reject the Plan.”
119. Letter from Patricia Falcao, dated August 30, 2021.
120. Email directed to the Planning Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated August 25, 2021, with attachment regarding Special Municipal Employee status.
121. Email from Patricia Falcao, dated August 30, 2021.
122. Email from Daniel Gilmartin, 111 Walker Lane, dated August 30, 2021.
123. Email from Dave S., dated September 4, 2021.
124. Letter from Holly Clarke, dated September 7, 2021, transmitting “Neighbors’ Comments on the Traffic Impact Analysis,” with 2 attachments.
125. Email from Elizabeth Bourguignon, 287 Warren Street, dated September 5, 2021.
126. Letter from Amy and Leonard Bard, 116 Tudor Road, dated September 5, 2021.
127. Email from Mary Brassard, 267 Hillcrest Road, dated September 28, 2021.
128. Email from Christopher K. Currier, 11 Fairlawn Street, dated September 28, 2021.
129. Email from Stephen Caruso, 120 Lexington Avenue, dated September 28, 2021.
130. Email from Emily Pugach, 42 Gayland Road, dated September 29, 2021.
131. Email from Robin L. Sherwood, dated September 29, 2021.
132. Email from Sarah Solomon, 21 Otis Street, dated September 29, 2021.
133. Email from Lee Ownbey, 27 Powderhouse Circle, dated September 29, 2021.
134. Email from Emily Tow, dated September 29, 2021.

135. Email from Leah Caruso, dated September 29, 2021.
136. Email from Jennifer Woodman, dated September 29, 2021.
137. Email from Nancy and Chet Yablonski, dated September 29, 2021.
138. Email from Pamela and Andrew Freedman, 17 Wilshire Park, dated September 29, 2021.
139. Email from Dr. Jennifer Lucarelli, 58 Avalon Rd, dated September 29, 2021.
140. Email from Maija Tiplady, dated September 30, 2021.
141. Email from Ashley Schell, dated September 30, 2021.
142. Email from Kristin Kearney, 11 Paul Revere Rd, dated September 30, 2021.
143. Email from Dave Renninger, dated September 30, 2021.
144. Letter from Brad and Rebecca Lacouture, dated September 30, 2021.
145. Email from Kerry Cervas, 259 Hillcrest Road, dated September 30, 2021.
146. Letter from Holly Clarke, dated October 1, 2021, transmitting "The Past Use of the Property for Automobile Repairs and Other Non-Residential Purposes Merit Environmental Precautions to Insure the Safe Development and Use of the Property."
147. Email from Carolyn Walsh, 202 Greendale Avenue, dated September 30, 2021.
148. Email from Robert DiMase, 1681 Central Avenue, dated October 6, 2021.
149. Email from Elyse Park, dated October 6, 2021.
150. Email from R.M. Connelly, dated October 6, 2021.
151. Email from Eric Sockol, 324 Country Way, undated, received October 6, 2021.
152. Email from R.M. Connelly, dated October 9, 2021.
153. Email from Robert James Onofrey, 49 Pine Street, dated October 12, 2021 with attachment.
154. Letter from Holly Clarke, dated October 16, 2021, transmitting "Neighbor's Comments on the Application of Needham Zoning By-Law 3.2.1."
155. Email from R.M. Connelly, dated October 18, 2021.
156. Email from David Lazarus, Oxbow Road, dated October 19, 2021.
157. Email directed to the Planning Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated October 27, 2021, transmitting "Objection to Use of Architectural Plans and Testimony 1688

Central Avenue.”

158. Email directed to the Planning Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated November 1, 2021, transmitting “The Applicant Cannot Keep both the Barn and the New Building.”
159. Letter to the Planning Board from Denise Linden, undated, received November 10, 2021.
160. Email to the Planning Board from Khristy J. Thompson, Ph.D., dated November 10, 2021 with the following attachments discussing the impact of lead and other metals on the neurodevelopment of young children.
161. Letter from Holly Clarke, dated November 13, 2021, transmitting “The Proponent’s October 27, 2021 Report Again Changes the Data Used to Assess the Impact of the Project on Central Avenue.”
162. Letter from Holly Clarke, dated November 14, 2021, transmitting “Photographs and Video of Traffic on Central Avenue”
163. Letter from Holly Clarke, dated November 14, 2021, transmitting “Commercial Child Care Facilities Do Not Customarily Have Accessory Buildings”
164. Email from Joseph and Margaret Abruzese dated November 15, 2021 accompanying the following attachment:

Town of Canton, Massachusetts, Zoning Board of Appeals Decision, dated August 13, 2020, with Exhibits A, B, C and D.
165. Letter from Sharon Cohen Gold and Evan Gold, dated November 16, 2021.
166. Letter to the Planning Board from Elizabeth Bourguignon, 287 Warren St, dated, November 16, 2021.
167. Letter to the Planning Board from Carolyn Day Reulbach, 12 Longfellow Road, dated, December 2, 2021.
168. Email directed to the Planning Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated December 6, 2021.
169. Email directed to the Planning Board from Maggie and Joe Abruzese, 30 Bridle Trail Road, dated December 6, 2021, transmitting “Parking Requirements of Needham Zoning Bylaw.”
170. Letter from Pat Falacao, 19 Pine Street, received December 7, 2021.
171. Email from Rick Hardy, 1347 South Street, dated December 8, 2021.
172. Email from Laurie and Steve Spitz, dated December 7, 2021, transmitting video of traffic on Central Avenue.

173. Letter from Joe Abruzese, dated December 12, 2021 regarding his presentation from December 8, 2021 public hearing.
174. Email from Maggie Abruzese, dated December 12, 2021, transmitting the following as discussed at the December 8, 2021 public hearing:
 - “Lighting at 1688 Central Avenue” with Exhibits
 - Talking Points from December 8, 2021 hearing.
175. Letter from M. Patrick Moore Jr., and Johanna W. Schneider, Hemenway & Barnes, LLP, dated December 20, 2021.
176. Letter from Holly Clarke, dated December 18, 2021, transmitting comments from neighbors.

Misc.

177. Email from Attorney Christopher H. Heep, dated June 9, 2021.
178. Two Emails from Attorney Christopher Heep, dated July 16, 2021.
179. Letter from Attorney Christopher H. Heep, dated September 2, 2021.
180. Letter from Attorney Christopher H. Heep, dated September 8, 2021.
181. Letter from Stephen J. Buchbinder, Schlesinger and Buchbinder, LLP, dated October 1, 2021.
182. Letter from Eve Slattery, General Counsel, Commonwealth of Massachusetts, State Ethics Commission, dated September 30, 2021.
183. Email from Evans Huber, dated October 7, 2021.
184. Email from Lee Newman directed to Evans Huber, dated October 8, 2021.
185. Letter from Eve Slattery, General Counsel, Commonwealth of Massachusetts, State Ethics Commission, dated October 4, 2021.
186. Email from Lee Newman directed to and replying to R.M. Connelly, dated October 19, 2021.
187. Letter from Brian R. Falk, Mirick O’Connell, Attorneys at Law, dated October 27, 2021.
188. Letter from Attorney Christopher H. Heep, dated November 2, 2021.
189. Letter directed to Evans Huber from Lee Newman, Director, Planning and Community Development, dated November 10, 2021.
190. Letter from David Roche, Building Commissioner, dated December 7, 2021.

The following testimony related to the proposal at 1688 Central Avenue was previously distributed and is being distributed again for convenience.

ZONING LEGEND:				
SINGLE RESIDENCE A, PROPOSED PUBLIC, SEMI PUBLIC OR INSTITUTIONAL USE				
	REQUIRED/ALLOWED	EXISTING	PROPOSED	COMPLIANCE
MIN. AREA	43,560 S.F.	146,003 S.F.	146,003 S.F.	YES
MIN. FRONTAGE	150'	250.05'	250.05'	YES
MIN. SETBACK FRONT	35'	*105.0' **211.2' ***276.3'	64.0'	YES
MIN. SETBACK SIDE	25'	*67.5' **65.0' ***54.2'	52.3'	YES
MIN. SETBACK REAR	25'	*864.9' **763.4' ***677.0'	811.0'	YES
MAXIMUM STORIES	2-1/2	*2 **1 ***2	1	YES
MAXIMUM HEIGHT	35'	*30.7' **15.3' ***31.2'	24.7'	YES
LOT COVERAGE	15%	NR	9.0%	YES
FLOOR AREA RATIO	.30	NR	.09	YES
DRIVEWAY OPENINGS	18' - 25'	19'	24'	YES

*EXISTING HOUSE (TO BE DEMOLISHED)
**OUT BUILDING -1 (TO BE DEMOLISHED)
***OUT BUILDING -2 (TO REMAIN)

ZONING BYLAW 6.1.3 PARKING PLAN AND DESIGN REQUIREMENTS				
	REQUIRED/ALLOWED	EXISTING	PROPOSED	COMPLIANCE
A) PARKING ILLUMINATION	AVG. 1 FOOT CANDLE	N/A	AVG. 1 FOOT CANDLE	YES
B) LOADING REQUIREMENTS	N/A	N/A	N/A	YES
C) HANDICAPPED REQUIREMENTS	2	N/A	2	YES
D) DRIVEWAY OPENINGS	1	1	1	YES
E) COMPACT CARS	50% (8'X16')	N/A	N/A	YES
F) PARKING SPACE SIZE	9'X18.5'	N/A	9'X18.5'	YES
G) BUMPER OVERHANG	1' OVERHANG	N/A	NONE REQUIRED	YES
H) PARKING SPACE LAYOUT	N/A	N/A	N/A	YES
I) WIDTH OF MANEUVERING AISLE	24' (90° STALL)	N/A	24' (90° STALL)	YES
J) PARKING SETBACK				
-FRONT	10'	N/A	*207.5'	YES
-SIDE	4'	N/A	26.9'	YES
-REAR	4'	N/A	609.6'	YES
-BUILDING	5'	N/A	5'	YES
K) LANDSCAPE AREA	10%	N/A	10%	YES
L) TREES	1 PER 10 SPACES (3)	N/A	3	YES
M) LOCATION	WITHIN LOT	N/A	WITHIN LOT	YES
N) BICYCLE RACKS	NONE REQUIRED	N/A	NONE REQUIRED	YES

* TO LOADING AREA
REQUIRED PARKING TO BE DETERMINED BY BUILDING INSPECTOR
PARKING PROVIDED SPACES INCLUDING 2 HANDICAP SPACES

LANDSCAPE AREA REQUIREMENT IS 10% OF REQUIRED SET BACK AREA. SET BACK AREA IS 3,939 S.F.
10% OF 3,939 IS 394 S.F. OF MAINTAINED LANDSCAPE AREA REQUIRED 25% OF THAT OR 98 S.F. TO
BE LOCATED WITHIN THE INTERIOR OF THE PARKING AREA. 860 S.F. PROVIDED WITHIN PARKING AREA

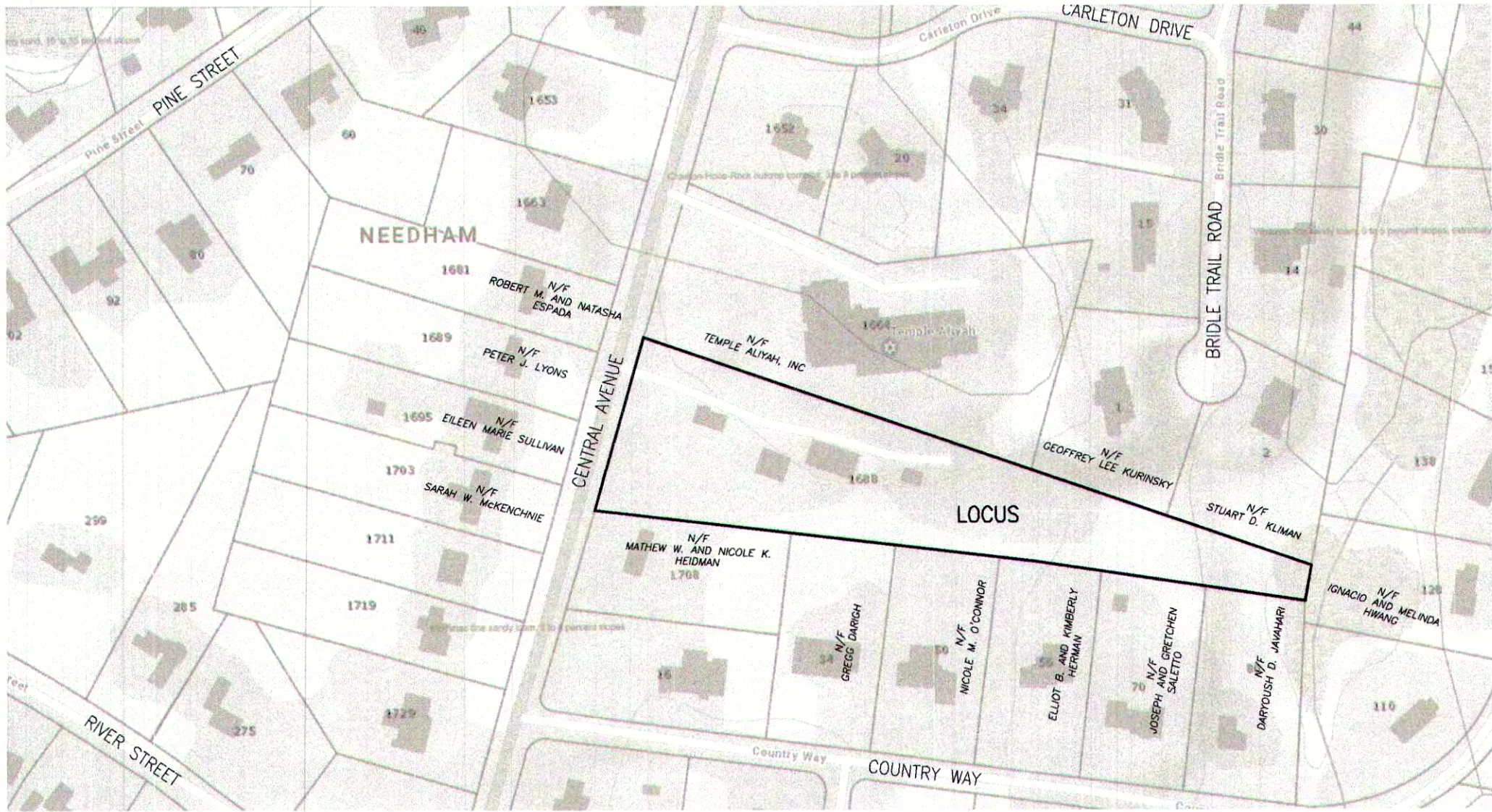
SITE DEVELOPMENT PLANS

DAYCARE

1688 CENTRAL AVENUE

NEEDHAM, MA

JUNE 22, 2020



LOCUS
N.T.S

PLAN INDEX

NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS

SHEET	1:	COVER SHEET
SHEET	2:	EXISTING CONDITIONS PLAN
SHEET	3:	SITE PLAN
SHEET	4:	GRADING AND UTILITIES PLAN
SHEET	5:	LANDSCAPE PLAN
SHEET	6 & 7:	DETAILS
SHEET	8:	SEWER PLAN AND PROFILE
SHEET	9:	CONSTRUCTION PERIOD PLAN
APPENDIX		PHOTOMETRIC AND SITE LIGHTING PLAN

OWNER:

NEEDHAM ENTERPRISES LLC
105 CHESTNUT STREET SUITE 28
NEEDHAM, MA 02492

APPLICANT:

NEEDHAM ENTERPRISES LLC
105 CHESTNUT STREET SUITE 28
NEEDHAM, MA 02492

ASSESSORS PARCELS:

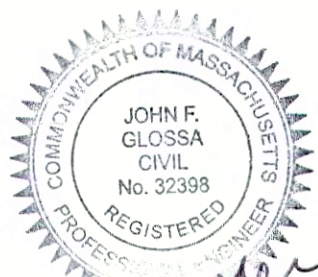
MAP 199, LOT 213

DEED REFERENCE:

BOOK 37770 PAGE 308

PLAN REFERENCE:

PLAN OF LAND DATED SEPTEMBER 28, 1933
BY P.D.G. HAMILTON, CIVIL ENGINEER



PREPARED BY
GLOSSA ENGINEERING, INC.
46 EAST ST
EAST WALPOLE, MA 02032
(508) 668-4401

EXISTING GRADE
EXISTING SPOT GRADE
EXISTING GAS MAIN
EXISTING SEWER MANHOLE
EXISTING DRAIN MANHOLE
EXISTING CATCH BASIN
EXISTING ELECTRIC MANHOLE
EXISTING UTILITY POLE
EXISTING TEST PIT
EXISTING BOUND
EXISTING FENCE
EXISTING FIRE HYDRANT
EXISTING GATE VALE

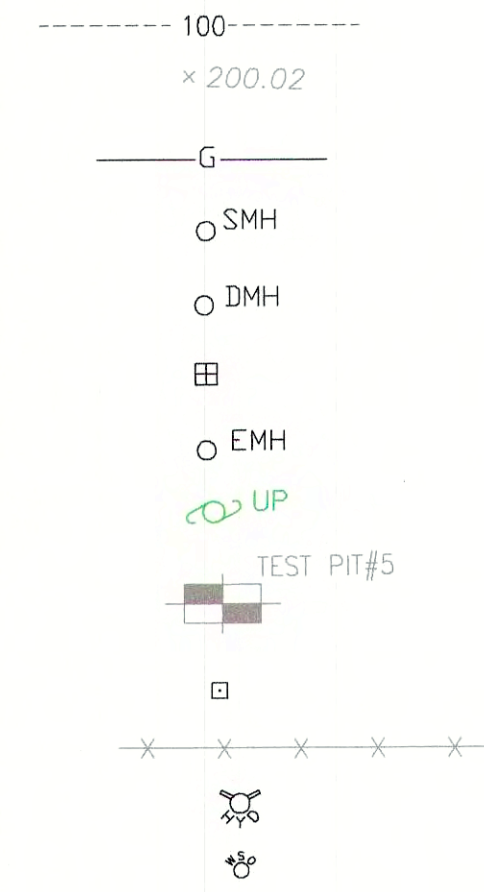
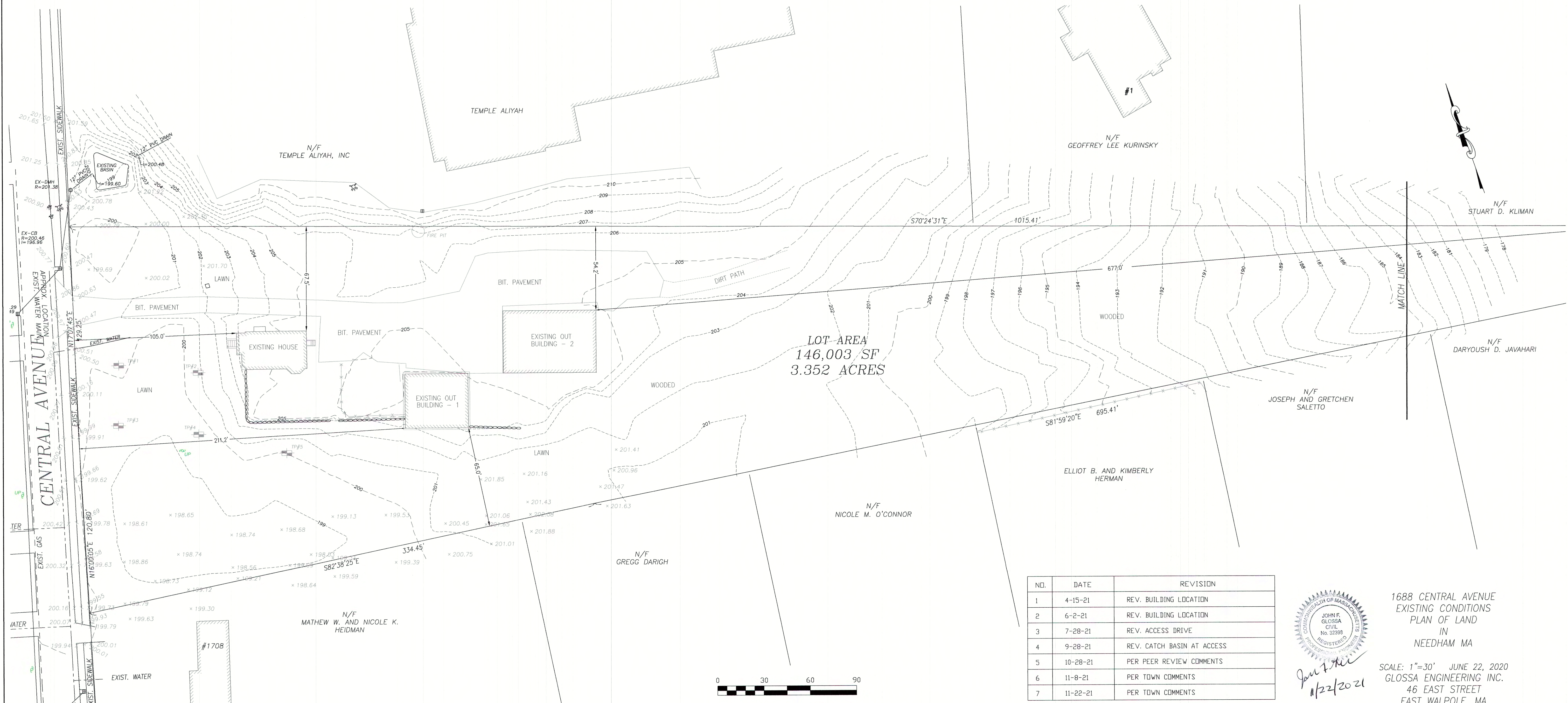
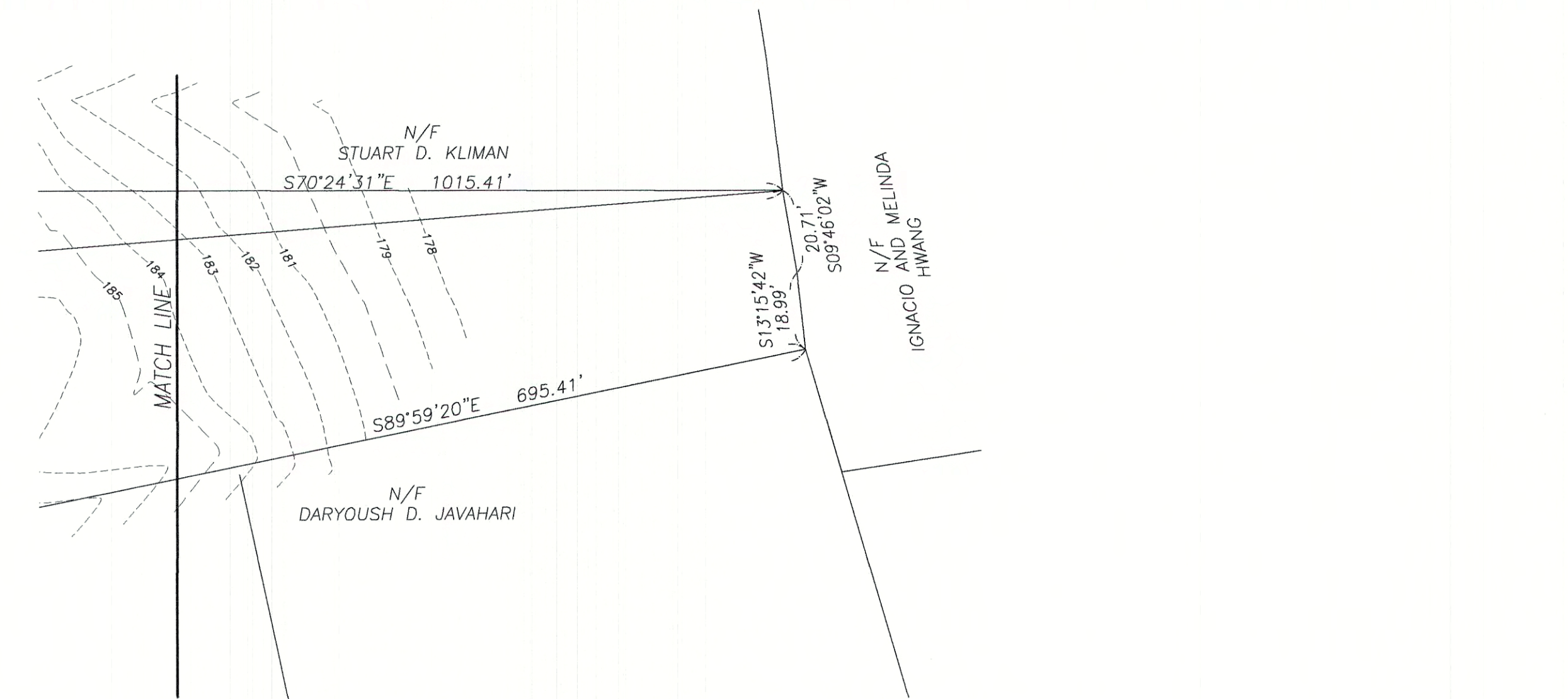


Figure 1 displays five cross-sectional diagrams of test pits, labeled TEST PIT #1 through TEST PIT #5. Each diagram shows the vertical profile of the soil layers and the depth of the pit. The vertical scale is in feet and inches, and the horizontal scale is in feet.

Test Pit	Soil Layer	Depth (ft/in)	Horizontal Scale (ft)
TEST PIT #1	A SANDY LOAM 10YR 3/2	0" to 14"	0 to 200.00
	B SANDY LOAM 10YR 5/8	14" to 40"	198.33 to 199.67
	C SAND 2.5Y 5/4	40" to 112"	199.67 to 190.67
	D SAND 2.5Y 5/4	112" to 108"	190.67 to 192.00
TEST PIT #2	A SANDY LOAM 10YR 3/2	0" to 13"	0 to 201.00
	B1 SANDY LOAM 10YR 5/8	13" to 26"	199.92 to 198.67
	B2 SANDY LOAM 2.5Y 6/3	26" to 48"	198.67 to 197.00
	C SAND 2.5Y 5/4	48" to 108"	197.00 to 192.00
TEST PIT #3	A SANDY LOAM 10YR 3/2	0" to 12"	0 to 199.50
	B SANDY LOAM 10YR 5/8	12" to 26"	198.50 to 197.33
	C SAND 2.5Y 5/4	26" to 120"	197.33 to 189.50
	D SAND 2.5Y 5/4	120" to 108"	189.50 to 192.00
TEST PIT #4	A SANDY LOAM 10YR 3/2	0" to 12"	0 to 199.75
	B SANDY LOAM 10YR 5/8	12" to 24"	198.75 to 197.75
	C SAND 2.5Y 5/4	24" to 114"	197.75 to 190.25
	D SAND 2.5Y 5/4	114" to 108"	190.25 to 192.00
TEST PIT #5	A SANDY LOAM 10YR 3/2	0" to 13"	0 to 200.00
	B SANDY LOAM 10YR 5/8	13" to 48"	198.92 to 196.00
	C SAND 2.5Y 5/4	48" to 136"	196.00 to 188.67
	D SAND 2.5Y 5/4	136" to 108"	188.67 to 192.00

SOIL TEST PERFORMED BY JOHN F. GLOSSA P.E. SOIL EVALUATOR #890
ON 3-24-20



NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS



1688 CENTRAL AVENUE
EXISTING CONDITIONS
PLAN OF LAND
IN
NEEDHAM MA

SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401

CONSTRUCTION NOTES

1) ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THIS PLAN AND THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN MAY VARY FROM THEIR FIELD LOCATION. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF THE CONSTRUCTION.

2) ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF NEEDHAM PUBLIC WORKS DEPARTMENT.

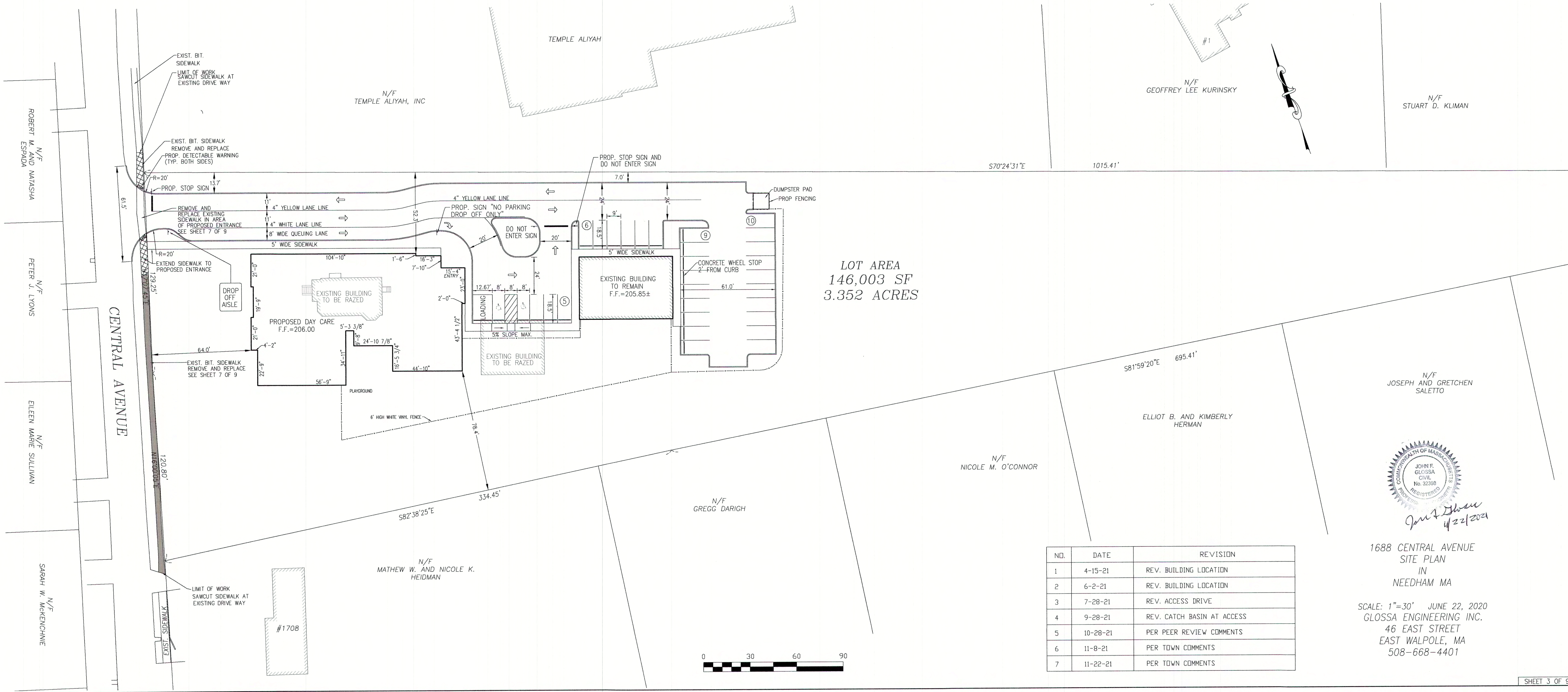
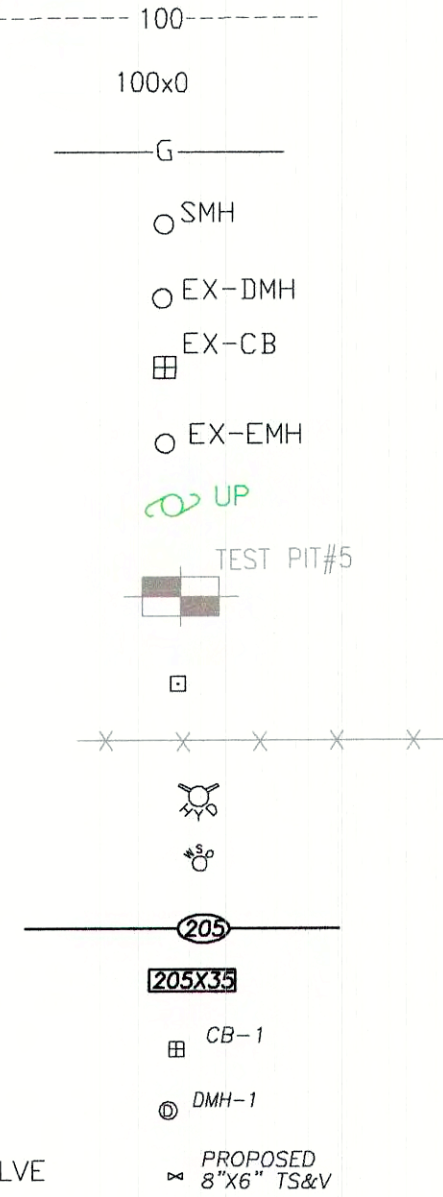
3) CONSTRUCTION OF SIDEWALK SHALL MEET ALL ADA REQUIREMENTS.

GENERAL NOTES:

1) THE PROJECT DOES NOT REQUIRE AN ELECTRICAL TRANSFORMER AND WILL NOT HAVE A GENERATOR.

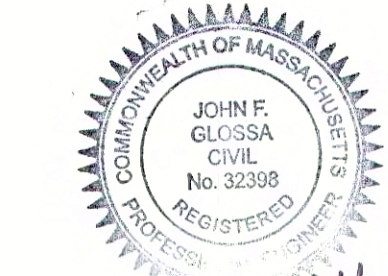
LEDGEND:

- EXISTING GRADE
EXISTING SPOT GRADE
EXISTING GAS MAIN
EXISTING SEWER MANHOLE
EXISTING DRAIN MANHOLE
EXISTING CATCH BASIN
EXISTING ELECTRIC MANHOLE
EXISTING UTILITY POLE
EXISTING TEST PIT
EXISTING BOUND
EXISTING FENCE
EXISTING FIRE HYDRANT
EXISTING GATE VALE
PROPOSED GRADE
PROPOSED SPOT GRADE
PROPOSED CATCH BASIN
PROPOSED DRAIN MANHOLE
PROPOSED TAPPING SLEEVE AND VALVE



LOT AREA
146,003 SF
3.352 ACRES

NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS



1688 CENTRAL AVENUE
SITE PLAN
IN
NEEDHAM MA

SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401

CONSTRUCTION NOTES:

1) ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THIS PLAN AND THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN MAY VARY FROM THEIR FIELD LOCATION. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF THE CONSTRUCTION.

2) ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF NEEDHAM PUBLIC WORKS DEPARTMENT.

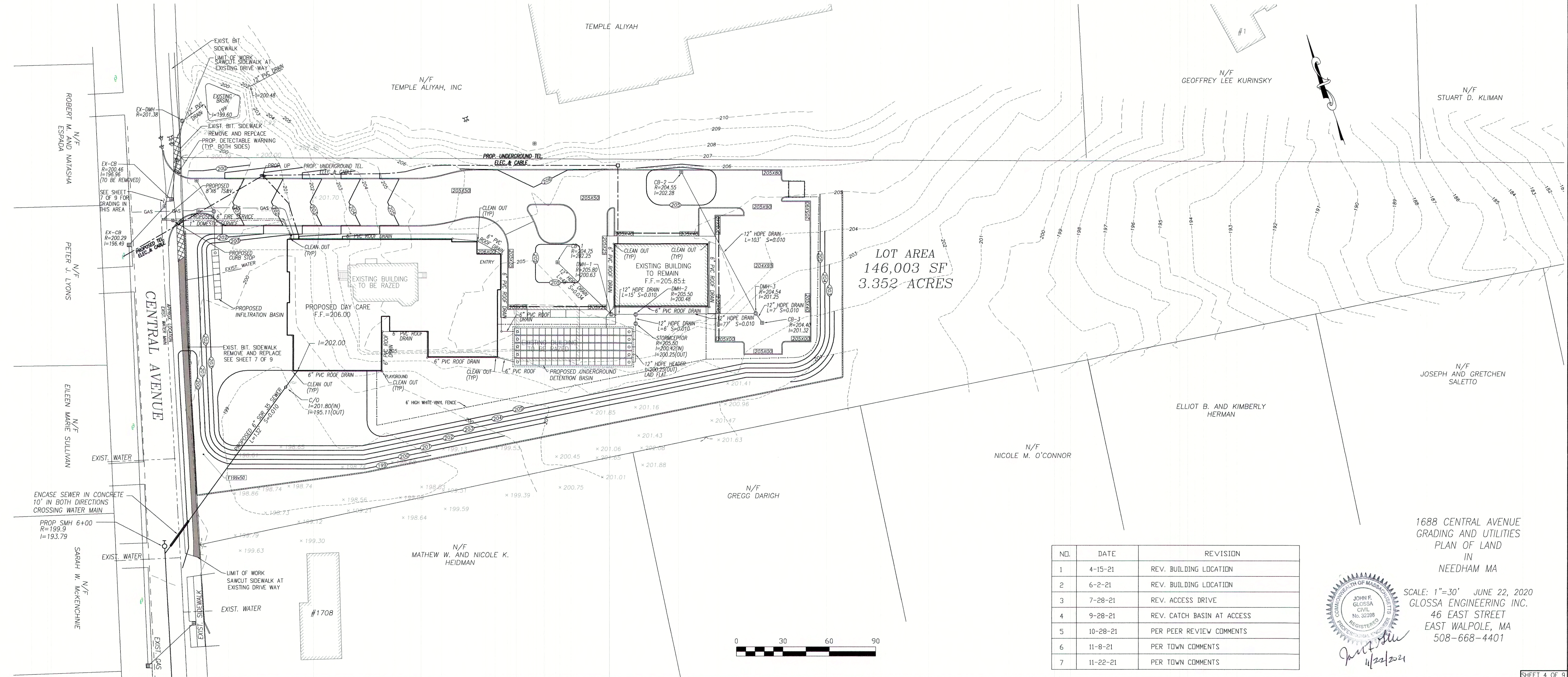
3) CONSTRUCTION OF SIDEWALK SHALL MEET ALL ADA REQUIREMENTS.

GENERAL NOTES:

1) THE PROJECT DOES NOT REQUIRE AN ELECTRICAL TRANSFORMER AND WILL NOT HAVE A GENERATOR.

LEDGEND:

EXISTING GRADE	----- 100
EXISTING SPOT GRADE	x 200.02
EXISTING GAS MAIN	— G —
EXISTING SEWER MANHOLE	○ SMH
EXISTING DRAIN MANHOLE	○ EX-DMH
EXISTING CATCH BASIN	▣ EX-CB
EXISTING ELECTRIC MANHOLE	○ EX-EMH
EXISTING UTILITY POLE	○ UP
EXISTING TEST PIT	TEST PIT#5
EXISTING BOUND	□
EXISTING FENCE	— X — X — X — X —
EXISTING FIRE HYDRANT	⊕
EXISTING GATE VALE	⊕
PROPOSED GRADE	205
PROPOSED SPOT GRADE	205.5
PROPOSED CATCH BASIN	▣ CB-1
PROPOSED DRAIN MANHOLE	⊕ DMH-1
PROPOSED TAPPING SLEEVE AND VALVE	PROPOSED 8"X6" TS&V



NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS

CONSTRUCTION NOTES:

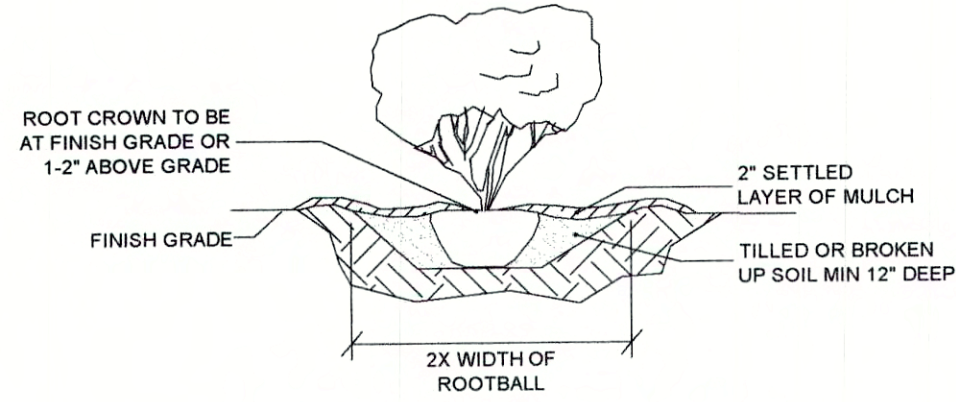
1) ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THIS PLAN AND THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN MAY VARY FROM THEIR FIELD LOCATION. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF THE CONSTRUCTION.

2) ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF NEEDHAM PUBLIC WORKS DEPARTMENT.

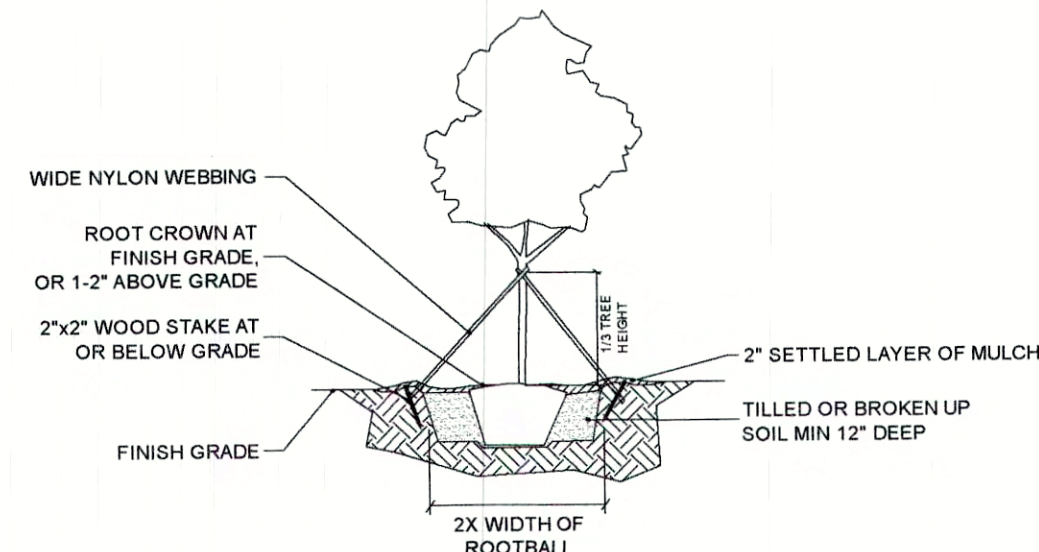
GENERAL NOTES:

1) THE PROJECT DOES NOT REQUIRE AN ELECTRICAL TRANSFORMER AND WILL NOT HAVE A GENERATOR.

	COMMON NAME	BOTANICAL NAME	SIZE	QUANTITY
PA	PINK AZALEA	RHODODENDRON PERICLYMENOIDES	2'-3'	4
MA	WHITE AZALEA	RHODODENDRON VICOSUM	2'-3'	3
RA	RHODODENDRON	RHODODENDRON FERRUGINEUM	2'-3'	2
JA	JUNIPER	JUNIPERUS	2'-3'	6
CA	CREeping JUNIPER	JUNIPERUS HORIZONTALIS	6"-12"	6
LA	MAPLE "LEGACY"	ACER SACCHARUM	1-1/2" CAL.	4
PA	WHITE PINE	PINUS STOBUS	1-1/2" CAL.	16
CA	CRABAPPLE "DONALD WYMAN"	MALUS "DONALD WYMAN"	1-1/2" CAL.	4
EA	ARBORVITAE "EMERALD GREEN"	THUJA OCCIDENTALIS "SMARAGO"	2'-3'	54
MA	ARBORVITAE "HETZ MIDGET"	THUJA OCCIDENTALIS "HETZ MIDGET"	2'-3'	18
CA	RED CEDAR	JUNIPERUS VIRGINIANA	1-1/2" CAL.	14
CA	CHERRY	PRUNUS AVIUM	1-1/2" CAL.	2
NS	NORWAY SPRUCE	PICEA ABIES	1-1/2" CAL.	3
BS	BLUE SPRUCE	PICEA PUNGENS	1-1/2" CAL.	5



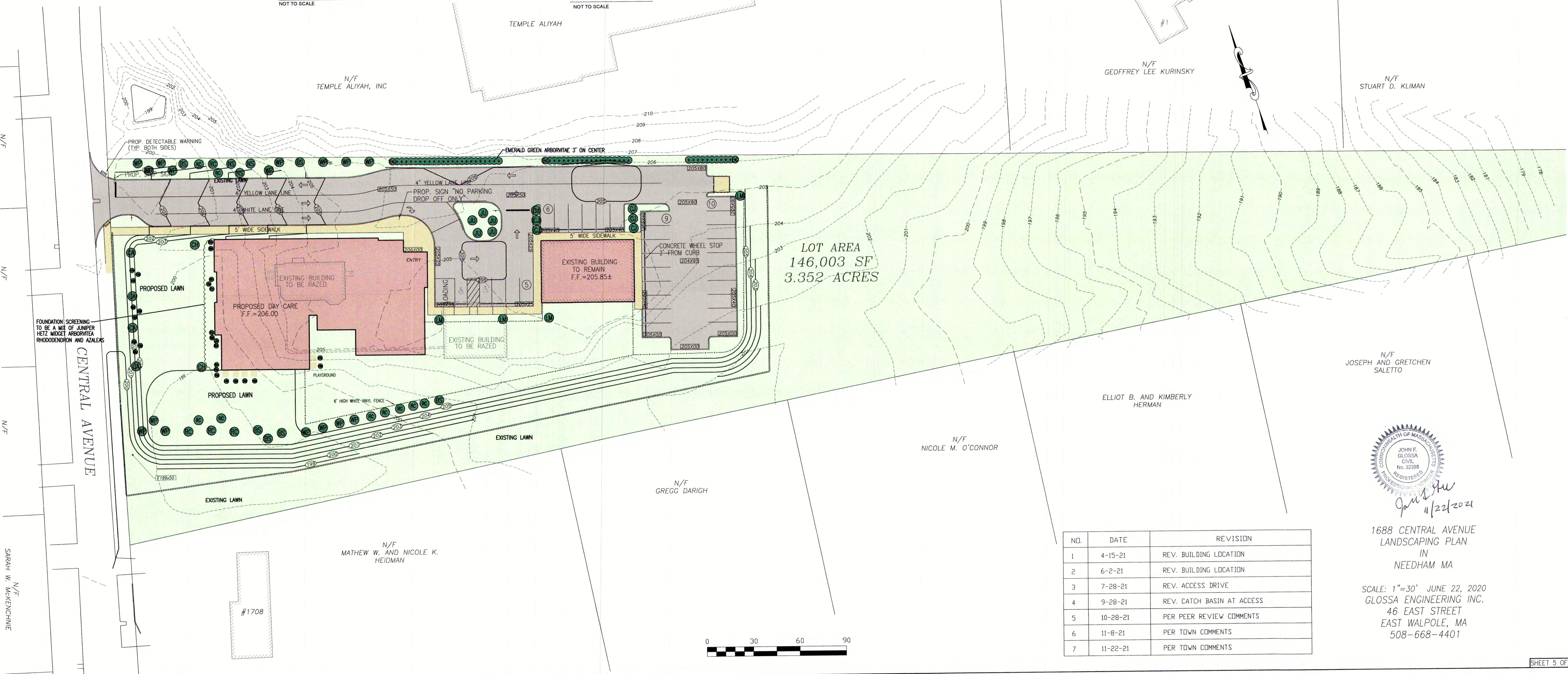
TYP. SHRUB PLANTING:
INDIVIDUAL PLANTING HOLE
NOT TO SCALE



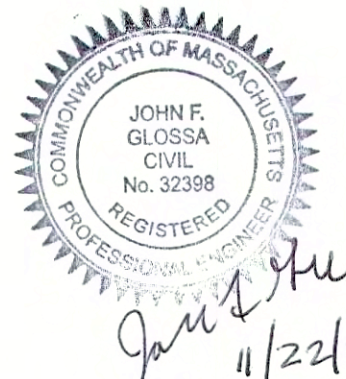
TREE PLANTING
NOT TO SCALE

LEDGEND:

- EXISTING GRADE 100-----
- EXISTING SPOT GRADE x 200.02
- EXISTING GAS MAIN G-----
- EXISTING SEWER MANHOLE SMH
- EXISTING DRAIN MANHOLE EX-DMH
- EXISTING CATCH BASIN EX-CB
- EXISTING ELECTRIC MANHOLE EX-EMH
- EXISTING UTILITY POLE UP
- EXISTING TEST PIT TEST PIT#5
- EXISTING BOUND
- EXISTING FENCE
- EXISTING FIRE HYDRANT
- EXISTING GATE VALE
- PROPOSED GRADE 205
- PROPOSED SPOT GRADE 205.45
- PROPOSED CATCH BASIN CB-1
- PROPOSED DRAIN MANHOLE DMH-1
- PROPOSED TAPPING SLEEVE AND VALVE 8"x6" TS&V

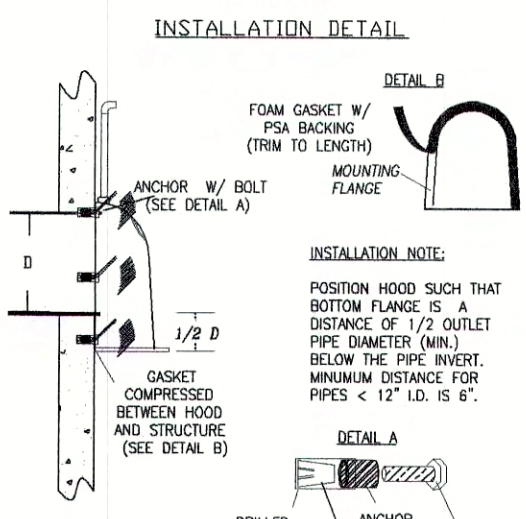
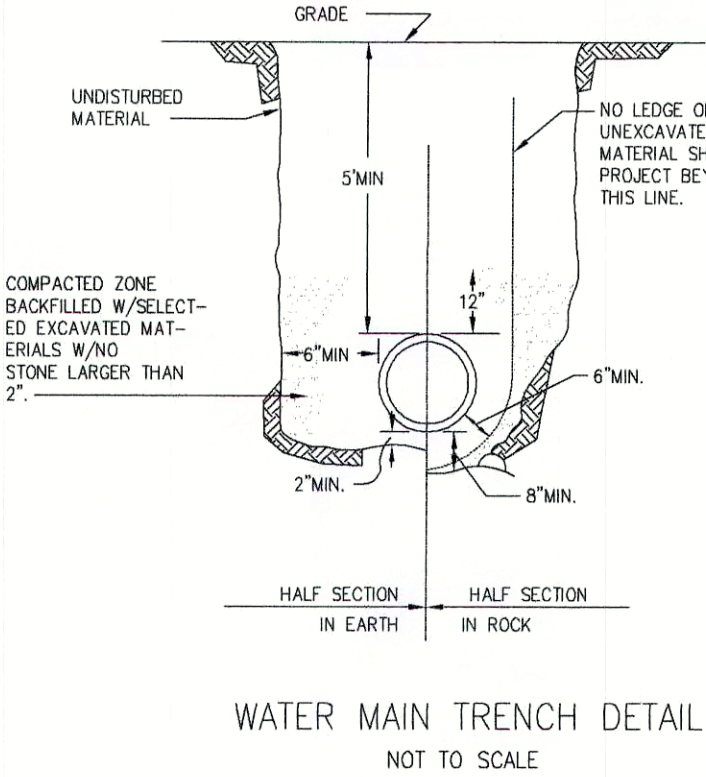
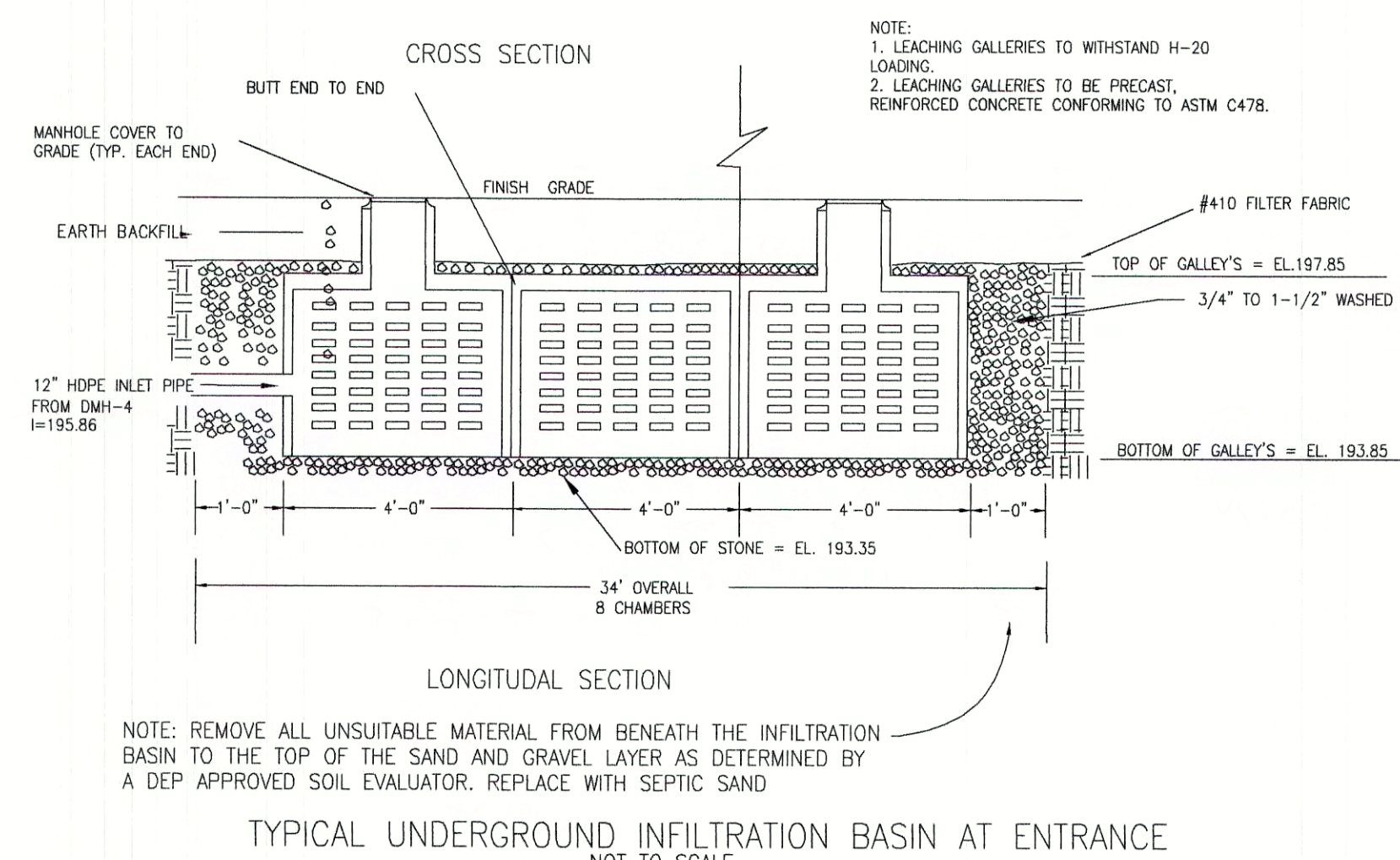
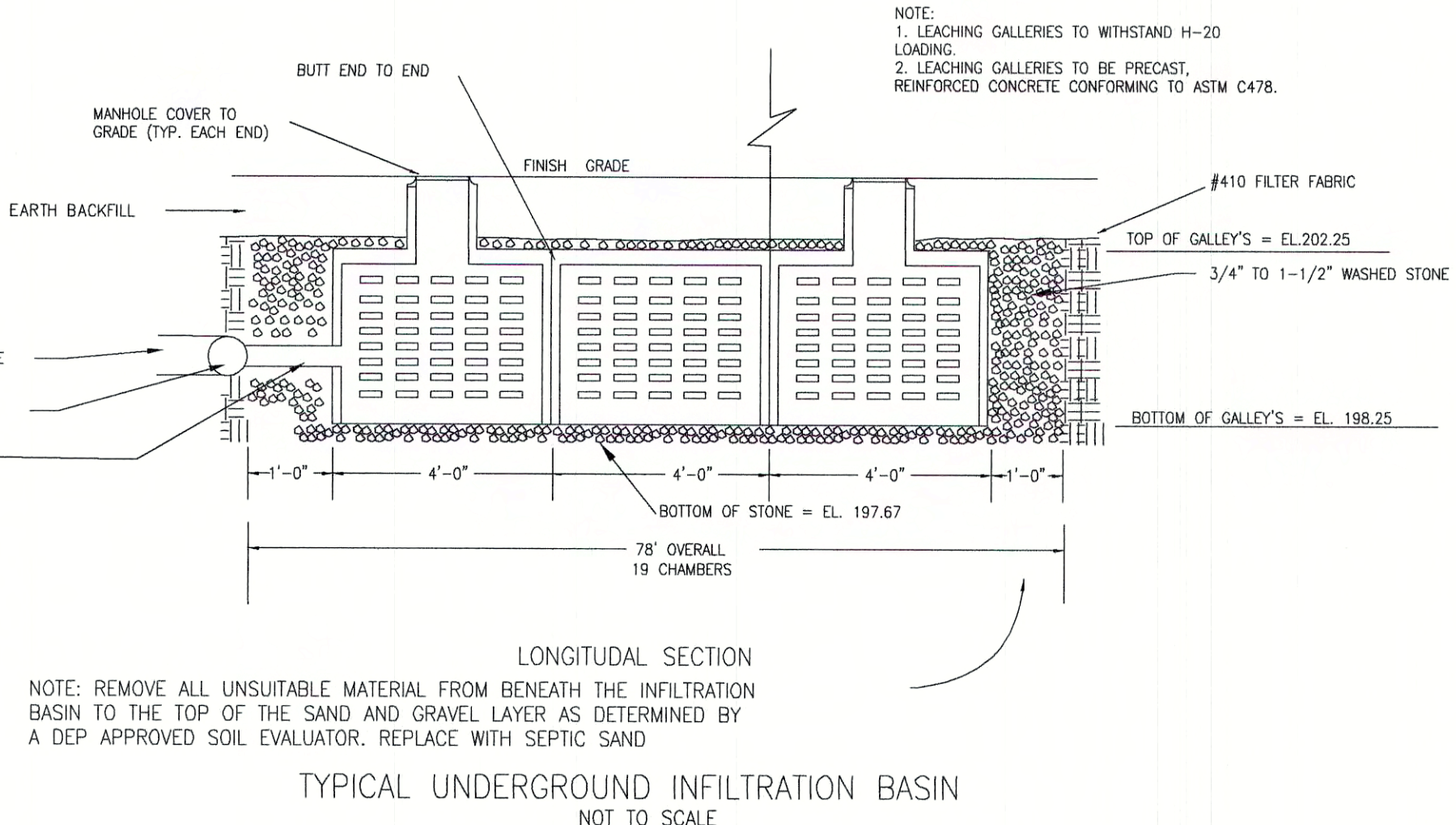
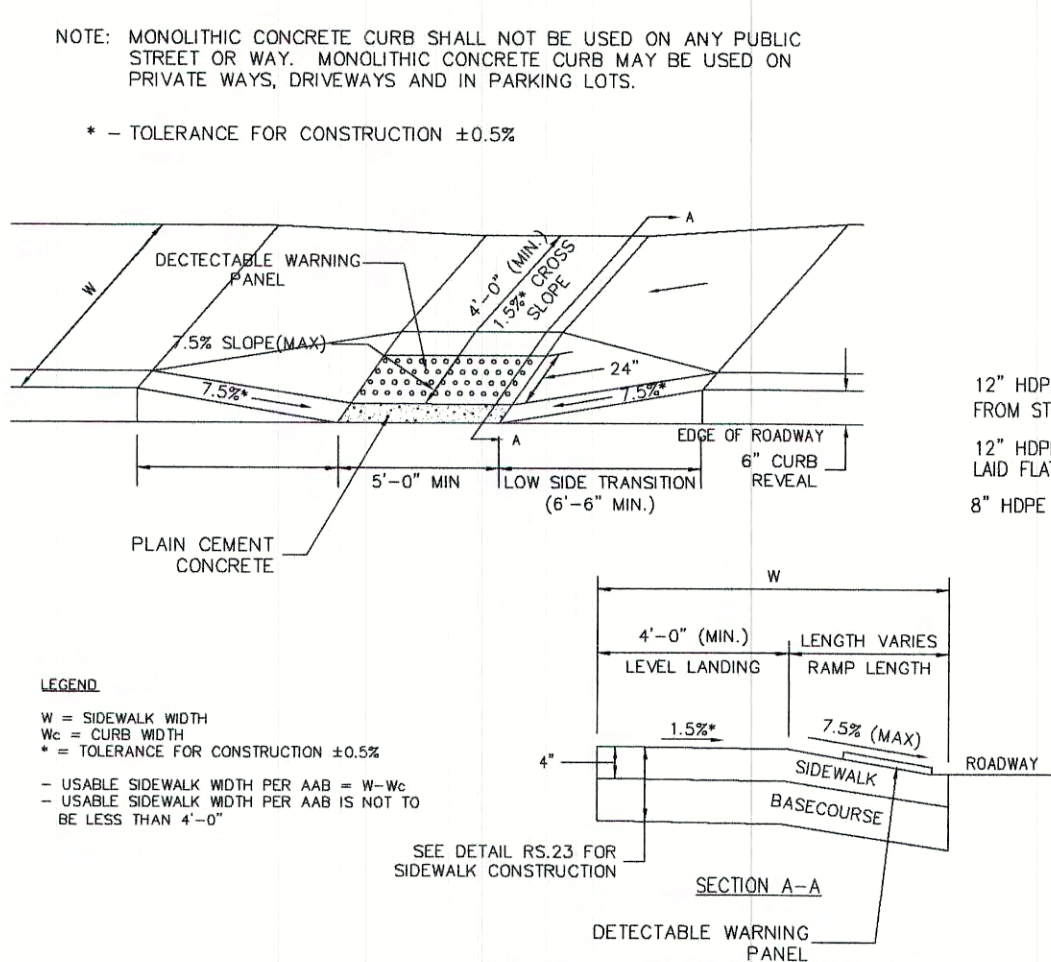
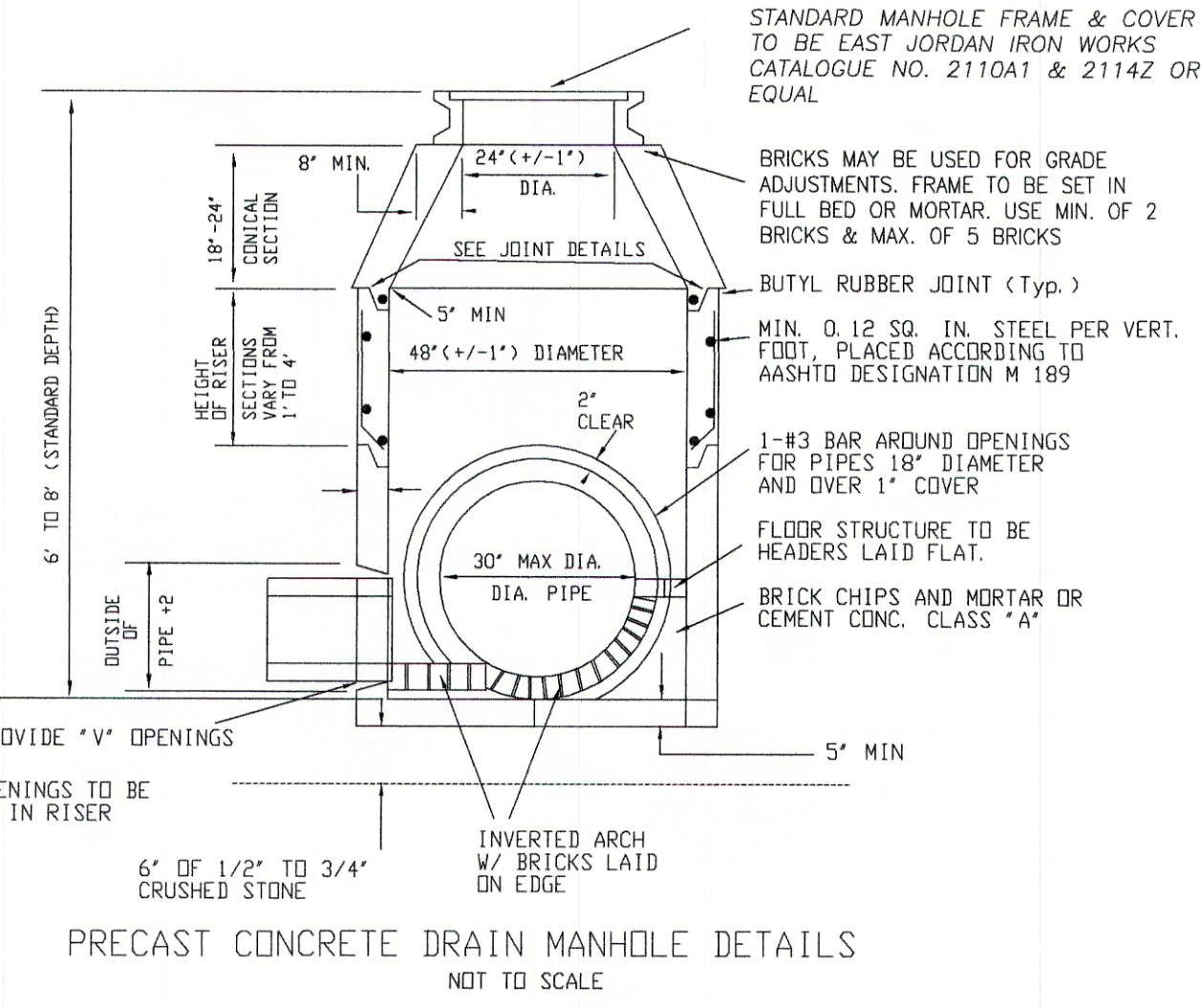
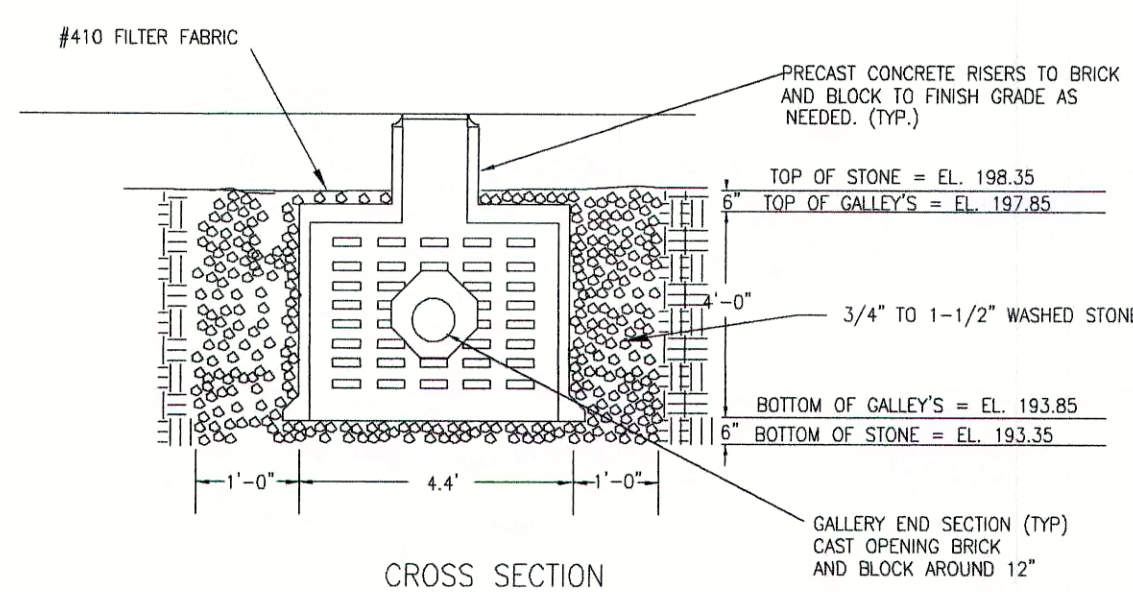
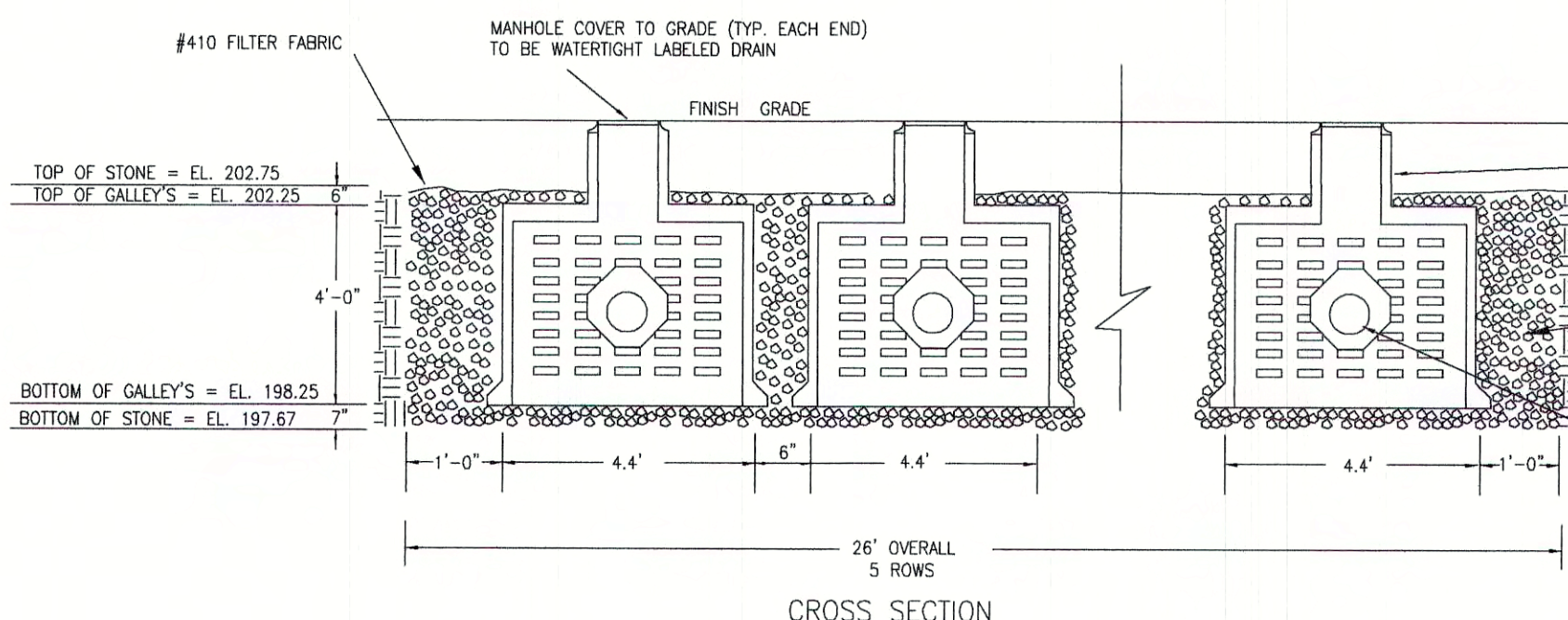
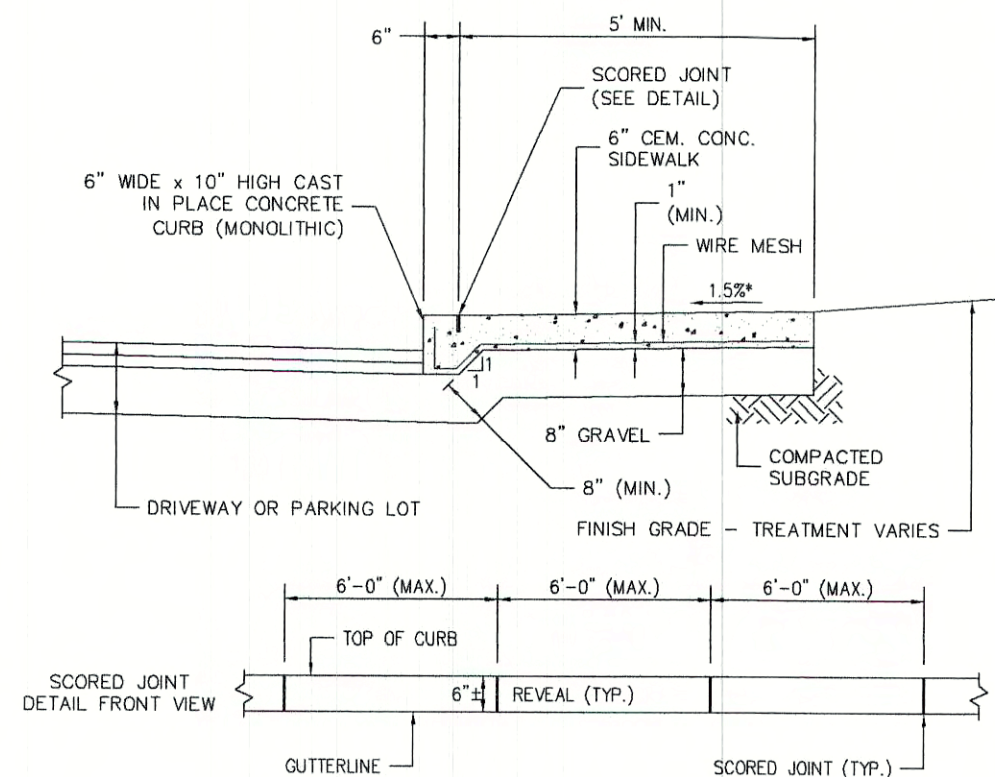
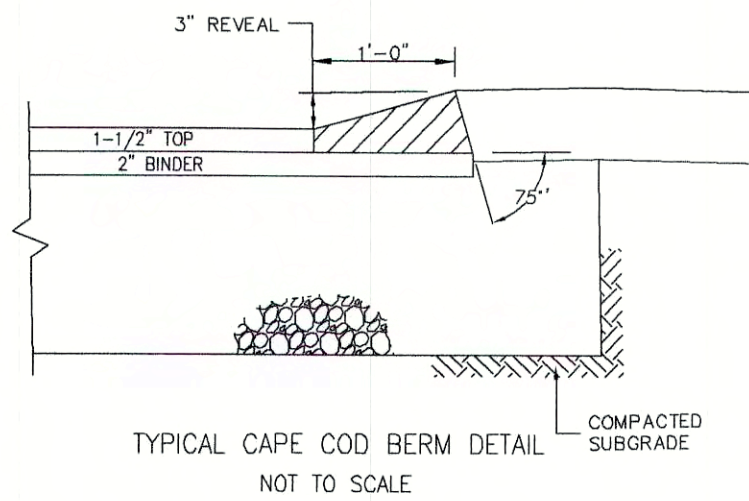
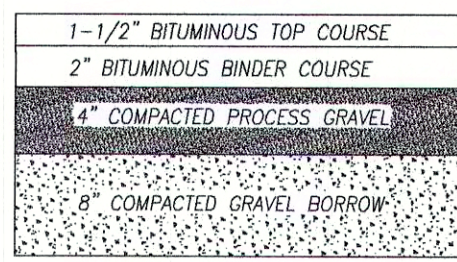


NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS

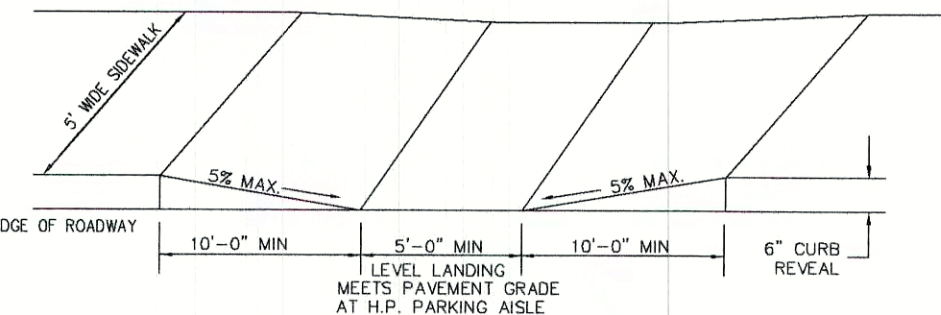


1688 CENTRAL AVENUE
LANDSCAPING PLAN
IN
NEEDHAM MA

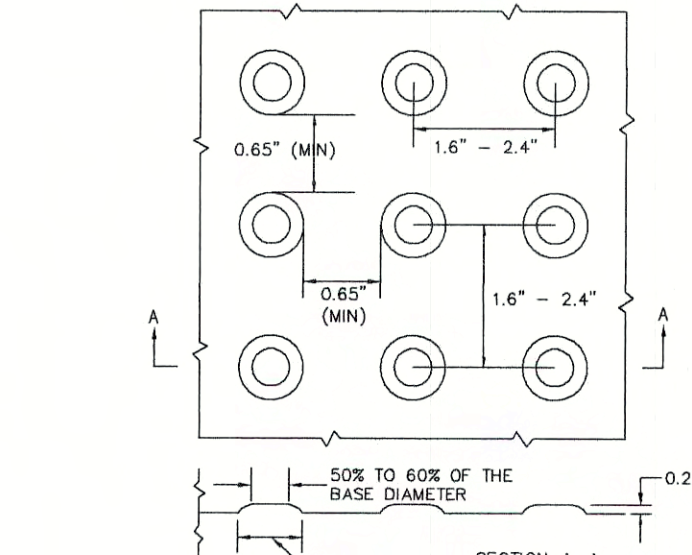
SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401



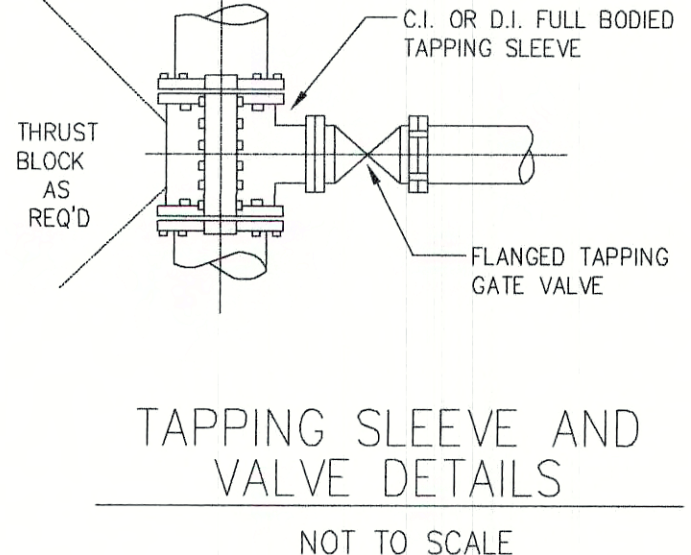
OIL AND GREASE TRAP SNOUT 18R OR APPROVED EQUAL NOT TO SCALE



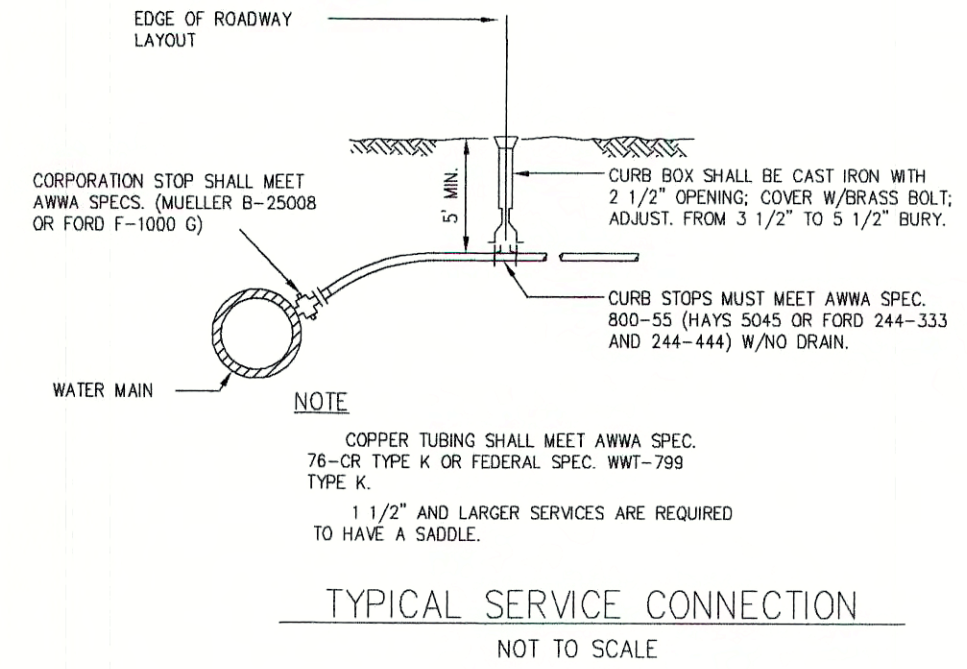
H.P. PARKING AISLE DETAIL NOT TO SCALE



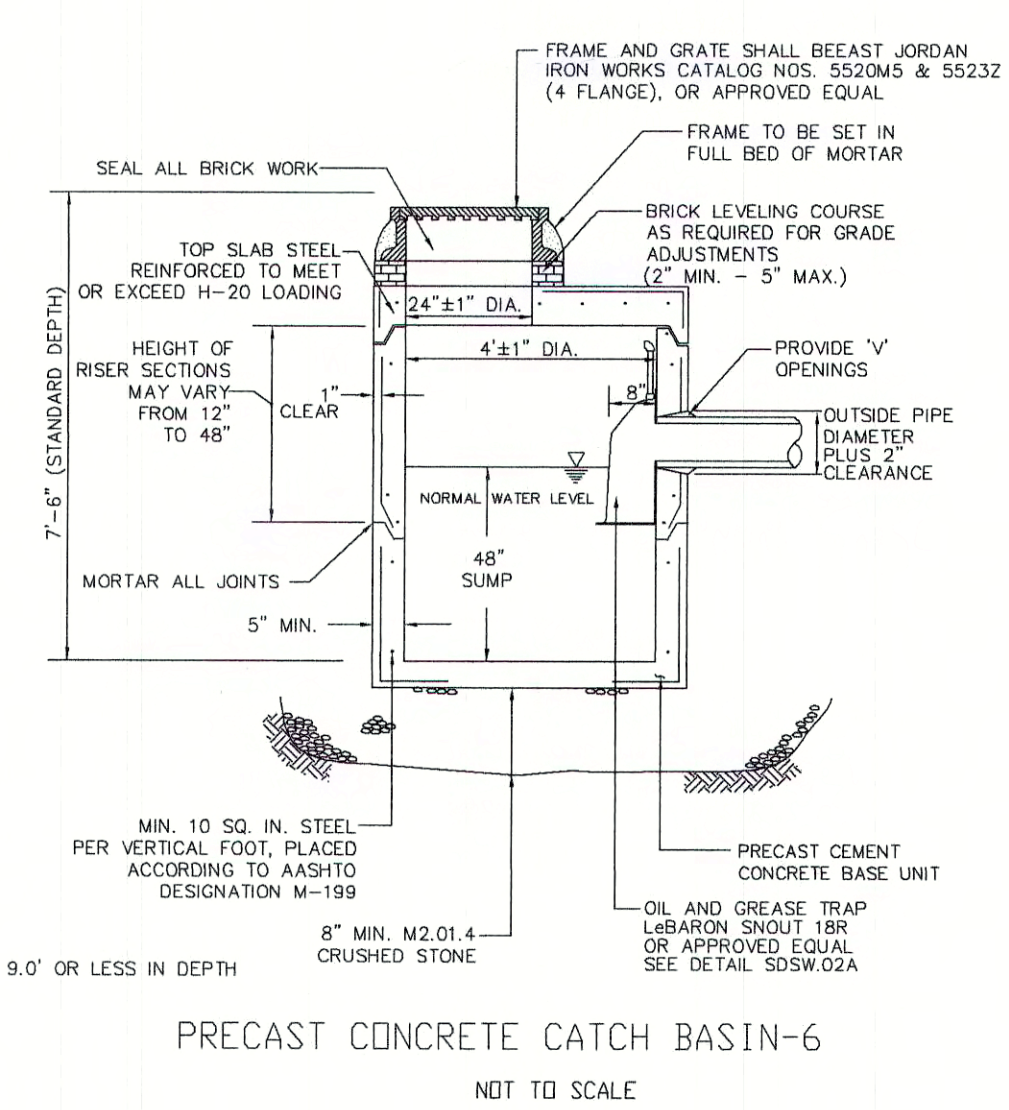
DETECTABLE WARING DETAIL NOT TO SCALE



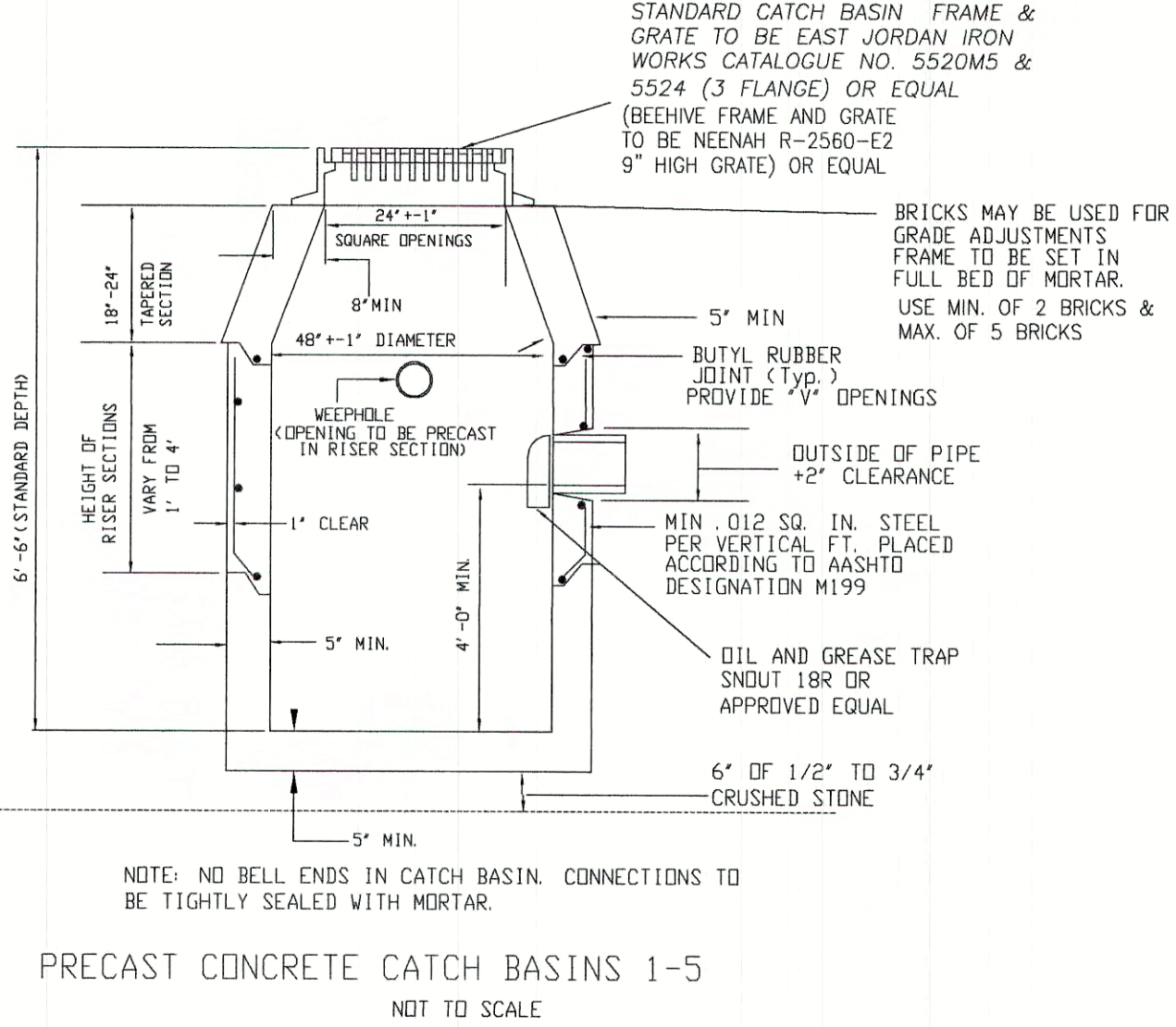
TAPPING SLEEVE AND VALVE DETAILS NOT TO SCALE



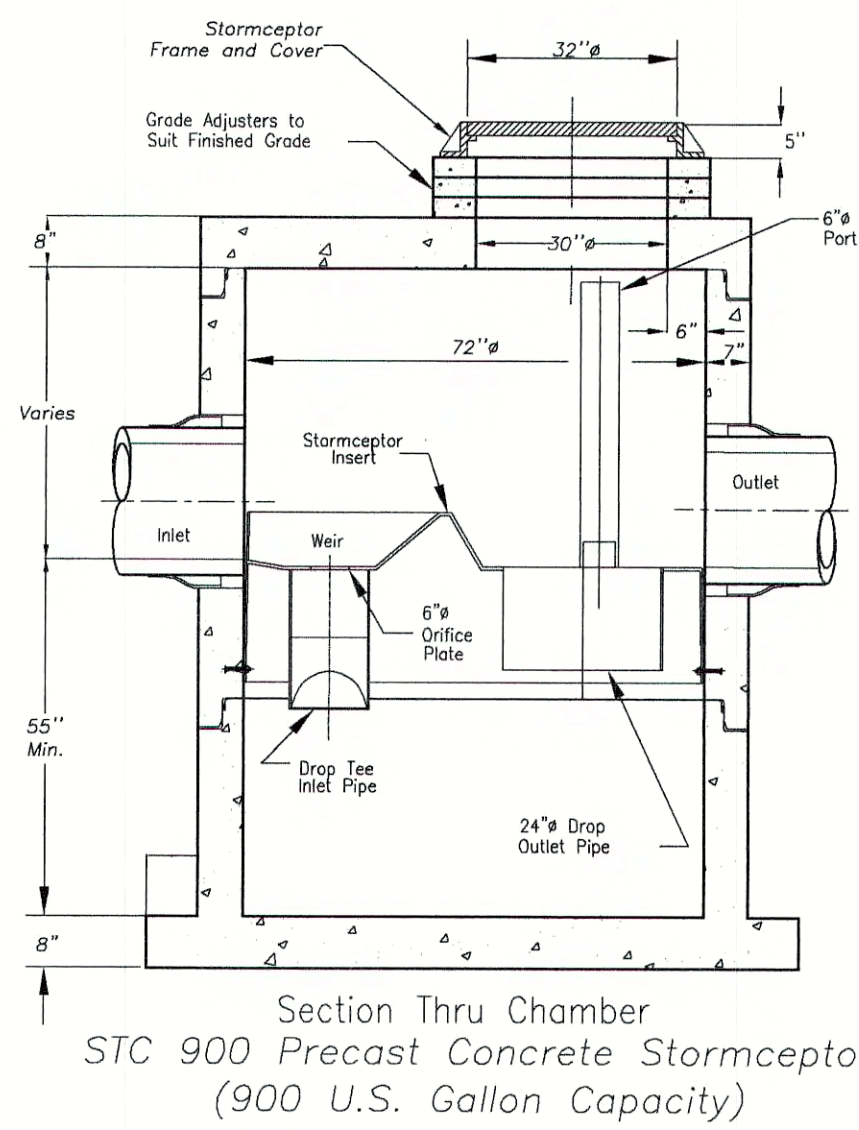
TYPICAL SERVICE CONNECTION NOT TO SCALE



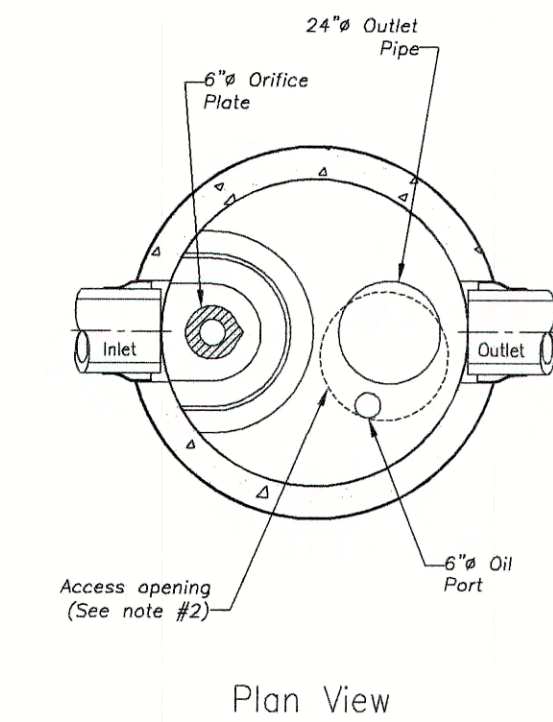
PRECAST CONCRETE CATCH BASIN-6 NOT TO SCALE



PRECAST CONCRETE CATCH BASINS 1-5 NOT TO SCALE

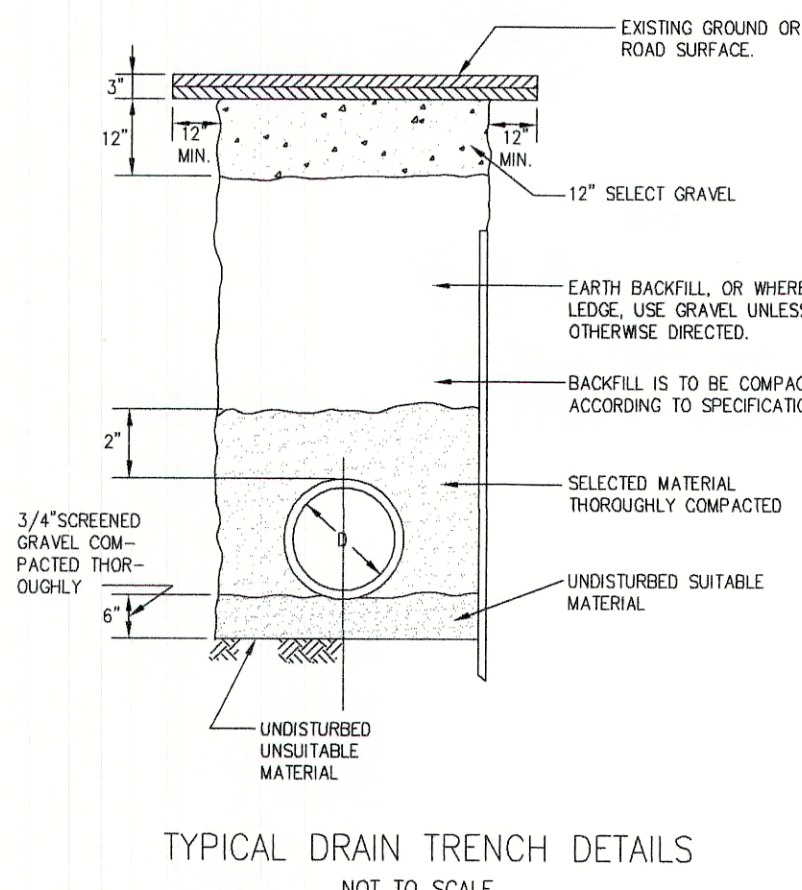


Section Thru Chamber STC 900 Precast Concrete Stormceptor (900 U.S. Gallon Capacity)



- Notes:
1. The Use Of Flexible Connection is Recommended At The Inlet and Outlet Where Applicable.
 2. The Cover Should be Positioned Over The Outlet Drop Pipe and The Oil Port.
 3. The Stormceptor System is protected by one or more of the following U.S. Patents: #4985148, #5498331, #5725760, #5753115, #5849181, #6068765, #6371690.
 4. Contact a Concrete Pipe Division representative for further details not listed on this drawing.

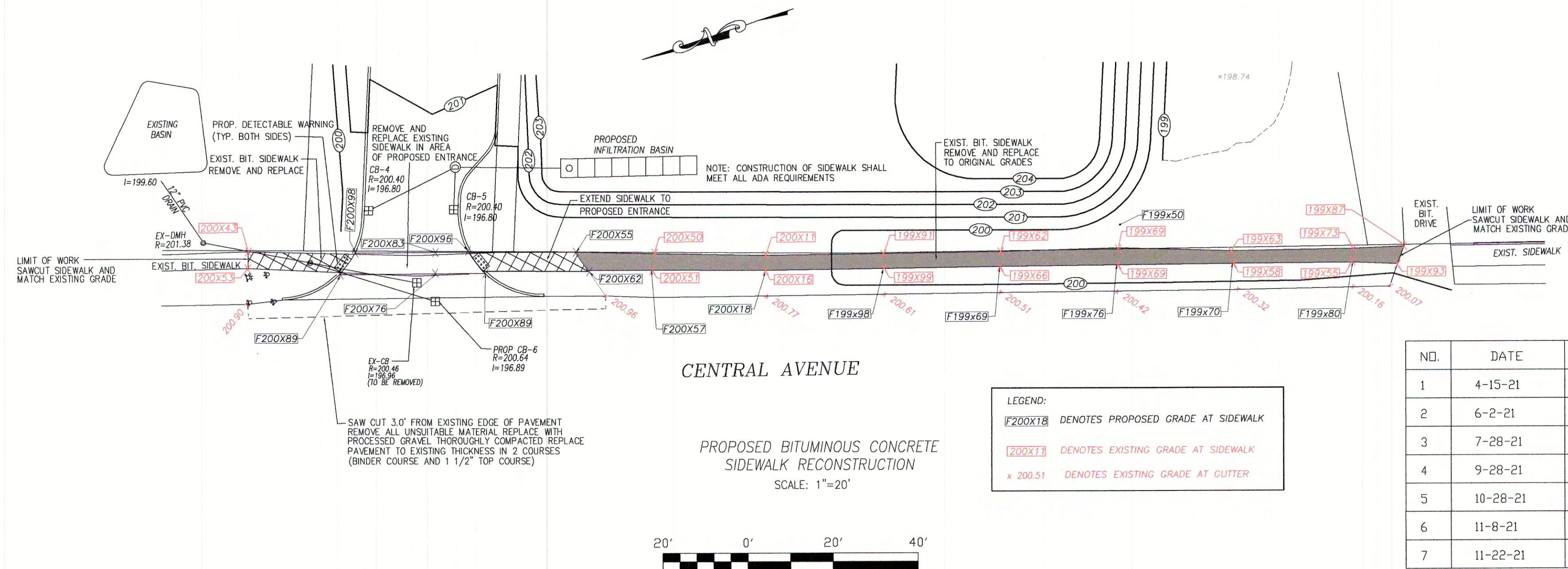
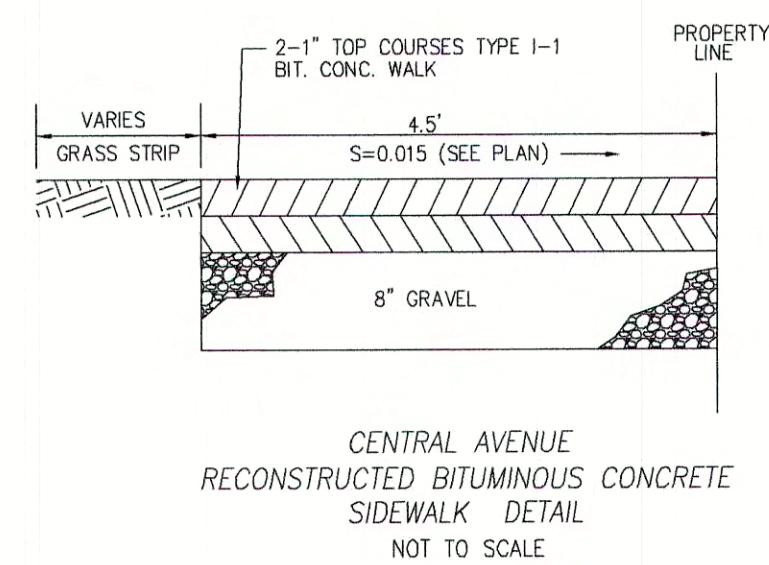
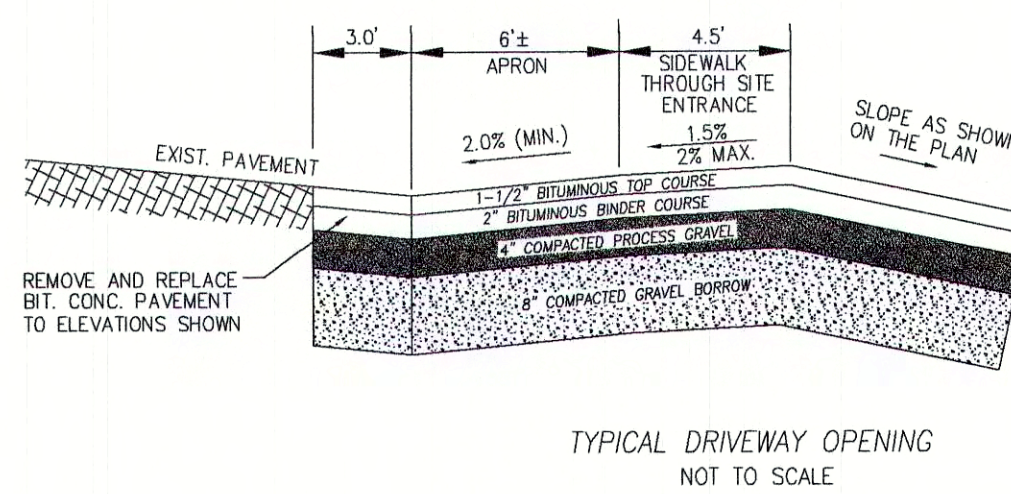
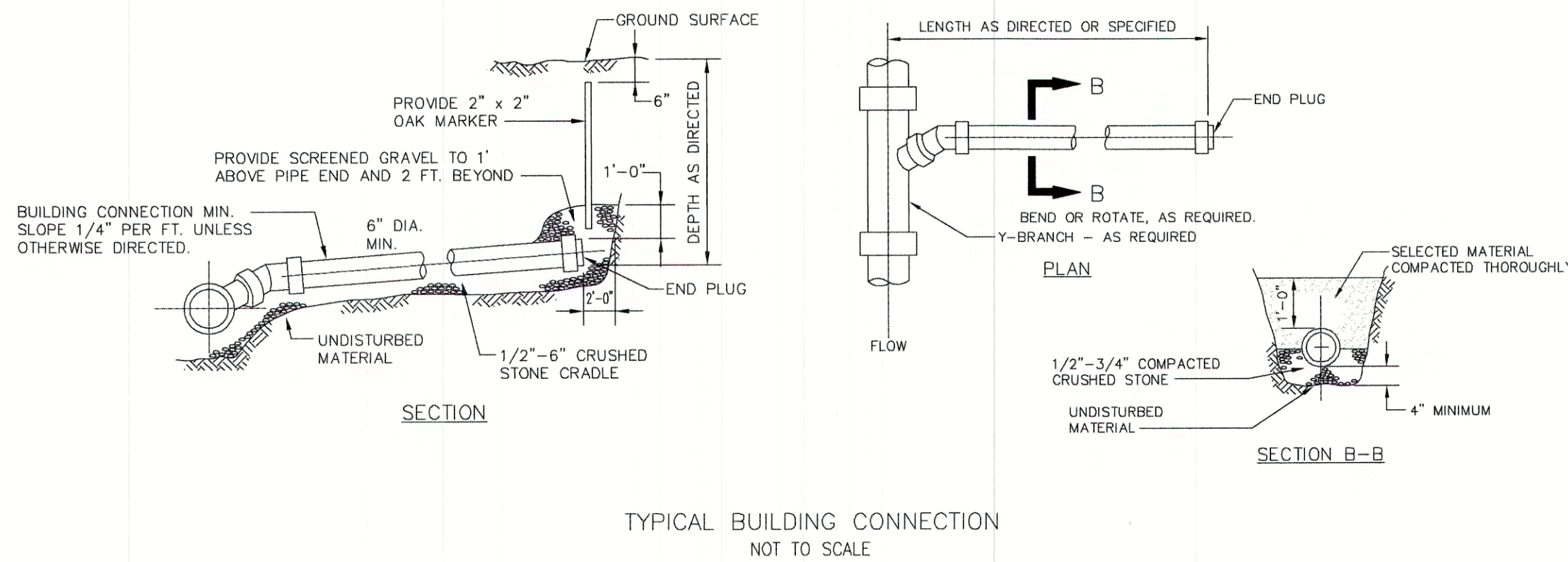
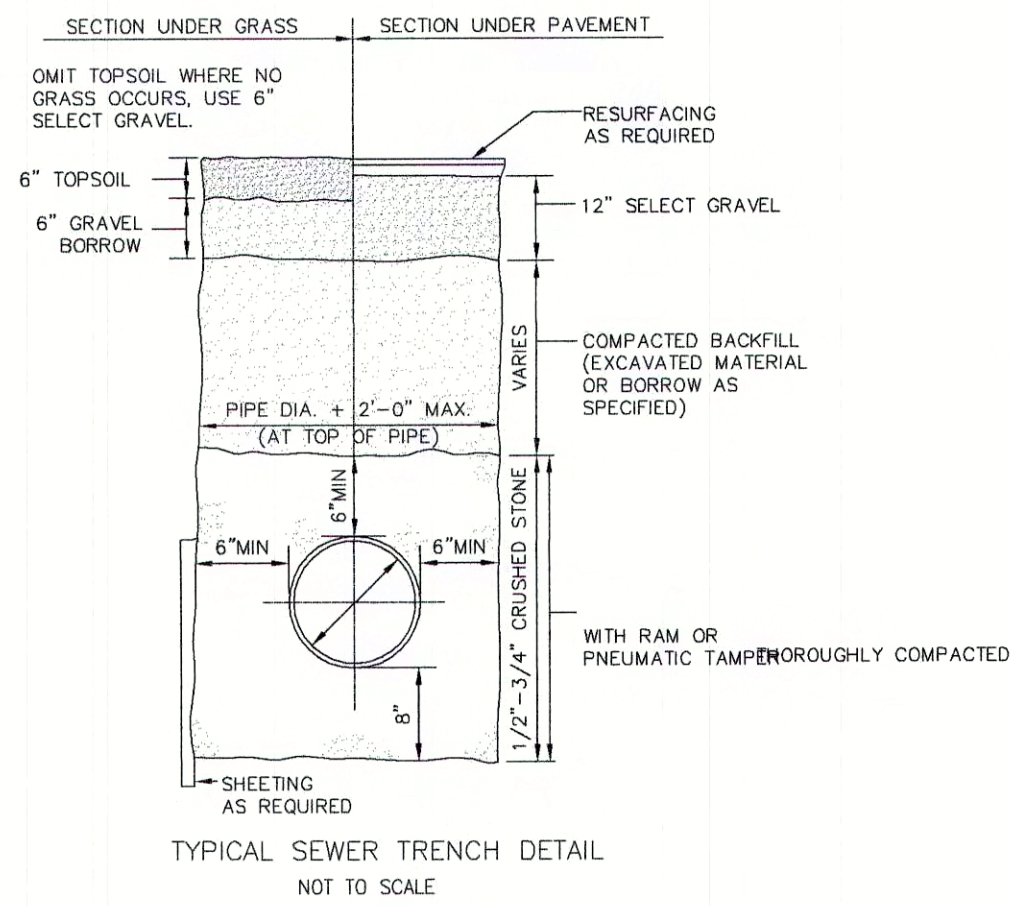
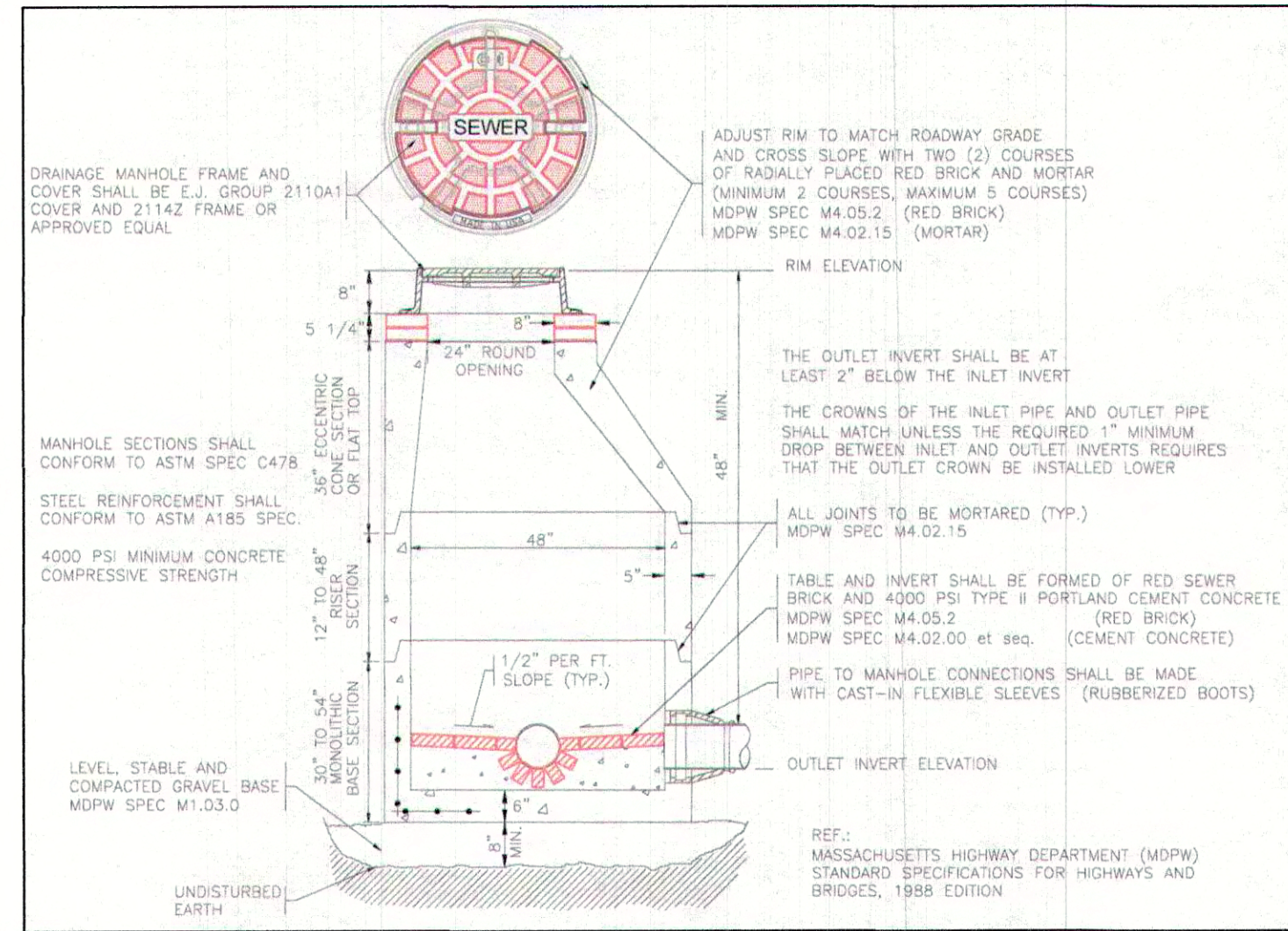
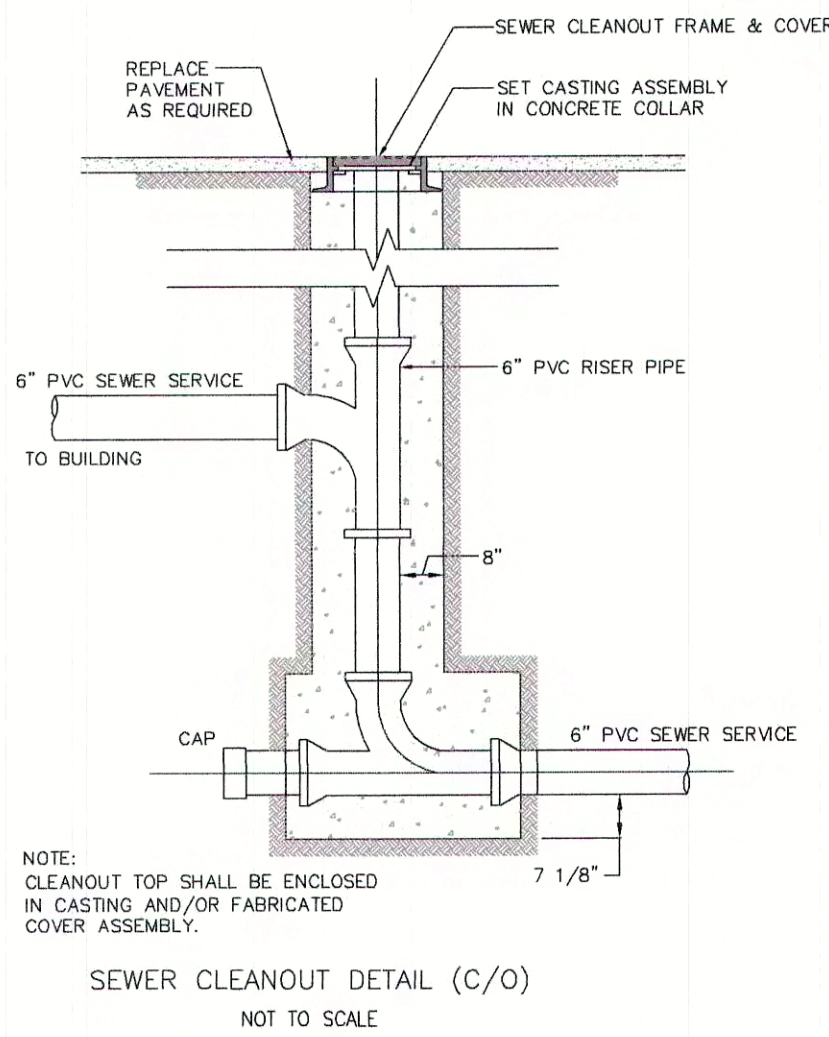
NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS



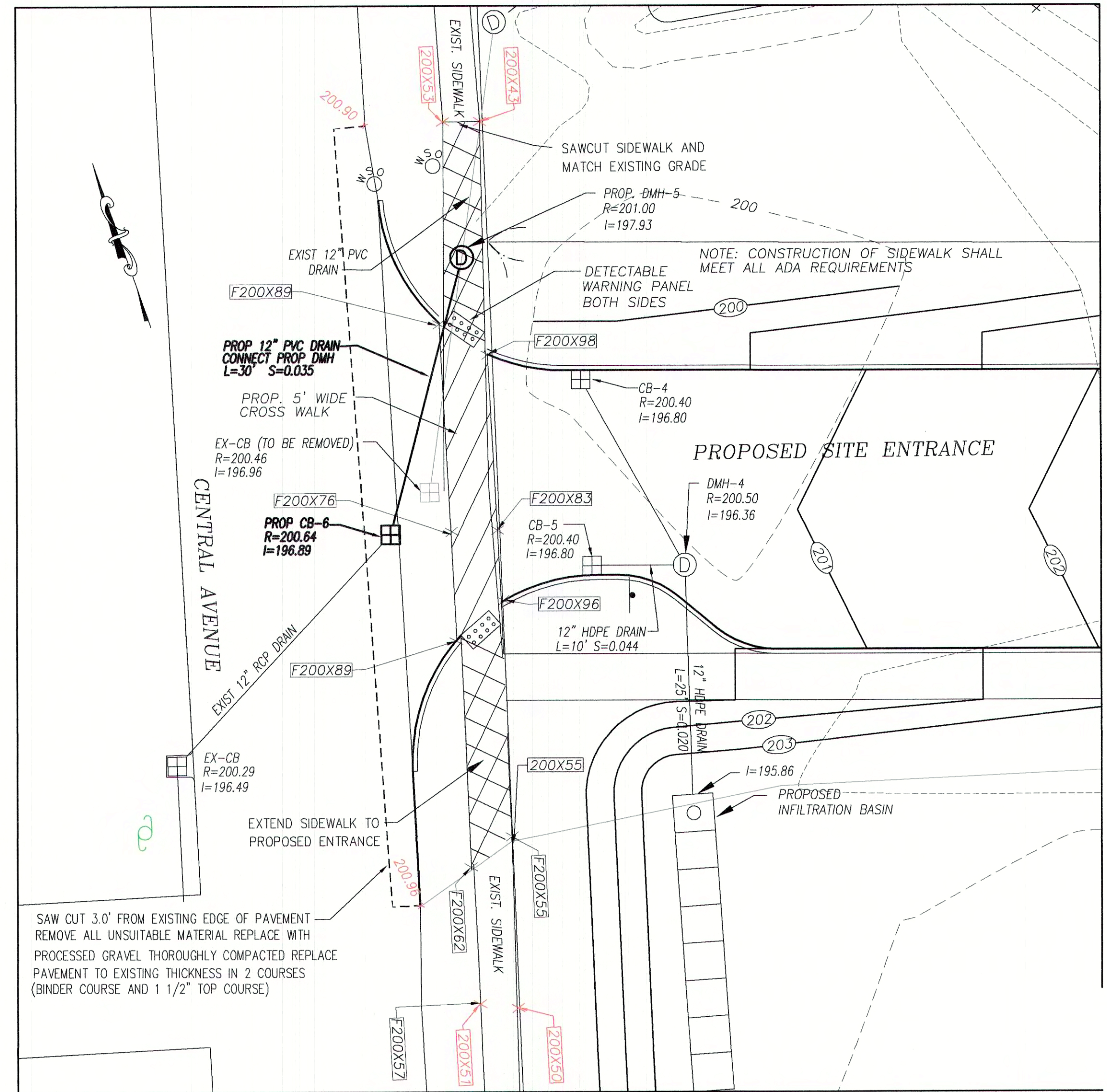
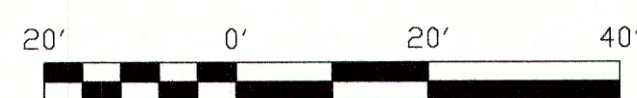
TYPICAL DRAIN TRENCH DETAILS NOT TO SCALE



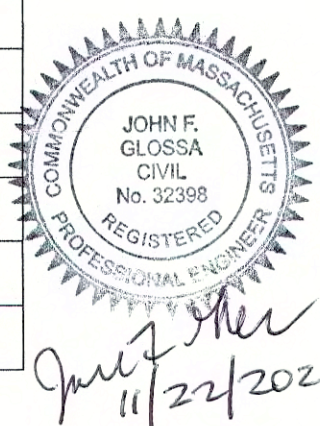
1688 CENTRAL AVENUE
CONSTRUCTION DETAILS
IN
NEEDHAM MA
SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401



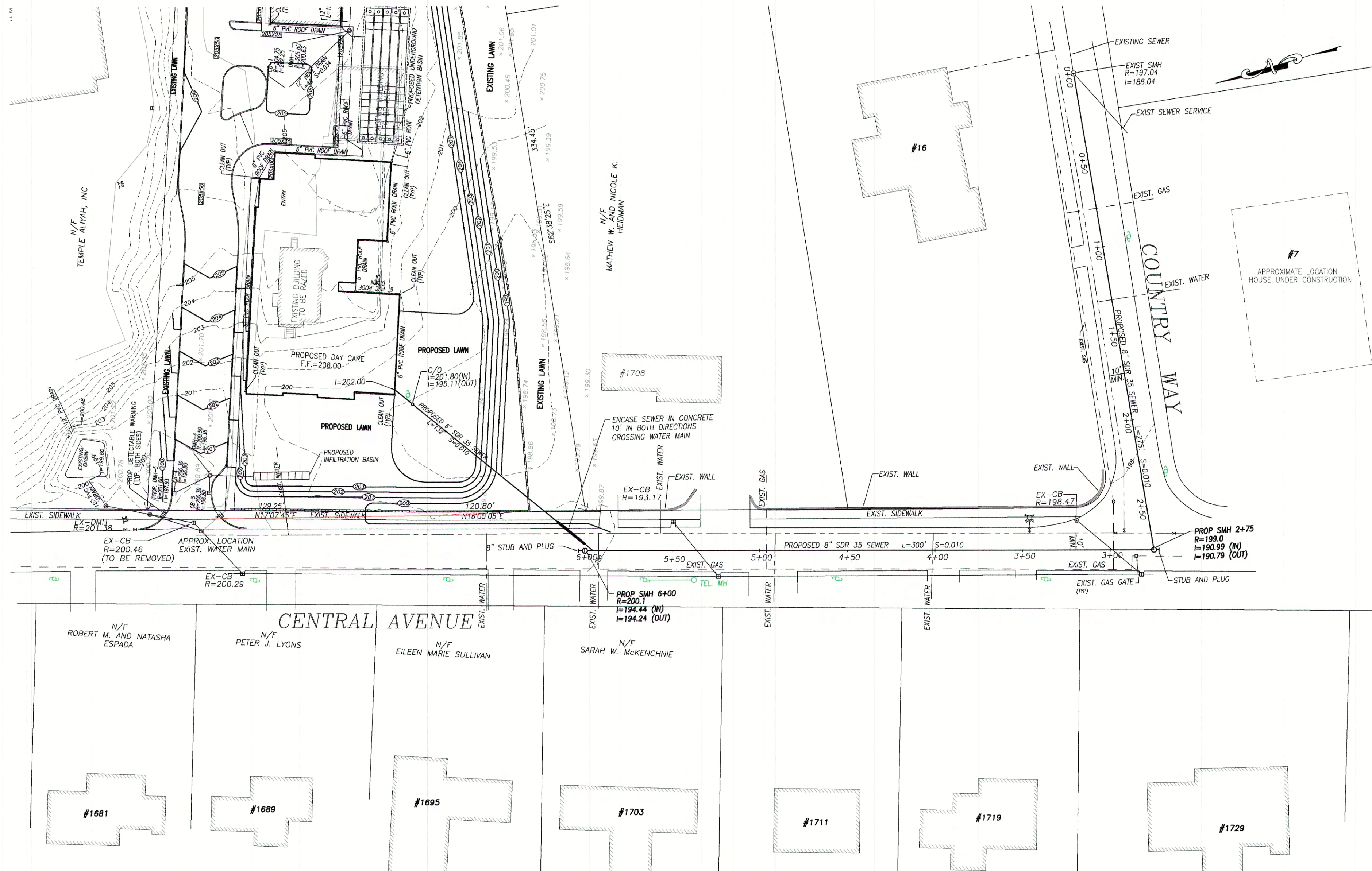
LEGEND:
F200X18 DENOTES PROPOSED GRADE AT SIDEWALK
200X18 DENOTES EXISTING GRADE AT SIDEWALK
x 200.51 DENOTES EXISTING GRADE AT GUTTER



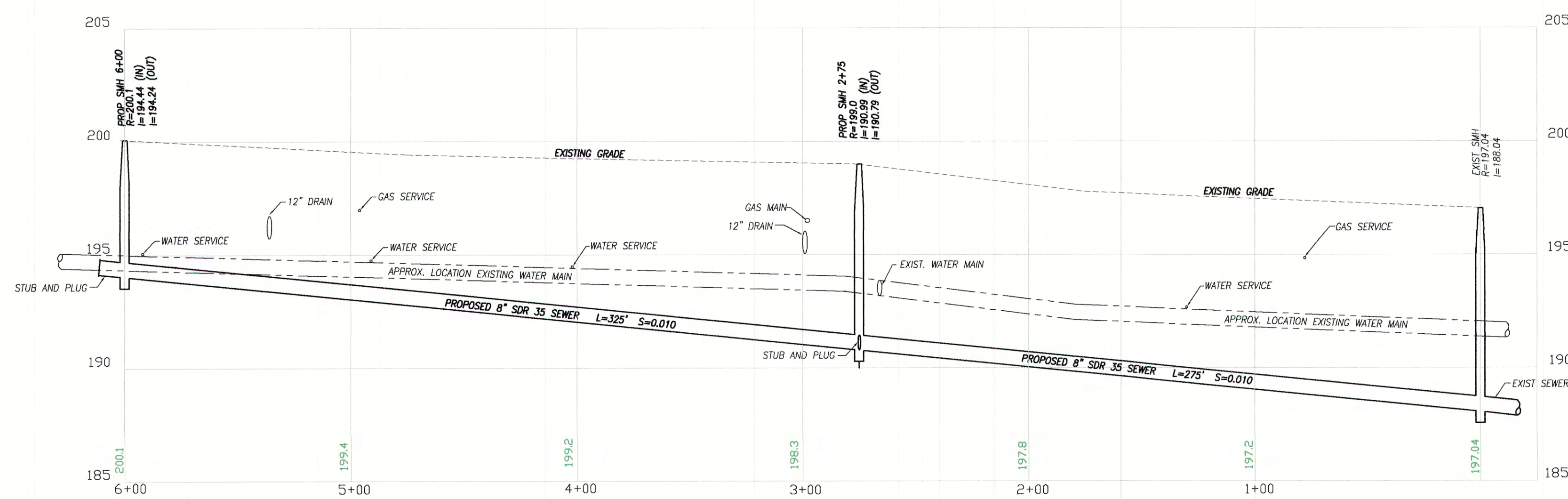
NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS



1688 CENTRAL AVENUE
CONSTRUCTION DETAILS
IN
NEEDHAM MA
SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401



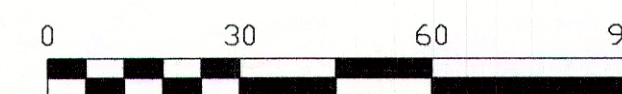
PLAN
SCALE: 1" = 40'



PROFILE
SCALE: HOR. 1" = 40'
VERT. 1" = 4'

NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS

BUILDING CONNECTION PROFILE
SCALE: HOR. 1" = 40'
VERT. 1" = 4'



LEDGEND:

EXISTING GRADE	----- 100-----
EXISTING SPOT GRADE	* 200.02
EXISTING GAS MAIN	-----
EXISTING GAS GATE	==
EXISTING SEWER MANHOLE	○ EXIST. SMH
EXISTING DRAIN MANHOLE	○ EX-DMH
EXISTING CATCH BASIN	⊞ EX-CB
EXISTING ELECTRIC MANHOLE	○ EX-EMH
EXISTING UTILITY POLE	○
EXISTING FENCE	× × × ×
EXISTING FIRE HYDRANT	⊗
EXISTING GATE VALE	⊞
PROPOSED GRADE	----- 205-----
PROPOSED SPOT GRADE	* 205.35
PROPOSED SEWER MANHOLE	○ PROP. SMH
PROPOSED CATCH BASIN	⊞ CB-1
PROPOSED DRAIN MANHOLE	○ DMH-1
PROPOSED TAPPING SLEEVE AND VALVE	⊞ PROPOSED 8"x6" TS&V

CONSTRUCTION NOTES

- 1) ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THIS PLAN AND THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN MAY VARY FROM THEIR FIELD LOCATION. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF THE CONSTRUCTION.
- 2) ALL CONSTRUCTION SHALL CONFORM TO THE STANDARDS AND SPECIFICATIONS OF THE TOWN OF NEEDHAM PUBLIC WORKS DEPARTMENT

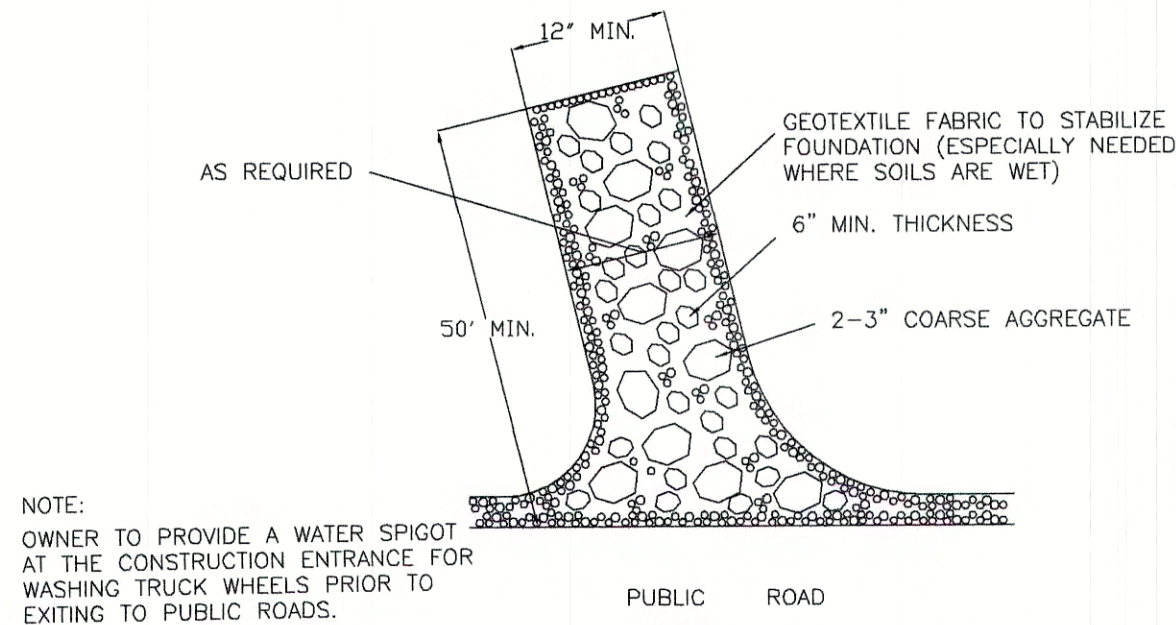


1688 CENTRAL AVENUE
SEWER EXTENSION
PLAN AND PROFILE
IN
NEEDHAM MA

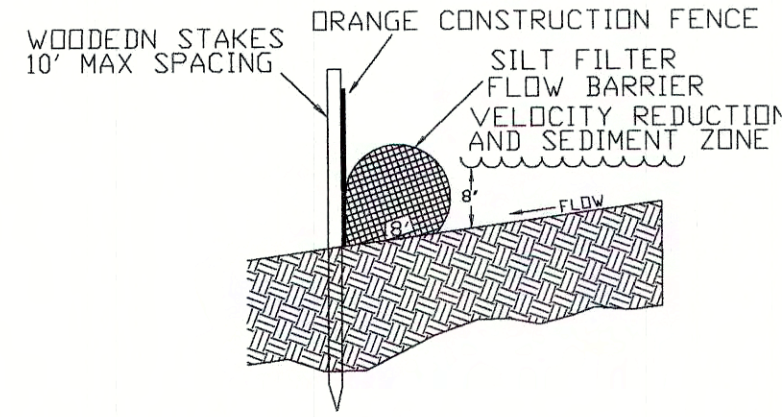
SCALE: AS NOTED NOVEMBER 19, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401

- CONSTRUCTION SEQUENCING:
1. INSTALLATION OF SILT BARRIERS AS SHOWN ON THE PLANS
 2. INSTALLATION OF STABILIZED CONSTRUCTION ENTRANCE
 3. ESTABLISHMENT OF A CONSTRUCTION STAGING AREA
 4. ESTABLISHMENT OF A MATERIALS STOCKPILE AREA
 5. REMOVAL OF EXISTING BUILDINGS
 6. CLEARING AND GRUBBING
 7. REMOVAL AND STOCKPILING OF TOP AND SUBSOILS
 8. REMOVAL OF SAND AND GRAVEL TO BRING SITE TO SUB GRADE
 9. ESTABLISHING AND STABILIZING WITH LOAM AND SEED ALL CUT AND FILL SLOPES
 10. INSTALL BINDER COURSE OF DRIVEWAY IN LOCATION OF FINAL ASPHALT DRIVEWAY
 11. CONSTRUCTION OF THE BUILDING
 12. INSTALLATION OF UNDERGROUND DETENTION BASIN
 13. INSTALLATION OF UNDERGROUND UTILITIES, IE DRAINAGE, WATER LINE, ELECTRIC, CATV AND TELEPHONE
 14. INSTALLATION OF LANDSCAPING AND GRASS AREAS
 15. FINAL COURSE OF ASPHALT FOR DRIVEWAYS
 16. CLEAN UP AND DEMOBILIZE

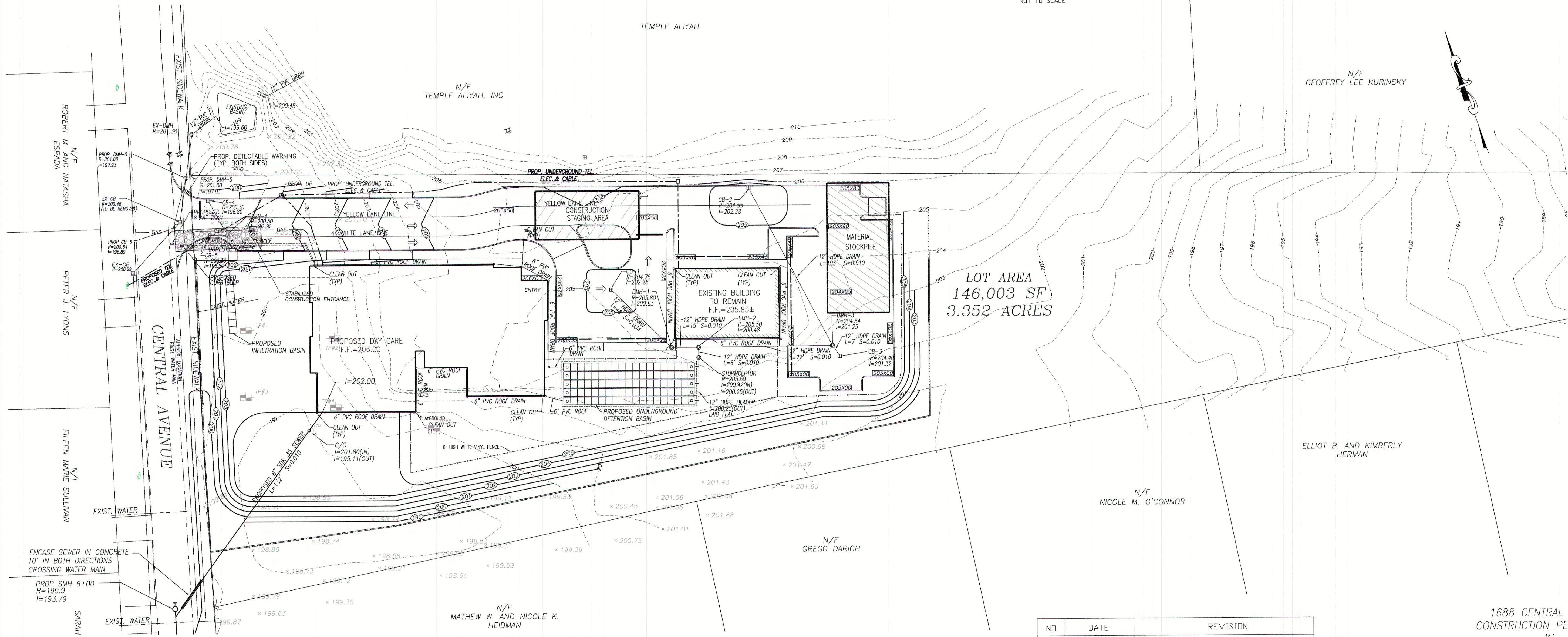
- CONSTRUCTION NOTES:
1. ALL AREAS TO BE ALTERED SHALL BE BROUGHT TO SUB GRADE OR FINAL GRADE AT THE START OF CONSTRUCTION
 2. AREAS ONCE BROUGHT TO GRADE THAT WILL NOT BE ALTERED AGAIN SHALL BE LOAMED AND SEEDED AND PROTECTED WITH STRAW GUARD AS NEEDED
 3. DRAINAGE BASIN AS SHOWN SHALL NOT BECOME OPERATIONAL UNTIL THE SITE IS FINISHED AND SWEEPED OF ALL DEBRIS
 4. TEMPORARY SEDIMENT BASINS SHALL BE USED AND MAINTAINED UNTIL ALL PROPOSED PAVED AREAS ARE COMPLETE AND SWEEPED OF ALL DEBRIS
 5. CATCH BASINS SHALL BE PROTECTED FROM SEDIMENTS AT ALL TIMES UNTIL CONSTRUCTION IS COMPLETE
 6. INSTALL SILT SACKS IN ALL EXISTING AND PROPOSED CATCH BASINS



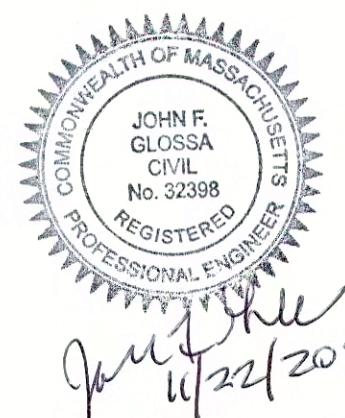
STABILIZED CONSTRUCTION ENTRANCE
NOT TO SCALE



8" COMPOST SOCK DETAIL
NOT TO SCALE

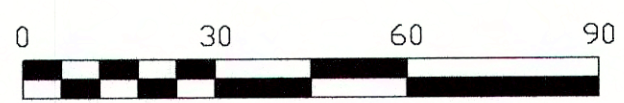


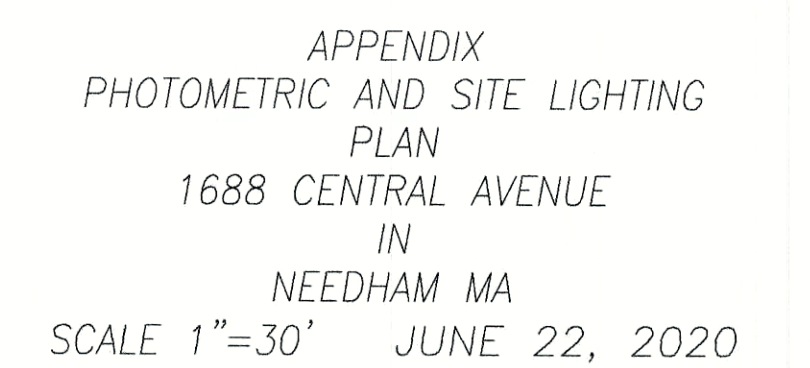
NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS
7	11-22-21	PER TOWN COMMENTS



1688 CENTRAL AVENUE
CONSTRUCTION PERIOD PLAN
IN
NEEDHAM MA

SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401





TECHNICAL MEMORANDUM

To: John Glossa, P.E., Glossa Engineering
Date: October 27, 2021
From: John T. Gillon, P.E.
Re: New Day Care Facility at 1688 Central Avenue Response 3

At your request, I have re-visited the Central Avenue corridor by obtaining new morning and evening peak hour counts at the Central Avenue / Charles River Street intersection. As can be seen on Figure 1, although that intersection is approximately 925 feet from the site access driveway, the southbound Central Avenue STOP LINE is only about 885 feet away. The new peak hour turning movements are provided separately but are provided on Figure 2 of this Memorandum. As detailed on Figure 3, those counts were increased by 30.4% as evidenced by MassDOT Station ID #6161 to identify 2021 roadway network volumes had Covid-19 not occurred. The adjusted 2021 morning and evening peak hour turning movement volumes are shown on Figure 4. These volumes were further inflated by one percent per year over seven years for a total of seven percent to account for normal growth which may occur between 2021 and 2028, our Base analysis year as provided on Figure 5. The site generation traffic volumes based on ITE projections for a 10,034 square-foot facility are provided on Figure 6. The projected peak hour traffic volumes comprised of the 2028 Base-year volumes and the projected site generated traffic volumes are shown on Figure 7.

We have utilized the following signal timing for existing, base and build conditions:

Ø2 = 50 sec split
Ø5 = 20 sec split
Ø6 = 30 sec split
Ø4 & Ø8 = 40 sec split

All Yellow = 3.0 sec, All Red = 2.0 sec.

Synchro 11 software was utilized and the roadway link length between the site and Charles River Street was identified as 885 feet. Both of these nodes were analyzed on the same roadway network. The electronic files will be made available to the Town and their consultant.

Levels of Service

As can be seen on Figure 8, (first two columns) the Central Avenue / Charles River Street intersection currently operates at overall levels of service of "E" during the morning peak hour (7:15 a.m. to 8:15 a.m.) and "D" during the evening peak hour (5:00 p.m. to 6:00 p.m.), assuming roadway network volumes adjusted upwards as described above.

The third and fourth columns in Figure 8 (Base 2028 AM and PM) show level of service projections for this intersection, that are anticipated for 2028 with no development at 1688 Central. These columns project that overall levels of service will worsen somewhat compared to current non-Covid conditions, again, assuming that there is no development at 1688 Central Avenue

The fifth and sixth columns in Figure 8 (entitled Projected Exist. Splits AM and PM) show the projected levels of service in 2028 at this intersection assuming that 1688 Central Ave is developed as Child Care Facility as proposed by the Applicant, but also assuming that no change in the timing of the signalization at the intersection is implemented.

Even if no change in the signal timing is implemented, these columns show that the development of this site as proposed will have essentially no impact on the projected levels of service on Charles River street during peak hours, and will have only a modest impact on Central Avenue Northbound levels of service during those hours. The only significant impact from the development of this site is projected to be on Central Avenue Southbound during the evening peak hour. Again, however, this assumes that no change to the intersection signal timing is made.

The last two columns on Figure 8 show the projected levels of service at this intersection in 2028 if this site is developed as proposed, and if the timing of the signals is optimized from the perspective of the intersection as a whole. As shown in these two columns, if the changed timing used for these calculations were to be implemented, the overall levels of service (and delays) on Central Ave during peak hours would become significantly better, while the delays and levels of service on Charles River Street would become worse.

However, it is not necessary to use this particular timing change in order to meaningfully mitigate the impact of traffic to and from this site on the overall level of service on Central Ave during peak hours. Less significant changes to the timing could be made which would improve traffic flow (and queueing) on Central Ave, without such a substantial impact on Charles River Street. The exact signal timing change decided upon should be based on a combination of traffic engineering and policy decisions as to how to best improve traffic at this intersection in all four directions.

Queueing at the Central Ave/Charles River Street Intersection

The sixth row of data on Figure 8 shows that the 95th percentile queue on Central Avenue southbound during the evening peak hour will increase from 830 feet today (with non-Covid traffic volumes) to 907 feet in 2028 without the proposed development of 1688 Central and 950 feet with the proposed development. Thus, comparing 2028 “build” to “no build” conditions projects an increase in the length of the queue during the evening peak hour of about 43 feet (approximately 2-3 vehicles) if this project is developed as proposed.

However since the length of the queue in 2028 is projected to extend past the site driveway under either “build” or “no build” conditions, a change to the timing of the signals at the intersection is called for. As shown on Figure 8 (last row, last column) if traffic signal timing is optimized for the entire intersection, the southbound queue could shorten from 830 feet today to only 670 feet, which is more than 200 feet south of the site driveway. These distances are summarized below:

Central Ave Evening Peak Hour Queueing from Central Ave/Charles River Intersection on Central Ave Southbound			
Existing	Base 2028 (no build)	Projected 2028	
		Existing Timing	Improved Timing
830 Feet	907 Feet	950 Feet	670 Feet

As noted above, it is not necessary to implement this particular timing change in order to significantly improve the queueing on Central Ave southbound, such that the queue from the intersection will not back up as far as the site driveway. It is clear that even a less substantial change to the signal timing can provide significant mitigation of the queueing from the intersection back towards the site.

Thank you for the opportunity to provide this additional information.

John T. Gillon, P.E.

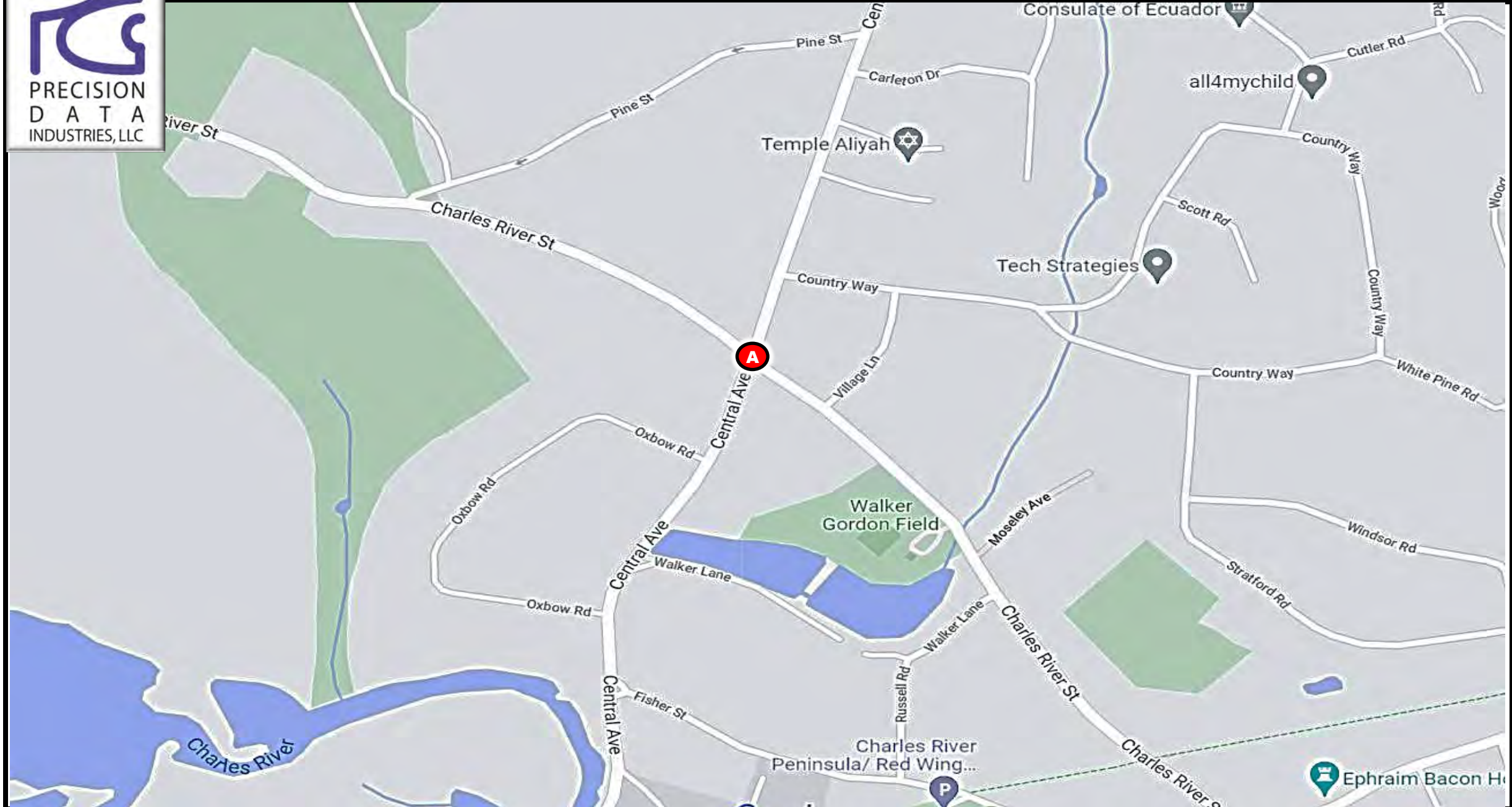


John T. Gillon



Location Map: 218209 Needham, MA

Precision Data Industries, LLC 46 Morton Street, Framingham, MA 01702 ph: 508-875-0100 email: datarequests@pdillc.com



Client: Gillon Associates	Engineer: J. Gillon	Site Code: TBA	Date: Wednesday 10/13/21	PDI Job # 218209	City, State: Needham, MA
------------------------------	------------------------	-------------------	-----------------------------	---------------------	-----------------------------

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Cars and Heavy Vehicles (Combined)

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	3	19	1	0	23	4	14	1	0	19	1	172	10	0	183	5	25	50	0	80	305
7:15 AM	2	31	2	0	35	6	20	2	0	28	1	158	12	0	171	5	35	68	0	108	342
7:30 AM	3	29	6	0	38	3	27	2	0	32	1	162	15	0	178	9	58	51	0	118	366
7:45 AM	3	51	1	0	55	4	33	3	0	40	0	150	25	0	175	9	44	70	0	123	393
Total	11	130	10	0	151	17	94	8	0	119	3	642	62	0	707	28	162	239	0	429	1406
8:00 AM	3	39	2	0	44	4	30	1	0	35	2	139	16	0	157	17	32	64	0	113	349
8:15 AM	4	31	1	0	36	8	34	3	0	45	0	115	20	0	135	8	34	64	0	106	322
8:30 AM	5	47	4	0	56	7	23	4	0	34	1	125	15	0	141	19	27	39	0	85	316
8:45 AM	6	41	5	0	52	5	22	1	0	28	2	106	9	0	117	5	31	46	0	82	279
Total	18	158	12	0	188	24	109	9	0	142	5	485	60	0	550	49	124	213	0	386	1266
Grand Total	29	288	22	0	339	41	203	17	0	261	8	1127	122	0	1257	77	286	452	0	815	2672
Approach %	8.6	85.0	6.5	0.0		15.7	77.8	6.5	0.0		0.6	89.7	9.7	0.0		9.4	35.1	55.5	0.0		
Total %	1.1	10.8	0.8	0.0	12.7	1.5	7.6	0.6	0.0	9.8	0.3	42.2	4.6	0.0	47.0	2.9	10.7	16.9	0.0	30.5	
Exiting Leg Total	1620					316					382					354					2672
Cars	25	276	21	0	322	37	194	16	0	247	8	1079	118	0	1205	74	276	434	0	784	2558
% Cars	86.2	95.8	95.5	0.0	95.0	90.2	95.6	94.1	0.0	94.6	100.0	95.7	96.7	0.0	95.9	96.1	96.5	96.0	0.0	96.2	95.7
Exiting Leg Total	1550					305					366					337					2558
Heavy Vehicles	4	12	1	0	17	4	9	1	0	14	0	48	4	0	52	3	10	18	0	31	114
% Heavy Vehicles	13.8	4.2	4.5	0.0	5.0	9.8	4.4	5.9	0.0	5.4	0.0	4.3	3.3	0.0	4.1	3.9	3.5	4.0	0.0	3.8	4.3
Exiting Leg Total	70					11					16					17					114

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

Sat Peak Analysis from 07:00 AM to 08:00 AM Begins at:																					
7:15 AM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	2	31	2	0	35	6	20	2	0	28	1	158	12	0	171	5	35	68	0	108	342
7:30 AM	3	29	6	0	38	3	27	2	0	32	1	162	15	0	178	9	58	51	0	118	366
7:45 AM	3	51	1	0	55	4	33	3	0	40	0	150	25	0	175	9	44	70	0	123	393
8:00 AM	3	39	2	0	44	4	30	1	0	35	2	139	16	0	157	17	32	64	0	113	349
Total Volume	11	150	11	0	172	17	110	8	0	135	4	609	68	0	681	40	169	253	0	462	1450
% Approach Total	6.4	87.2	6.4	0.0		12.6	81.5	5.9	0.0		0.6	89.4	10.0	0.0		8.7	36.6	54.8	0.0		
PHF	0.917	0.735	0.458	0.000	0.782	0.708	0.833	0.667	0.000	0.844	0.500	0.940	0.680	0.000	0.956	0.588	0.728	0.904	0.000	0.939	0.922
Cars	10	143	10	0	163	16	105	8	0	129	4	581	68	0	653	40	165	241	0	446	1391
Cars %	90.9	95.3	90.9	0.0	94.8	94.1	95.5	100.0	0.0	95.6	100.0	95.4	100.0	0.0	95.9	100.0	97.6	95.3	0.0	96.5	95.9
Heavy Vehicles	1	7	1	0	9	1	5	0	0	6	0	28	0	0	28	0	4	12	0	16	59
Heavy Vehicles %	9.1	4.7	9.1	0.0	5.2	5.9	4.5	0.0	0.0	4.4	0.0	4.6	0.0	0.0	4.1	0.0	2.4	4.7	0.0	3.5	4.1
Cars Enter Leg	10	143	10	0	163	16	105	8	0	129	4	581	68	0	653	40	165	241	0	446	1391
Heavy Enter Leg	1	7	1	0	9	1	5	0	0	6	0	28	0	0	28	0	4	12	0	16	59
Total Entering Leg	11	150	11	0	172	17	110	8	0	135	4	609	68	0	681	40	169	253	0	462	1450
Cars Exiting Leg	838					179					191					183					1391
Heavy Exiting Leg	41					5					7					6					59
Total Exiting Leg	879					184					198					189					1450

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Cars

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	2	18	1	0	21	2	11	1	0	14	1	168	9	0	178	4	25	48	0	77	290
7:15 AM	1	29	2	0	32	6	18	2	0	26	1	154	12	0	167	5	35	60	0	100	325
7:30 AM	3	28	6	0	37	2	27	2	0	31	1	150	15	0	166	9	58	50	0	117	351
7:45 AM	3	50	0	0	53	4	32	3	0	39	0	143	25	0	168	9	42	68	0	119	379
Total	9	125	9	0	143	14	88	8	0	110	3	615	61	0	679	27	160	226	0	413	1345
8:00 AM	3	36	2	0	41	4	28	1	0	33	2	134	16	0	152	17	30	63	0	110	336
8:15 AM	4	30	1	0	35	7	33	2	0	42	0	113	18	0	131	6	32	63	0	101	309
8:30 AM	5	47	4	0	56	7	23	4	0	34	1	118	15	0	134	19	26	36	0	81	305
8:45 AM	4	38	5	0	47	5	22	1	0	28	2	99	8	0	109	5	28	46	0	79	263
Total	16	151	12	0	179	23	106	8	0	137	5	464	57	0	526	47	116	208	0	371	1213
Grand Total	25	276	21	0	322	37	194	16	0	247	8	1079	118	0	1205	74	276	434	0	784	2558
Approach %	7.8	85.7	6.5	0.0		15.0	78.5	6.5	0.0		0.7	89.5	9.8	0.0		9.4	35.2	55.4	0.0		
Total %	1.0	10.8	0.8	0.0	12.6	1.4	7.6	0.6	0.0	9.7	0.3	42.2	4.6	0.0	47.1	2.9	10.8	17.0	0.0	30.6	
Exiting Leg Total	1550					305					366					337					2558

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	1	29	2	0	32	6	18	2	0	26	1	154	12	0	167	5	35	60	0	100	325
7:30 AM	3	28	6	0	37	2	27	2	0	31	1	150	15	0	166	9	58	50	0	117	351
7:45 AM	3	50	0	0	53	4	32	3	0	39	0	143	25	0	168	9	42	68	0	119	379
8:00 AM	3	36	2	0	41	4	28	1	0	33	2	134	16	0	152	17	30	63	0	110	336
Total Volume	10	143	10	0	163	16	105	8	0	129	4	581	68	0	653	40	165	241	0	446	1391
% Approach Total	6.1	87.7	6.1	0.0		12.4	81.4	6.2	0.0		0.6	89.0	10.4	0.0		9.0	37.0	54.0	0.0		
PHF	0.833	0.715	0.417	0.000	0.769	0.667	0.820	0.667	0.000	0.827	0.500	0.943	0.680	0.000	0.972	0.588	0.711	0.886	0.000	0.937	0.918
Entering Leg	10	143	10	0	163	16	105	8	0	129	4	581	68	0	653	40	165	241	0	446	1391
Exiting Leg	838					179					191					183					1391
Total	1001					308					844					629					2782

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**



	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	1	1	0	0	2	2	3	0	0	5	0	4	1	0	5	1	0	2	0	3	15
7:15 AM	1	2	0	0	3	0	2	0	0	2	0	4	0	0	4	0	0	8	0	8	17
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	12	0	0	12	0	0	1	0	1	15
7:45 AM	0	1	1	0	2	0	1	0	0	1	0	7	0	0	7	0	2	2	0	4	14
Total	2	5	1	0	8	3	6	0	0	9	0	27	1	0	28	1	2	13	0	16	61
8:00 AM	0	3	0	0	3	0	2	0	0	2	0	5	0	0	5	0	2	1	0	3	13
8:15 AM	0	1	0	0	1	1	1	1	0	3	0	2	2	0	4	2	2	1	0	5	13
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	7	0	0	7	0	1	3	0	4	11
8:45 AM	2	3	0	0	5	0	0	0	0	0	0	7	1	0	8	0	3	0	0	3	16
Total	2	7	0	0	9	1	3	1	0	5	0	21	3	0	24	2	8	5	0	15	53
Grand Total	4	12	1	0	17	4	9	1	0	14	0	48	4	0	52	3	10	18	0	31	114
Approach %	23.5	70.6	5.9	0.0		28.6	64.3	7.1	0.0		0.0	92.3	7.7	0.0		9.7	32.3	58.1	0.0		
Total %	3.5	10.5	0.9	0.0	14.9	3.5	7.9	0.9	0.0	12.3	0.0	42.1	3.5	0.0	45.6	2.6	8.8	15.8	0.0	27.2	
Exiting Leg Total	70					11					16					17					114
Buses	0	2	0	0	2	3	0	1	0	4	0	2	0	0	2	2	0	4	0	6	14
% Buses	0.0	16.7	0.0	0.0	11.8	75.0	0.0	100.0	0.0	28.6	0.0	4.2	0.0	0.0	3.8	66.7	0.0	22.2	0.0	19.4	12.3
Exiting Leg Total	9					0					5					0					14
Single-Unit Trucks	2	9	1	0	12	1	8	0	0	9	0	43	3	0	46	1	8	10	0	19	86
% Single-Unit	50.0	75.0	100.0	0.0	70.6	25.0	88.9	0.0	0.0	64.3	0.0	89.6	75.0	0.0	88.5	33.3	80.0	55.6	0.0	61.3	75.4
Exiting Leg Total	54					9					10					13					86
Articulated Trucks	2	1	0	0	3	0	1	0	0	1	0	3	1	0	4	0	2	4	0	6	14
% Articulated	50.0	8.3	0.0	0.0	17.6	0.0	11.1	0.0	0.0	7.1	0.0	6.3	25.0	0.0	7.7	0.0	20.0	22.2	0.0	19.4	12.3
Exiting Leg Total	7					2					1					4					14

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	1	1	0	0	2	2	3	0	0	5	0	4	1	0	5	1	0	2	0	3	15
7:15 AM	1	2	0	0	3	0	2	0	0	2	0	4	0	0	4	0	0	8	0	8	17
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	12	0	0	12	0	0	1	0	1	15
7:45 AM	0	1	1	0	2	0	1	0	0	1	0	7	0	0	7	0	2	2	0	4	14
Total Volume	2	5	1	0	8	3	6	0	0	9	0	27	1	0	28	1	2	13	0	16	61
% Approach Total	25.0	62.5	12.5	0.0		33.3	66.7	0.0	0.0		0.0	96.4	3.6	0.0		6.3	12.5	81.3	0.0		
PHF	0.500	0.625	0.250	0.000	0.667	0.375	0.500	0.000	0.000	0.450	0.000	0.563	0.250	0.000	0.583	0.250	0.250	0.406	0.000	0.500	0.897
Buses	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	3	0	4	7
Buses %	0.0	20.0	0.0	0.0	12.5	66.7	0.0	0.0	0.0	22.2	0.0	0.0	0.0	0.0	0.0	100.0	0.0	23.1	0.0	25.0	11.5
Single-Unit Trucks	1	3	1	0	5	1	6	0	0	7	0	25	1	0	26	0	2	8	0	10	48
Single-Unit %	50.0	60.0	100.0	0.0	62.5	33.3	100.0	0.0	0.0	77.8	0.0	92.6	100.0	0.0	92.9	0.0	100.0	61.5	0.0	62.5	78.7
Articulated Trucks	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	6
Articulated %	50.0	20.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	0.0	7.4	0.0	0.0	7.1	0.0	0.0	15.4	0.0	12.5	9.8
Buses	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	3	0	4	7
Single-Unit Trucks	1	3	1	0	5	1	6	0	0	7	0	25	1	0	26	0	2	8	0	10	48
Articulated Trucks	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	6
Total Entering Leg	2	5	1	0	8	3	6	0	0	9	0	27	1	0	28	1	2	13	0	16	61
Buses	5					0					2					0					7
Single-Unit Trucks	34					3					3					8					48
Articulated Trucks	4					0					1					1					6
Total Exiting Leg	43					3					6					9					61

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Buses

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	1	0	2	5
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	3	0	4	7
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	1	0	1	0	2	0	1	0	0	1	1	0	0	0	1	4
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
8:45 AM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	1	0	1	0	2	0	2	0	0	2	1	0	1	0	2	7
Grand Total	0	2	0	0	2	3	0	1	0	4	0	2	0	0	2	2	0	4	0	6	14
Approach %	0.0	100.0	0.0	0.0		75.0	0.0	25.0	0.0		0.0	100.0	0.0	0.0		33.3	0.0	66.7	0.0		
Total %	0.0	14.3	0.0	0.0	14.3	21.4	0.0	7.1	0.0	28.6	0.0	14.3	0.0	0.0	14.3	14.3	0.0	28.6	0.0	42.9	
Exiting Leg Total	9					0					5					0					14

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	1	0	2	5
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
Total Volume	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	3	0	4	7
% Approach Total	0.0	100.0	0.0	0.0		100.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0		25.0	0.0	75.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.250	0.000	0.000	0.000	0.000	0.000	0.250	0.000	0.750	0.000	0.500	0.350
Entering Leg	0	1	0	0	1	2	0	0	0	2	0	0	0	0	0	1	0	3	0	4	7
Exiting Leg	5					0					2					0					7
Total	6					2					2					4					14

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Single-Unit Trucks

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	0	0	0	0	0	0	3	0	0	3	0	4	1	0	5	0	0	1	0	1	9
7:15 AM	1	1	0	0	2	0	2	0	0	2	0	3	0	0	3	0	0	5	0	5	12
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	11	0	0	11	0	0	1	0	1	14
7:45 AM	0	1	1	0	2	0	1	0	0	1	0	7	0	0	7	0	2	1	0	3	13
Total	1	3	1	0	5	1	6	0	0	7	0	25	1	0	26	0	2	8	0	10	48
8:00 AM	0	3	0	0	3	0	2	0	0	2	0	5	0	0	5	0	0	1	0	1	11
8:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	1	0	2	1	2	0	0	3	6
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	5	0	0	5	0	1	1	0	2	7
8:45 AM	1	2	0	0	3	0	0	0	0	0	0	7	1	0	8	0	3	0	0	3	14
Total	1	6	0	0	7	0	2	0	0	2	0	18	2	0	20	1	6	2	0	9	38
Grand Total	2	9	1	0	12	1	8	0	0	9	0	43	3	0	46	1	8	10	0	19	86
Approach %	16.7	75.0	8.3	0.0		11.1	88.9	0.0	0.0		0.0	93.5	6.5	0.0		5.3	42.1	52.6	0.0		
Total %	2.3	10.5	1.2	0.0	14.0	1.2	9.3	0.0	0.0	10.5	0.0	50.0	3.5	0.0	53.5	1.2	9.3	11.6	0.0	22.1	
Exiting Leg Total	54					9					10					13					86

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:15 AM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:15 AM	1	1	0	0	2	0	2	0	0	2	0	3	0	0	3	0	0	5	0	5	12
7:30 AM	0	1	0	0	1	1	0	0	0	1	0	11	0	0	11	0	0	1	0	1	14
7:45 AM	0	1	1	0	2	0	1	0	0	1	0	7	0	0	7	0	2	1	0	3	13
8:00 AM	0	3	0	0	3	0	2	0	0	2	0	5	0	0	5	0	0	1	0	1	11
Total Volume	1	6	1	0	8	1	5	0	0	6	0	26	0	0	26	0	2	8	0	10	50
% Approach Total	12.5	75.0	12.5	0.0		16.7	83.3	0.0	0.0		0.0	100.0	0.0	0.0		0.0	20.0	80.0	0.0		
PHF	0.250	0.500	0.250	0.000	0.667	0.250	0.625	0.000	0.000	0.750	0.000	0.591	0.000	0.000	0.591	0.000	0.250	0.400	0.000	0.500	0.893
Entering Leg	1	6	1	0	8	1	5	0	0	6	0	26	0	0	26	0	2	8	0	10	50
Exiting Leg	35					3					6					6					50
Total	43					9					32					16					100

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Articulated Trucks

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
7:00 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	2	0	2	4
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	1	0	0	2	0	0	0	0	0	0	2	0	0	2	0	0	2	0	2	6
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	1	0	1	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
8:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	1	0	0	0	1	0	1	0	0	1	0	1	1	0	2	0	2	2	0	4	8
Grand Total	2	1	0	0	3	0	1	0	0	1	0	3	1	0	4	0	2	4	0	6	14
Approach %	66.7	33.3	0.0	0.0		0.0	100.0	0.0	0.0		0.0	75.0	25.0	0.0		0.0	33.3	66.7	0.0		
Total %	14.3	7.1	0.0	0.0	21.4	0.0	7.1	0.0	0.0	7.1	0.0	21.4	7.1	0.0	28.6	0.0	14.3	28.6	0.0	42.9	
Exiting Leg Total	7					2					1					4					14

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

8:00 AM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Total
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	2
8:15 AM	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	0	0	1	0	1	3
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	1	0	1	2
8:45 AM	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total Volume	1	0	0	0	1	0	1	0	0	1	0	1	1	0	2	0	2	2	0	4	8
% Approach Total	100.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	50.0	50.0	0.0		0.0	50.0	50.0	0.0		
PHF	0.250	0.000	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.250	0.000	0.500	0.000	0.250	0.500	0.000	0.500	0.667
Entering Leg	1	0	0	0	1	0	1	0	0	1	0	1	1	0	2	0	2	2	0	4	8
Exiting Leg					3					2					0					3	8
Total					4					3					2					7	16

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**



Bicycles (on Roadway and Crosswalks)

	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	1
7:15 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	3
7:30 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	
7:45 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Total	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	3	7
8:00 AM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:15 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
8:30 AM	0	0	1	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1	3
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	1
Total	0	1	1	0	0	0	2	0	1	1	0	0	0	2	0	0	0	0	0	0	0	0	2	0	0	0	0	2	6
Grand Total	0	5	1	0	0	0	6	0	1	1	0	0	0	2	0	0	0	0	0	0	0	1	4	0	0	0	0	5	13
Approach %	0.0	83.3	16.7	0.0	0.0	0.0		0.0	50.0	50.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0		20.0	80.0	0.0	0.0	0.0	0.0		
Total %	0.0	38.5	7.7	0.0	0.0	0.0	46.2	0.0	7.7	7.7	0.0	0.0	0.0	15.4	0.0	0.0	0.0	0.0	0.0	0.0	0.0	7.7	30.8	0.0	0.0	0.0	0.0	38.5	
Exiting Leg Total	0							5							7							1							13

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	1
7:15 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	0	0	0	2	
7:30 AM	0	2	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
7:45 AM	0	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	
Total Volume	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	3	
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	33.3	66.7	0.0	0.0	0.0	0.0		
PHF	0.000	0.500	0.000	0.000	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.000	0.000	0.000	0.000	0.375	
Entering Leg	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	2	0	0	0	0	3	
Exiting Leg	0							2							5							0							
Total	4							2							5							3							

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **7:00 AM**
 End Time: **9:00 AM**
 Class:



Pedestrians

	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
8:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
8:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
8:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	1	1	2
Approach %	0	0	0	0	0	0	0	0	0	0	0	0	100	100	0	0	0	0	0	0	0	0	0	0	0	0	100	100	
Total %	0	0	0	0	0	0	0	0	0	0	0	0	50	50	0	0	0	0	0	0	0	0	0	0	0	0	50	50	
Exiting Leg Total	0							1							0							1							2

Peak Hour Analysis from 07:00 AM to 09:00 AM begins at:

7:00 AM	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
7:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1
7:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	100.0	100.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250		0.250
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	1	1	1
Exiting Leg	0							0							0							1							1
Total	0							0							0							2							2

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Cars and Heavy Vehicles (Combined)

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	5	164	4	0	173	1	38	2	0	41	0	44	5	0	49	15	36	22	0	73	336
4:15 PM	4	134	6	0	144	8	47	3	0	58	4	46	15	0	65	18	38	22	0	78	345
4:30 PM	5	133	19	0	157	2	37	3	0	42	1	57	13	0	71	9	29	22	0	60	330
4:45 PM	10	145	5	0	160	7	32	3	0	42	1	41	16	0	58	9	32	28	0	69	329
Total	24	576	34	0	634	18	154	11	0	183	6	188	49	0	243	51	135	94	0	280	1340
5:00 PM	8	148	5	0	161	2	20	5	0	27	0	50	4	0	54	12	36	22	0	70	312
5:15 PM	4	158	3	0	165	2	41	0	0	43	1	57	5	0	63	14	40	24	0	78	349
5:30 PM	6	141	6	0	153	10	45	7	0	62	1	55	11	0	67	13	26	33	0	72	354
5:45 PM	7	151	5	0	163	13	35	1	0	49	0	55	13	0	68	14	34	25	0	73	353
Total	25	598	19	0	642	27	141	13	0	181	2	217	33	0	252	53	136	104	0	293	1368
Grand Total	49	1174	53	0	1276	45	295	24	0	364	8	405	82	0	495	104	271	198	0	573	2708
Approach %	3.8	92.0	4.2	0.0		12.4	81.0	6.6	0.0		1.6	81.8	16.6	0.0		18.2	47.3	34.6	0.0		
Total %	1.8	43.4	2.0	0.0	47.1	1.7	10.9	0.9	0.0	13.4	0.3	15.0	3.0	0.0	18.3	3.8	10.0	7.3	0.0	21.2	
Exiting Leg Total	648					332					1302					426					2708
Cars	48	1154	52	0	1254	43	287	23	0	353	8	396	81	0	485	99	266	196	0	561	2653
% Cars	98.0	98.3	98.1	0.0	98.3	95.6	97.3	95.8	0.0	97.0	100.0	97.8	98.8	0.0	98.0	95.2	98.2	99.0	0.0	97.9	98.0
Exiting Leg Total	635					326					1276					416					2653
Heavy Vehicles	1	20	1	0	22	2	8	1	0	11	0	9	1	0	10	5	5	2	0	12	55
% Heavy Vehicles	2.0	1.7	1.9	0.0	1.7	4.4	2.7	4.2	0.0	3.0	0.0	2.2	1.2	0.0	2.0	4.8	1.8	1.0	0.0	2.1	2.0
Exiting Leg Total	13					6					26					10					55

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:00 PM	8	148	5	0	161	2	20	5	0	27	0	50	4	0	54	12	36	22	0	70	312
5:15 PM	4	158	3	0	165	2	41	0	0	43	1	57	5	0	63	14	40	24	0	78	349
5:30 PM	6	141	6	0	153	10	45	7	0	62	1	55	11	0	67	13	26	33	0	72	354
5:45 PM	7	151	5	0	163	13	35	1	0	49	0	55	13	0	68	14	34	25	0	73	353
Total Volume	25	598	19	0	642	27	141	13	0	181	2	217	33	0	252	53	136	104	0	293	1368
% Approach Total	3.9	93.1	3.0	0.0		14.9	77.9	7.2	0.0		0.8	86.1	13.1	0.0		18.1	46.4	35.5	0.0		
PHF	0.781	0.946	0.792	0.000	0.973	0.519	0.783	0.464	0.000	0.730	0.500	0.952	0.635	0.000	0.926	0.946	0.850	0.788	0.000	0.939	0.966
Cars	25	591	19	0	635	27	138	13	0	178	2	216	32	0	250	52	134	104	0	290	1353
Cars %	100.0	98.8	100.0	0.0	98.9	100.0	97.9	100.0	0.0	98.3	100.0	99.5	97.0	0.0	99.2	98.1	98.5	100.0	0.0	99.0	98.9
Heavy Vehicles	0	7	0	0	7	0	3	0	0	3	0	1	1	0	2	1	2	0	0	3	15
Heavy Vehicles %	0.0	1.2	0.0	0.0	1.1	0.0	2.1	0.0	0.0	1.7	0.0	0.5	3.0	0.0	0.8	1.9	1.5	0.0	0.0	1.0	1.1
Cars Enter Leg	25	591	19	0	635	27	138	13	0	178	2	216	32	0	250	52	134	104	0	290	1353
Heavy Enter Leg	0	7	0	0	7	0	3	0	0	3	0	1	1	0	2	1	2	0	0	3	15
Total Entering Leg	25	598	19	0	642	27	141	13	0	181	2	217	33	0	252	53	136	104	0	293	1368
Cars Exiting Leg	347					155					656					195					1353
Heavy Exiting Leg	1					2					8					4					15
Total Exiting Leg	348					157					664					199					1368

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Cars

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	5	159	4	0	168	1	35	2	0	38	0	42	5	0	47	15	35	22	0	72	325
4:15 PM	4	131	6	0	141	6	47	3	0	56	4	43	15	0	62	17	37	22	0	76	335
4:30 PM	4	129	18	0	151	2	35	3	0	40	1	54	13	0	68	9	29	22	0	60	319
4:45 PM	10	144	5	0	159	7	32	2	0	41	1	41	16	0	58	6	31	26	0	63	321
Total	23	563	33	0	619	16	149	10	0	175	6	180	49	0	235	47	132	92	0	271	1300
5:00 PM	8	145	5	0	158	2	20	5	0	27	0	50	3	0	53	12	35	22	0	69	307
5:15 PM	4	157	3	0	164	2	40	0	0	42	1	56	5	0	62	14	39	24	0	77	345
5:30 PM	6	139	6	0	151	10	43	7	0	60	1	55	11	0	67	12	26	33	0	71	349
5:45 PM	7	150	5	0	162	13	35	1	0	49	0	55	13	0	68	14	34	25	0	73	352
Total	25	591	19	0	635	27	138	13	0	178	2	216	32	0	250	52	134	104	0	290	1353
Grand Total	48	1154	52	0	1254	43	287	23	0	353	8	396	81	0	485	99	266	196	0	561	2653
Approach %	3.8	92.0	4.1	0.0		12.2	81.3	6.5	0.0		1.6	81.6	16.7	0.0		17.6	47.4	34.9	0.0		
Total %	1.8	43.5	2.0	0.0	47.3	1.6	10.8	0.9	0.0	13.3	0.3	14.9	3.1	0.0	18.3	3.7	10.0	7.4	0.0	21.1	
Exiting Leg Total	635					326					1276					416					2653

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

5:00 PM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
5:00 PM	8	145	5	0	158	2	20	5	0	27	0	50	3	0	53	12	35	22	0	69	307
5:15 PM	4	157	3	0	164	2	40	0	0	42	1	56	5	0	62	14	39	24	0	77	345
5:30 PM	6	139	6	0	151	10	43	7	0	60	1	55	11	0	67	12	26	33	0	71	349
5:45 PM	7	150	5	0	162	13	35	1	0	49	0	55	13	0	68	14	34	25	0	73	352
Total Volume	25	591	19	0	635	27	138	13	0	178	2	216	32	0	250	52	134	104	0	290	1353
% Approach Total	3.9	93.1	3.0	0.0		15.2	77.5	7.3	0.0		0.8	86.4	12.8	0.0		17.9	46.2	35.9	0.0		
PHF	0.781	0.941	0.792	0.000	0.968	0.519	0.802	0.464	0.000	0.742	0.500	0.964	0.615	0.000	0.919	0.929	0.859	0.788	0.000	0.942	0.961
Entering Leg	25	591	19	0	635	27	138	13	0	178	2	216	32	0	250	52	134	104	0	290	1353
Exiting Leg	347					155					656					195					1353
Total	982					333					906					485					2706

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class: **Heavy Vehicles-Combined (Buses, Single-Unit Trucks, Articulated Trucks)**



	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	5	0	0	5	0	3	0	0	3	0	2	0	0	2	0	1	0	0	1	11
4:15 PM	0	3	0	0	3	2	0	0	0	2	0	3	0	0	3	1	1	0	0	2	10
4:30 PM	1	4	1	0	6	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	11
4:45 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	3	1	2	0	6	8
Total	1	13	1	0	15	2	5	1	0	8	0	8	0	0	8	4	3	2	0	9	40
5:00 PM	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	5
5:15 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	4
5:30 PM	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	1	0	0	0	1	5
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	7	0	0	7	0	3	0	0	3	0	1	1	0	2	1	2	0	0	3	15
Grand Total	1	20	1	0	22	2	8	1	0	11	0	9	1	0	10	5	5	2	0	12	55
Approach %	4.5	90.9	4.5	0.0		18.2	72.7	9.1	0.0		0.0	90.0	10.0	0.0		41.7	41.7	16.7	0.0		
Total %	1.8	36.4	1.8	0.0	40.0	3.6	14.5	1.8	0.0	20.0	0.0	16.4	1.8	0.0	18.2	9.1	9.1	3.6	0.0	21.8	
Exiting Leg Total	13					6					26					10					55
Buses	1	2	0	0	3	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	7
% Buses	100.0	10.0	0.0	0.0	13.6	0.0	25.0	0.0	0.0	18.2	0.0	11.1	0.0	0.0	10.0	0.0	20.0	0.0	0.0	8.3	12.7
Exiting Leg Total	1					1					2					3					7
Single-Unit Trucks	0	17	1	0	18	2	4	1	0	7	0	6	1	0	7	5	4	2	0	11	43
% Single-Unit	0.0	85.0	100.0	0.0	81.8	100.0	50.0	100.0	0.0	63.6	0.0	66.7	100.0	0.0	70.0	100.0	80.0	100.0	0.0	91.7	78.2
Exiting Leg Total	10					5					23					5					43
Articulated Trucks	0	1	0	0	1	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	5
% Articulated	0.0	5.0	0.0	0.0	4.5	0.0	25.0	0.0	0.0	18.2	0.0	22.2	0.0	0.0	20.0	0.0	0.0	0.0	0.0	0.0	9.1
Exiting Leg Total	2					0					1					2					5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	5	0	0	5	0	3	0	0	3	0	2	0	0	2	0	1	0	0	1	11
4:15 PM	0	3	0	0	3	2	0	0	0	2	0	3	0	0	3	1	1	0	0	2	10
4:30 PM	1	4	1	0	6	0	2	0	0	2	0	3	0	0	3	0	0	0	0	0	11
4:45 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	3	1	2	0	6	8
Total Volume	1	13	1	0	15	2	5	1	0	8	0	8	0	0	8	4	3	2	0	9	40
% Approach Total	6.7	86.7	6.7	0.0		25.0	62.5	12.5	0.0		0.0	100.0	0.0	0.0		44.4	33.3	22.2	0.0		
PHF	0.250	0.650	0.250	0.000	0.625	0.250	0.417	0.250	0.000	0.667	0.000	0.667	0.000	0.000	0.667	0.333	0.750	0.250	0.000	0.375	0.909
Buses	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	4
Buses %	100.0	7.7	0.0	0.0	13.3	0.0	20.0	0.0	0.0	12.5	0.0	12.5	0.0	0.0	12.5	0.0	0.0	0.0	0.0	0.0	10.0
Single-Unit Trucks	0	11	1	0	12	2	3	1	0	6	0	5	0	0	5	4	3	2	0	9	32
Single-Unit %	0.0	84.6	100.0	0.0	80.0	100.0	60.0	100.0	0.0	75.0	0.0	62.5	0.0	0.0	62.5	100.0	100.0	100.0	0.0	100.0	80.0
Articulated Trucks	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	4
Articulated %	0.0	7.7	0.0	0.0	6.7	0.0	20.0	0.0	0.0	12.5	0.0	25.0	0.0	0.0	25.0	0.0	0.0	0.0	0.0	0.0	10.0
Buses	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	4
Single-Unit Trucks	0	11	1	0	12	2	3	1	0	6	0	5	0	0	5	4	3	2	0	9	32
Articulated Trucks	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	4
Total Entering Leg	1	13	1	0	15	2	5	1	0	8	0	8	0	0	8	4	3	2	0	9	40
Buses	1					0					1					2					4
Single-Unit Trucks	9					4					16					3					32
Articulated Trucks	2					0					1					1					4
Total Exiting Leg	12					4					18					6					40

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Buses

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
Total	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	3
Grand Total	1	2	0	0	3	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	7
Approach %	33.3	66.7	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
Total %	14.3	28.6	0.0	0.0	42.9	0.0	28.6	0.0	0.0	28.6	0.0	14.3	0.0	0.0	14.3	0.0	14.3	0.0	0.0	14.3	
Exiting Leg Total	1					1					2					3					7

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:30 PM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:30 PM	1	1	0	0	2	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	4
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	2
Total Volume	1	1	0	0	2	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	6
% Approach Total	50.0	50.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		
PHF	0.250	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.500	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.375
Entering Leg	1	1	0	0	2	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	6
Exiting Leg					1					1					1					3	6
Total	3					3					2					4					12

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Single-Unit Trucks

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	4	0	0	4	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	8
4:15 PM	0	3	0	0	3	2	0	0	0	2	0	3	0	0	3	1	1	0	0	2	10
4:30 PM	0	3	1	0	4	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	6
4:45 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	3	1	2	0	6	8
Total	0	11	1	0	12	2	3	1	0	6	0	5	0	0	5	4	3	2	0	9	32
5:00 PM	0	3	0	0	3	0	0	0	0	0	0	0	1	0	1	0	1	0	0	1	5
5:15 PM	0	1	0	0	1	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	2
5:30 PM	0	2	0	0	2	0	1	0	0	1	0	0	0	0	0	1	0	0	0	1	4
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	6	0	0	6	0	1	0	0	1	0	1	1	0	2	1	1	0	0	2	11
Grand Total	0	17	1	0	18	2	4	1	0	7	0	6	1	0	7	5	4	2	0	11	43
Approach %	0.0	94.4	5.6	0.0		28.6	57.1	14.3	0.0		0.0	85.7	14.3	0.0		45.5	36.4	18.2	0.0		
Total %	0.0	39.5	2.3	0.0	41.9	4.7	9.3	2.3	0.0	16.3	0.0	14.0	2.3	0.0	16.3	11.6	9.3	4.7	0.0	25.6	
Exiting Leg Total	10					5					23					5					43

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	4	0	0	4	0	2	0	0	2	0	1	0	0	1	0	1	0	0	1	8
4:15 PM	0	3	0	0	3	2	0	0	0	2	0	3	0	0	3	1	1	0	0	2	10
4:30 PM	0	3	1	0	4	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	6
4:45 PM	0	1	0	0	1	0	0	1	0	1	0	0	0	0	0	3	1	2	0	6	8
Total Volume	0	11	1	0	12	2	3	1	0	6	0	5	0	0	5	4	3	2	0	9	32
% Approach Total	0.0	91.7	8.3	0.0		33.3	50.0	16.7	0.0		0.0	100.0	0.0	0.0		44.4	33.3	22.2	0.0		
PHF	0.000	0.688	0.250	0.000	0.750	0.250	0.375	0.250	0.000	0.750	0.000	0.417	0.000	0.000	0.417	0.333	0.750	0.250	0.000	0.375	0.800
Entering Leg	0	11	1	0	12	2	3	1	0	6	0	5	0	0	5	4	3	2	0	9	32
Exiting Leg	9					4					16					3					32
Total	21					10					21					12					64

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Articulated Trucks

	Central Avenue					Charles River Street					Central Avenue					Charles River Street					Total
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	4
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	1
Grand Total	0	1	0	0	1	0	2	0	0	2	0	2	0	0	2	0	0	0	0	0	5
Approach %	0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
Total %	0.0	20.0	0.0	0.0	20.0	0.0	40.0	0.0	0.0	40.0	0.0	40.0	0.0	0.0	40.0	0.0	0.0	0.0	0.0	0.0	
Exiting Leg Total	2					0					1					2					5

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Central Avenue					Charles River Street					Central Avenue					Charles River Street					
	from North					from East					from South					from West					
	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	Right	Thru	Left	U-Turn	Total	
4:00 PM	0	1	0	0	1	0	1	0	0	1	0	1	0	0	1	0	0	0	0	0	3
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	1	0	0	1	0	0	0	0	0	1
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	4
% Approach Total	0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	100.0	0.0	0.0		0.0	0.0	0.0	0.0		
PHF	0.000	0.250	0.000	0.000	0.250	0.000	0.250	0.000	0.000	0.250	0.000	0.500	0.000	0.000	0.500	0.000	0.000	0.000	0.000	0.000	0.333
Entering Leg	0	1	0	0	1	0	1	0	0	1	0	2	0	0	2	0	0	0	0	0	4
Exiting Leg					2					0		1			1					1	4
Total					3					1					3					1	8

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Bicycles (on Roadway and Crosswalks)

	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total	
	from North							from East							from South							from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	
4:15 PM	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	5	
4:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	0	1	0	0	0	0	0	0	2	
Total	0	4	0	0	0	0	4	0	4	0	0	0	0	4	0	1	0	0	0	0	0	1	2	0	4	0	0	0	6	15
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	4	0	0	0	0	0	0	4	
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	2	2	2	0	0	0	0	0	0	2	0	0	2	0	0	0	2	6
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	1
5:45 PM	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	1	0	0	0	0	0	1	0	2	0	0	0	0	2	4
Total	0	0	0	0	0	0	0	0	0	1	0	0	2	3	2	5	0	0	0	0	0	7	0	2	3	0	0	0	5	15
Grand Total	0	4	0	0	0	0	4	0	4	1	0	0	2	7	2	6	0	0	0	0	8	2	2	7	0	0	0	11	30	
Approach %	0.0	100.0	0.0	0.0	0.0	0.0		0.0	57.1	14.3	0.0	0.0	28.6		25.0	75.0	0.0	0.0	0.0	0.0		18.2	18.2	63.6	0.0	0.0	0.0			
Total %	0.0	13.3	0.0	0.0	0.0	0.0	13.3	0.0	13.3	3.3	0.0	0.0	6.7	23.3	6.7	20.0	0.0	0.0	0.0	0.0	26.7	6.7	6.7	23.3	0.0	0.0	0.0	36.7		
Exiting Leg Total	13							6							7							4							30	

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:15 PM	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total	
	from North							from East							from South							from West								
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total		
4:15 PM	0	4	0	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	3	0	0	0	5	9
4:30 PM	0	0	0	0	0	0	0	0	3	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	
4:45 PM	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	1	0	0	0	0	1	0	0	0	0	0	0	0	2	
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	4	0	0	0	0	0	0	0	4	
Total Volume	0	4	0	0	0	0	4	0	4	0	0	0	0	4	0	5	0	0	0	0	5	2	0	3	0	0	0	5	18	
% Approach Total	0.0	100.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		0.0	100.0	0.0	0.0	0.0	0.0		40.0	0.0	60.0	0.0	0.0	0.0			
PHF	0.000	0.250	0.000	0.000	0.000	0.000	0.250	0.000	0.333	0.000	0.000	0.000	0.000	0.333	0.000	0.313	0.000	0.000	0.000	0.000	0.313	0.250	0.000	0.250	0.000	0.000	0.000	0.250	0.500	
Entering Leg	0	4	0	0	0	0	4	0	4	0	0	0	0	4	0	5	0	0	0	0	5	2	0	3	0	0	0	5	18	
Exiting Leg	8							0							6							4							18	
Total	12							4							11							9							36	

PDI File #: **218209 A**
 Location: **N: Central Avenue S: Central Avenue**
 Location: **E: Charles River Street W: Charles River Street**
 City, State: **Needham, MA**
 Client: **Gillon/J. Gillon**
 Site Code: **TBA**
 Count Date: **Wednesday, October 13, 2021**
 Start Time: **4:00 PM**
 End Time: **6:00 PM**
 Class:



Pedestrians

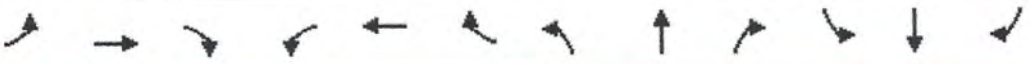
	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
5:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
5:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Grand Total	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Approach %	0	0	0	0	0	0	0	0	0	0	0	66.7	33.3		0	0	0	0	0	0	0	0	0	0	0	0	0		
Total %	0	0	0	0	0	0	0	0	0	0	0	66.7	33.3	100	0	0	0	0	0	0	0	0	0	0	0	0	0		
Exiting Leg Total	0							3							0							0							3

Peak Hour Analysis from 04:00 PM to 06:00 PM begins at:

4:00 PM	Central Avenue							Charles River Street							Central Avenue							Charles River Street							Total
	from North							from East							from South							from West							
	Right	Thru	Left	U-Turn	CW-EB	CW-WB	Total	Right	Thru	Left	U-Turn	CW-SB	CW-NB	Total	Right	Thru	Left	U-Turn	CW-WB	CW-EB	Total	Right	Thru	Left	U-Turn	CW-NB	CW-SB	Total	
4:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
4:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
4:30 PM	0	0	0	0	0	0	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2
4:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
% Approach Total	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.7	33.3		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0		
PHF	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.250	0.250	0.375	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000		0.375
Entering Leg	0	0	0	0	0	0	0	0	0	0	0	2	1	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3
Exiting Leg	0							3							0							0							3
Total	0							6							0							0							6

Needham
Central Ave at Charles River Street

Existing 2021 - Covid Adjusted
Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	330	220	52	10	143	22	88	794	5	14	195	14
Future Volume (vph)	330	220	52	10	143	22	88	794	5	14	195	14
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.983			0.999			0.991	
Flt Protected	0.950				0.997			0.995			0.997	
Satd. Flow (prot)	1652	1845	0	0	1857	0	0	1855	0	0	1873	0
Flt Permitted	0.329				0.968			0.936			0.938	
Satd. Flow (perm)	572	1845	0	0	1803	0	0	1745	0	0	1762	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					8						4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	351	234	55	12	168	26	92	827	5	18	244	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	351	289	0	0	206	0	0	924	0	0	280	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave at Charles River Street

Existing 2021 - Covid Adjusted
Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	50.0		30.0	30.0		40.0	40.0		40.0	40.0	
Total Split (%)	22.2%	55.6%		33.3%	33.3%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	15.0	45.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effect Green (s)	33.6	33.6			13.8			35.1			35.1	
Actuated g/C Ratio	0.43	0.43			0.18			0.45			0.45	
v/c Ratio	0.79	0.37			0.64			1.19			0.36	
Control Delay	30.8	16.7			38.4			121.5			16.7	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	30.8	16.7			38.4			121.5			16.7	
LOS	C	B			D			F			B	
Approach Delay		24.4			38.4			121.5			16.7	
Approach LOS		C			D			F			B	
Queue Length 50th (ft)	121	93			91			~558			86	
Queue Length 95th (ft)	#202	149			147			#856			139	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	450	1058			579			778			788	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.78	0.27			0.36			1.19			0.36	
Intersection Summary												
Area Type:	Other											
Cycle Length: 90												
Actuated Cycle Length: 78.7												
Natural Cycle: 90												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.19												
Intersection Signal Delay: 68.5							Intersection LOS: E					
Intersection Capacity Utilization 111.5%							ICU Level of Service H					
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4:



Needham
Central Ave at Chrls River Street

Existing 2021 - Covid Adjusted
Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	176	69	16	183	35	43	282	3	24	779	32
Future Volume (vph)	135	176	69	16	183	35	43	282	3	24	779	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.980			0.999			0.995	
Flt Protected	0.950				0.997			0.994			0.999	
Satd. Flow (prot)	1652	1820	0	0	1851	0	0	1855	0	0	1882	0
Flt Permitted	0.284				0.964			0.810			0.984	
Satd. Flow (perm)	494	1820	0	0	1790	0	0	1511	0	0	1854	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					10						3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.80	0.80	0.80	0.93	0.93	0.93	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	144	187	73	20	229	44	46	303	3	25	803	33
Shared Lane Traffic (%)												
Lane Group Flow (vph)	144	260	0	0	293	0	0	352	0	0	861	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave at Chrles River Street

Existing 2021 - Covid Adjusted
Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	50.0		30.0	30.0		40.0	40.0		40.0	40.0	
Total Split (%)	22.2%	55.6%		33.3%	33.3%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	15.0	45.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	33.6	33.6			17.2			35.3			35.3	
Actuated g/C Ratio	0.43	0.43			0.22			0.45			0.45	
v/c Ratio	0.38	0.34			0.74			0.52			1.04	
Control Delay	16.7	16.0			39.7			21.2			66.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	16.7	16.0			39.7			21.2			66.5	
LOS	B	B			D			C			E	
Approach Delay		16.2			39.7			21.2			66.5	
Approach LOS		B			D			C			E	
Queue Length 50th (ft)	43	82			130			121			~466	
Queue Length 95th (ft)	77	132			190			248			#830	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	432	1047			578			676			831	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.33	0.25			0.51			0.52			1.04	
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	79											
Natural Cycle:	70											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.04											
Intersection Signal Delay:	43.4					Intersection LOS: D						
Intersection Capacity Utilization	91.5%					ICU Level of Service F						
Analysis Period (min)	15											
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4:



Needham
Central Ave at Charles River Street

BASE 2028
Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	353	235	55	11	153	23	94	849	5	15	208	15
Future Volume (vph)	353	235	55	11	153	23	94	849	5	15	208	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.983			0.999			0.991	
Flt Protected	0.950				0.997			0.995			0.997	
Satd. Flow (prot)	1652	1845	0	0	1858	0	0	1855	0	0	1873	0
Flt Permitted	0.317				0.966			0.932			0.929	
Satd. Flow (perm)	551	1845	0	0	1800	0	0	1738	0	0	1745	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					8						4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	376	250	59	13	180	27	98	884	5	19	260	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	376	309	0	0	220	0	0	987	0	0	298	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave at Charles River Street

BASE 2028
Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	50.0		30.0	30.0		40.0	40.0		40.0	40.0	
Total Split (%)	22.2%	55.6%		33.3%	33.3%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	15.0	45.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag								
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effect Green (s)	34.5	34.5			14.5			35.1			35.1	
Actuated g/C Ratio	0.43	0.43			0.18			0.44			0.44	
v/c Ratio	0.84	0.39			0.66			1.29			0.39	
Control Delay	36.0	16.8			39.0			164.2			17.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	36.0	16.8			39.0			164.2			17.5	
LOS	D	B			D			F			B	
Approach Delay		27.3			39.0			164.2			17.5	
Approach LOS		C			D			F			B	
Queue Length 50th (ft)	132	101			99			~633			94	
Queue Length 95th (ft)	#239	159			156			#948			152	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	446	1045			572			765			771	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.84	0.30			0.38			1.29			0.39	

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 79.6

Natural Cycle: 100

Control Type: Actuated-Uncoordinated

Maximum v/c Ratio: 1.29

Intersection Signal Delay: 88.9

Intersection LOS: F

Intersection Capacity Utilization 117.5%

ICU Level of Service H

Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer.

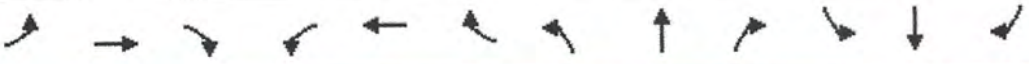
Queue shown is maximum after two cycles.

Splits and Phases: 4:



Needham
Central Ave @ Charles River St

Base 2028
Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	144	188	73	17	195	37	46	301	3	25	833	34
Future Volume (vph)	144	188	73	17	195	37	46	301	3	25	833	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Fr't		0.958			0.980			0.999			0.995	
Flt Protected	0.950				0.997			0.994			0.999	
Satd. Flow (prot)	1652	1820	0	0	1851	0	0	1855	0	0	1882	0
Flt Permitted	0.274				0.963			0.773			0.983	
Satd. Flow (perm)	476	1820	0	0	1788	0	0	1442	0	0	1852	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					10						3	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.80	0.80	0.80	0.93	0.93	0.93	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	153	200	78	21	244	46	49	324	3	26	859	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	153	278	0	0	311	0	0	376	0	0	920	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave @ Charles River St

Base 2028
Evening Peak Hour

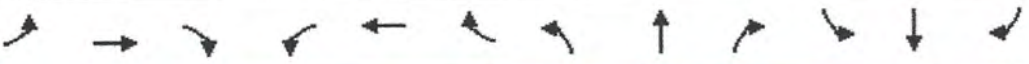
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	50.0		30.0	30.0		40.0	40.0		40.0	40.0	
Total Split (%)	22.2%	55.6%		33.3%	33.3%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	15.0	45.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effect Green (s)	34.6	34.6			17.9			35.3			35.3	
Actuated g/C Ratio	0.43	0.43			0.22			0.44			0.44	
v/c Ratio	0.41	0.35			0.76			0.59			1.12	
Control Delay	16.9	16.1			41.3			23.6			96.6	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	16.9	16.1			41.3			23.6			96.6	
LOS	B	B			D			C			F	
Approach Delay		16.4			41.3			23.6			96.6	
Approach LOS		B			D			C			F	
Queue Length 50th (ft)	46	89			141			139			~548	
Queue Length 95th (ft)	81	142			202			277			#907	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	428	1033			570			636			819	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.36	0.27			0.55			0.59			1.12	
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	80											
Natural Cycle:	80											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.12											
Intersection Signal Delay:	57.7					Intersection LOS: E						
Intersection Capacity Utilization	96.3%					ICU Level of Service F						
Analysis Period (min)	15											
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4:



Needham
Central Ave at Charles River St

Projected/ Existing Splits
Morning Peak Hour

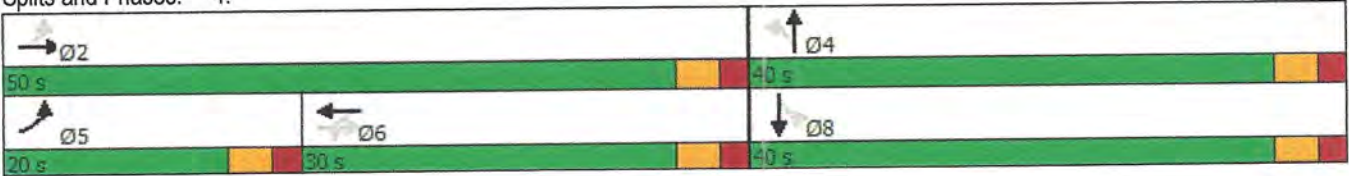
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	235	55	11	153	23	94	857	5	15	215	18
Future Volume (vph)	357	235	55	11	153	23	94	857	5	15	215	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.983			0.999			0.990	
Flt Protected	0.950				0.997			0.995			0.997	
Satd. Flow (prot)	1652	1845	0	0	1858	0	0	1855	0	0	1871	0
Flt Permitted	0.317				0.966			0.930			0.930	
Satd. Flow (perm)	551	1845	0	0	1800	0	0	1734	0	0	1745	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					8						5	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	380	250	59	13	180	27	98	893	5	19	269	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	380	309	0	0	220	0	0	996	0	0	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave at Charles River St

Projected/ Existing Splits
Morning Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	50.0		30.0	30.0		40.0	40.0		40.0	40.0	
Total Split (%)	22.2%	55.6%		33.3%	33.3%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	15.0	45.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	34.5	34.5			14.5			35.1			35.1	
Actuated g/C Ratio	0.43	0.43			0.18			0.44			0.44	
v/c Ratio	0.85	0.39			0.66			1.30			0.40	
Control Delay	36.9	16.8			39.0			170.4			17.7	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	36.9	16.8			39.0			170.4			17.7	
LOS	D	B			D			F			B	
Approach Delay		27.9			39.0			170.4			17.7	
Approach LOS		C			D			F			B	
Queue Length 50th (ft)	134	101			99			~643			99	
Queue Length 95th (ft)	#244	159			156			#959			159	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	446	1044			572			764			771	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.85	0.30			0.38			1.30			0.40	
Intersection Summary												
Area Type: Other												
Cycle Length: 90												
Actuated Cycle Length: 79.6												
Natural Cycle: 120												
Control Type: Actuated-Uncoordinated												
Maximum v/c Ratio: 1.30												
Intersection Signal Delay: 91.6						Intersection LOS: F						
Intersection Capacity Utilization 118.7%						ICU Level of Service H						
Analysis Period (min) 15												
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4:



Needham
Central Ave. @ Charles River St.

Projected / Existing Splits
Evening Peak Hour

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	188	73	17	195	37	46	309	3	25	842	57
Future Volume (vph)	147	188	73	17	195	37	46	309	3	25	842	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.980			0.999			0.992	
Flt Protected	0.950				0.997			0.994			0.999	
Satd. Flow (prot)	1652	1820	0	0	1851	0	0	1855	0	0	1877	0
Flt Permitted	0.271				0.963			0.764			0.983	
Satd. Flow (perm)	471	1820	0	0	1788	0	0	1425	0	0	1847	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					10						4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.80	0.80	0.80	0.93	0.93	0.93	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	156	200	78	21	244	46	49	332	3	26	868	59
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	278	0	0	311	0	0	384	0	0	953	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

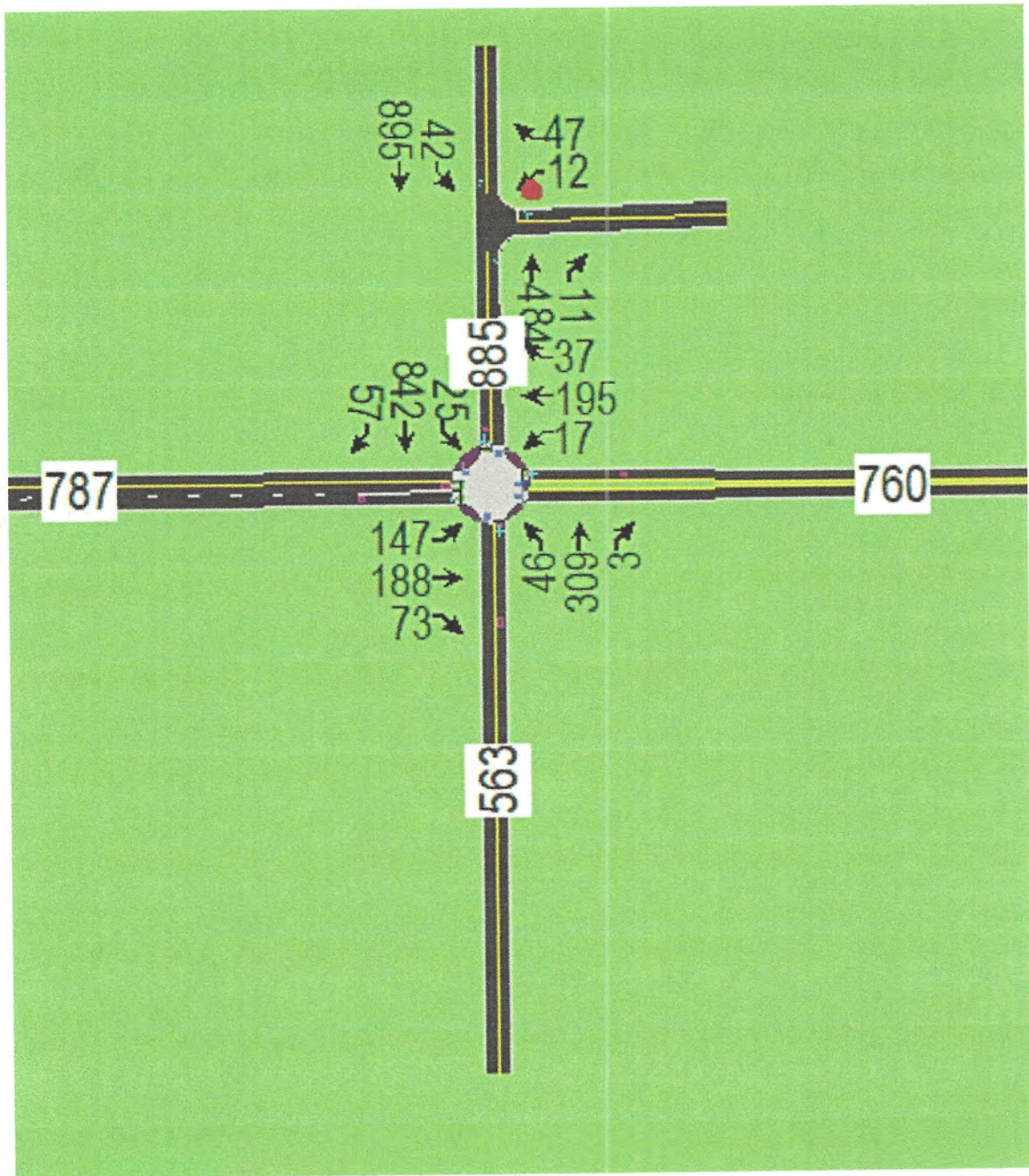
Needham
Central Ave. @ Charles River St.

Projected / Existing Splits
Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	20.0	50.0		30.0	30.0		40.0	40.0		40.0	40.0	
Total Split (%)	22.2%	55.6%		33.3%	33.3%		44.4%	44.4%		44.4%	44.4%	
Maximum Green (s)	15.0	45.0		25.0	25.0		35.0	35.0		35.0	35.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effect Green (s)	34.8	34.8			17.9			35.3			35.3	
Actuated g/C Ratio	0.43	0.43			0.22			0.44			0.44	
v/c Ratio	0.41	0.35			0.76			0.61			1.17	
Control Delay	17.0	16.0			41.4			24.4			113.9	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	17.0	16.0			41.4			24.4			113.9	
LOS	B	B			D			C			F	
Approach Delay		16.4			41.4			24.4			113.9	
Approach LOS		B			D			C			F	
Queue Length 50th (ft)	47	89			142			144			~588	
Queue Length 95th (ft)	82	142			202			286			#950	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	427	1031			569			627			816	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.37	0.27			0.55			0.61			1.17	
Intersection Summary												
Area Type:	Other											
Cycle Length:	90											
Actuated Cycle Length:	80.2											
Natural Cycle:	90											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.17											
Intersection Signal Delay:	66.2					Intersection LOS: E						
Intersection Capacity Utilization	98.2%					ICU Level of Service F						
Analysis Period (min)	15											
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4:





Needham
Central Avenue at Site Drive

Projected Optimum Splits
Morning Peak Hour

Intersection						
Int Delay, s/veh	1.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W		T		S	T
Traffic Vol, veh/h	10	42	1226	12	46	239
Future Vol, veh/h	10	42	1226	12	46	239
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-3
Peak Hour Factor	96	96	95	95	80	80
Heavy Vehicles, %	2	0	2	0	0	0
Mvmt Flow	10	44	1291	13	58	299

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1713	1298	0	0	1304	0
Stage 1	1298	-	-	-	-	-
Stage 2	415	-	-	-	-	-
Critical Hdwy	6.42	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	99	200	-	-	538	-
Stage 1	256	-	-	-	-	-
Stage 2	666	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	86	200	-	-	538	-
Mov Cap-2 Maneuver	86	-	-	-	-	-
Stage 1	256	-	-	-	-	-
Stage 2	580	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	38.9	0	2
HCM LOS	E		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	159	538
HCM Lane V/C Ratio	-	-	0.341	0.107
HCM Control Delay (s)	-	-	38.9	12.5
HCM Lane LOS	-	-	E	B
HCM 95th %tile Q(veh)	-	-	1.4	0.4

Needham
Central ve. @ Site Drive

Projected / Existing Splits
Evening Peak Hour

Intersection						
Int Delay, s/veh	1					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	W	W	N	N	S	S
Traffic Vol, veh/h	12	47	484	11	42	895
Future Vol, veh/h	12	47	484	11	42	895
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	-3
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	13	49	509	12	44	942

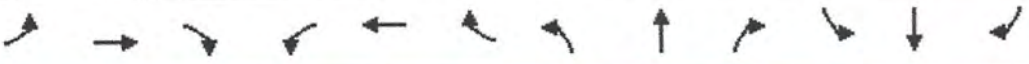
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1545	515	0	0	521	0
Stage 1	515	-	-	-	-	-
Stage 2	1030	-	-	-	-	-
Critical Hdwy	6.42	6.22	-	-	4.12	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	-	-	2.218	-
Pot Cap-1 Maneuver	126	560	-	-	1045	-
Stage 1	600	-	-	-	-	-
Stage 2	344	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	115	560	-	-	1045	-
Mov Cap-2 Maneuver	115	-	-	-	-	-
Stage 1	600	-	-	-	-	-
Stage 2	314	-	-	-	-	-

Approach	WB	NB	SB
HCM Control Delay, s	19.3	0	0.4
HCM LOS	C		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	313	1045
HCM Lane V/C Ratio	-	-	0.198	0.042
HCM Control Delay (s)	-	-	19.3	8.6
HCM Lane LOS	-	-	C	A
HCM 95th %tile Q(veh)	-	-	0.7	0.1

Needham
Central Ave. at Charles River Street

Projected Optimum Timing
Morning Peak Houe

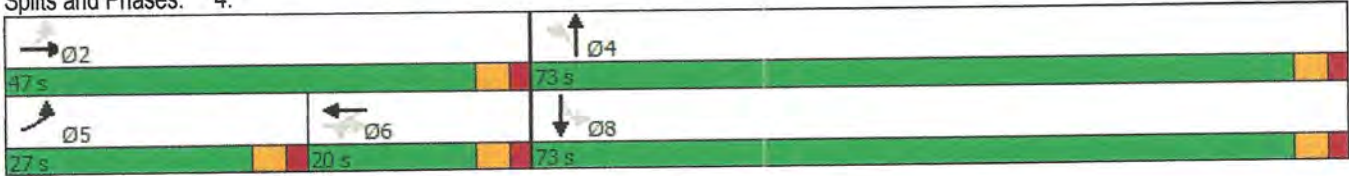
												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	357	235	55	11	153	23	94	857	5	15	215	18
Future Volume (vph)	357	235	55	11	153	23	94	857	5	15	215	18
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.971			0.983			0.999			0.990	
Flt Protected	0.950				0.997			0.995			0.997	
Satd. Flow (prot)	1652	1845	0	0	1858	0	0	1855	0	0	1871	0
Flt Permitted	0.200				0.963			0.928			0.922	
Satd. Flow (perm)	348	1845	0	0	1794	0	0	1730	0	0	1730	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					5						6	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.85	0.85	0.85	0.96	0.96	0.96	0.80	0.80	0.80
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	380	250	59	13	180	27	98	893	5	19	269	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	380	309	0	0	220	0	0	996	0	0	311	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave. at Charles River Street

Projected Optimum Timing
Morning Peak Houe

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	27.0	47.0		20.0	20.0		73.0	73.0		73.0	73.0	
Total Split (%)	22.5%	39.2%		16.7%	16.7%		60.8%	60.8%		60.8%	60.8%	
Maximum Green (s)	22.0	42.0		15.0	15.0		68.0	68.0		68.0	68.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	42.0	42.0			15.0			68.0			68.0	
Actuated g/C Ratio	0.35	0.35			0.12			0.57			0.57	
v/c Ratio	1.06	0.48			0.96			1.02			0.32	
Control Delay	96.9	33.5			102.7			59.6			14.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	96.9	33.5			102.7			59.6			14.5	
LOS	F	C			F			E			B	
Approach Delay		68.4			102.7			59.6			14.5	
Approach LOS		E			F			E			B	
Queue Length 50th (ft)	~274	186			168			~780			118	
Queue Length 95th (ft)	#471	272			#299			#1067			151	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	360	645			228			980			982	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	1.06	0.48			0.96			1.02			0.32	
Intersection Summary												
Area Type:	Other											
Cycle Length:	120											
Actuated Cycle Length:	120											
Natural Cycle:	120											
Control Type:	Actuated-Uncoordinated											
Maximum v/c Ratio:	1.06											
Intersection Signal Delay:	60.3					Intersection LOS: E						
Intersection Capacity Utilization	118.7%					ICU Level of Service H						
Analysis Period (min)	15											
~ Volume exceeds capacity, queue is theoretically infinite.												
Queue shown is maximum after two cycles.												
# 95th percentile volume exceeds capacity, queue may be longer.												
Queue shown is maximum after two cycles.												

Splits and Phases: 4:



Needham
Central Ave. at Charles River Street

Projected - Optimum Timing
Evening Peak Hour

												
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	147	188	73	17	195	37	46	309	3	25	842	37
Future Volume (vph)	147	188	73	17	195	37	46	309	3	25	842	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	10	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			-3%	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.958			0.980			0.999			0.994	
Flt Protected	0.950				0.997			0.994			0.999	
Satd. Flow (prot)	1652	1820	0	0	1851	0	0	1855	0	0	1880	0
Flt Permitted	0.232				0.961			0.842			0.984	
Satd. Flow (perm)	403	1820	0	0	1784	0	0	1571	0	0	1852	0
Right Turn on Red			No			Yes			No			Yes
Satd. Flow (RTOR)					10						4	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		787			760			563			885	
Travel Time (s)		17.9			17.3			12.8			20.1	
Peak Hour Factor	0.94	0.94	0.94	0.80	0.80	0.80	0.93	0.93	0.93	0.97	0.97	0.97
Heavy Vehicles (%)	2%	0%	0%	0%	0%	2%	0%	2%	0%	0%	2%	0%
Adj. Flow (vph)	156	200	78	21	244	46	49	332	3	26	868	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	156	278	0	0	311	0	0	384	0	0	932	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		10			10			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.09	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.98	0.98	0.98
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	
Leading Detector (ft)	20	100		20	100		20	100		20	100	
Trailing Detector (ft)	0	0		0	0		0	0		0	0	
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	
Detector 1 Type	CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex		CI+Ex	CI+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		CI+Ex			CI+Ex			CI+Ex			CI+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	5	2			6			4			8	
Permitted Phases	2	6		6			4			8		

Needham
Central Ave. at Charles River Street

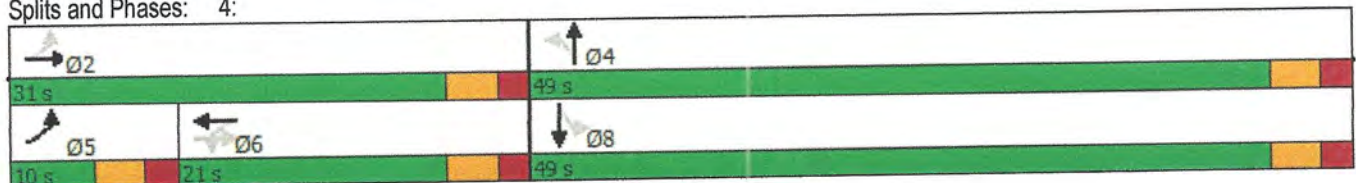
Projected - Optimum Timing
Evening Peak Hour

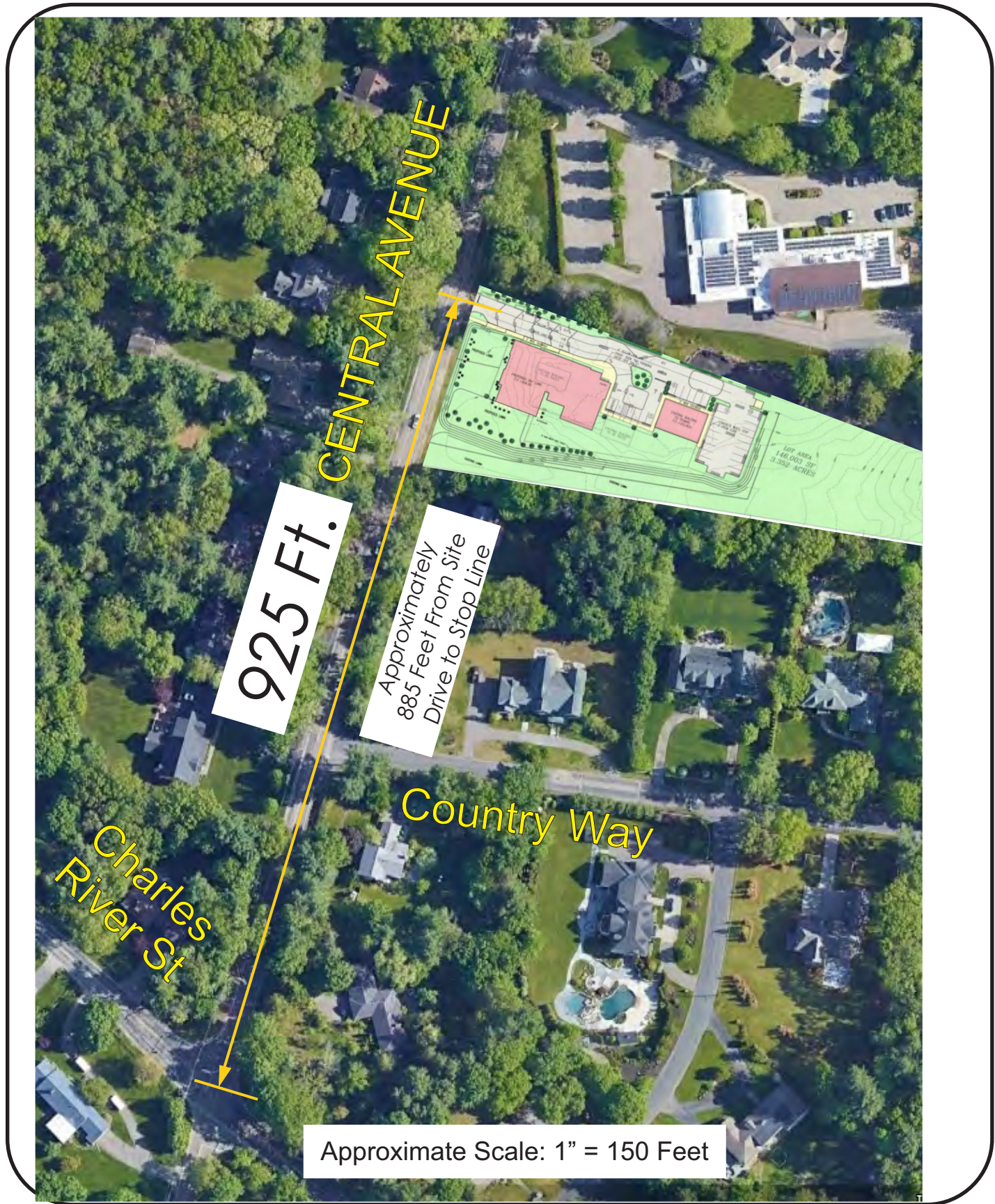
	↖	→	↗	↖	←	↖	↗	↑	↗	↘	↓	↙
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Detector Phase	5	2		6	6		4	4		8	8	
Switch Phase												
Minimum Initial (s)	5.0	5.0		5.0	5.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	10.0	20.0		20.0	20.0		20.0	20.0		20.0	20.0	
Total Split (s)	10.0	31.0		21.0	21.0		49.0	49.0		49.0	49.0	
Total Split (%)	12.5%	38.8%		26.3%	26.3%		61.3%	61.3%		61.3%	61.3%	
Maximum Green (s)	5.0	26.0		16.0	16.0		44.0	44.0		44.0	44.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	5.0	5.0			5.0			5.0			5.0	
Lead/Lag	Lead			Lag								
Lead-Lag Optimize?	Yes			Yes								
Vehicle Extension (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Recall Mode	None	Min		Min	Min		None	None		None	None	
Act Effct Green (s)	25.3	25.3			15.3			41.5			41.5	
Actuated g/C Ratio	0.33	0.33			0.20			0.54			0.54	
v/c Ratio	0.73	0.46			0.86			0.45			0.93	
Control Delay	43.3	24.2			54.1			12.9			34.1	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	43.3	24.2			54.1			12.9			34.1	
LOS	D	C			D			B			C	
Approach Delay		31.1			54.1			12.9			34.1	
Approach LOS		C			D			B			C	
Queue Length 50th (ft)	57	109			146			106			390	
Queue Length 95th (ft)	#138	180			#232			172			#670	
Internal Link Dist (ft)		707			680			483			805	
Turn Bay Length (ft)												
Base Capacity (vph)	215	620			381			906			1069	
Starvation Cap Reductn	0	0			0			0			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.73	0.45			0.82			0.42			0.87	

Intersection Summary

Area Type: Other
 Cycle Length: 80
 Actuated Cycle Length: 76.9
 Natural Cycle: 80
 Control Type: Actuated-Uncoordinated
 Maximum v/c Ratio: 0.93
 Intersection Signal Delay: 32.5
 Intersection Capacity Utilization 97.0%
 Analysis Period (min) 15
 # 95th percentile volume exceeds capacity, queue may be longer.
 Queue shown is maximum after two cycles.

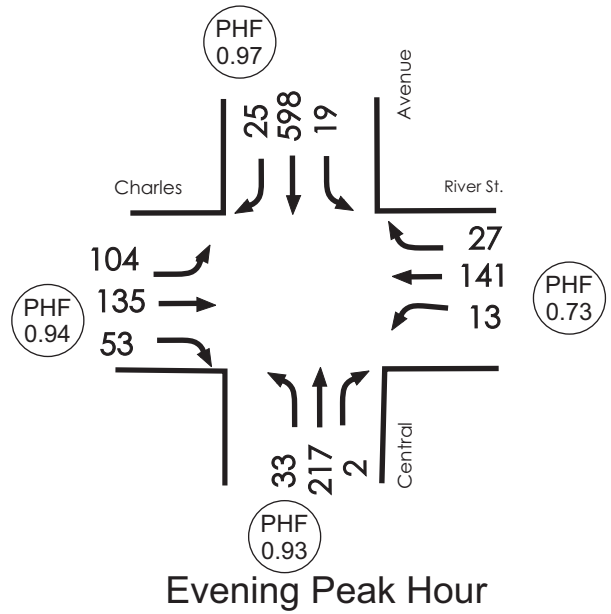
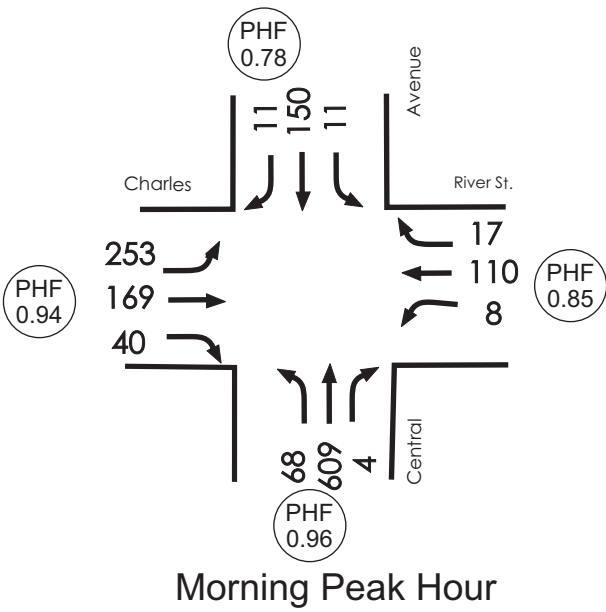
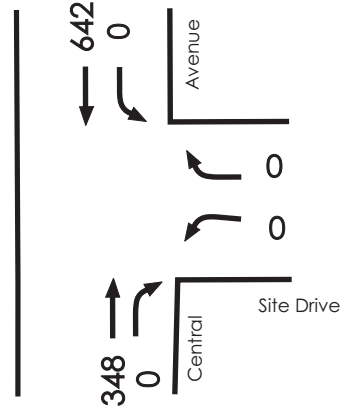
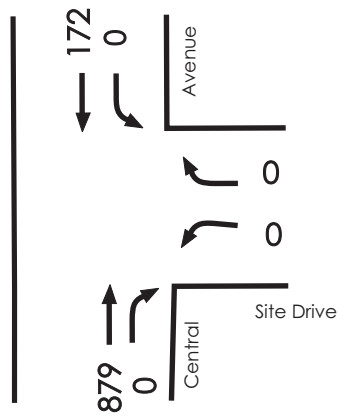
Splits and Phases: 4:





Locus Map

Figure 1

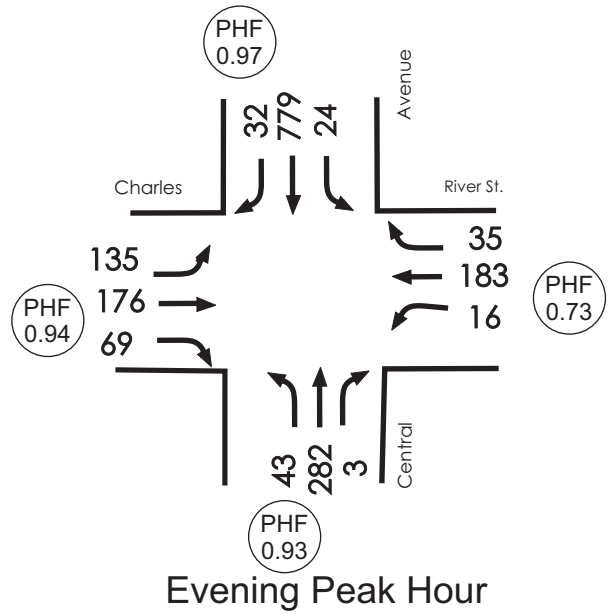
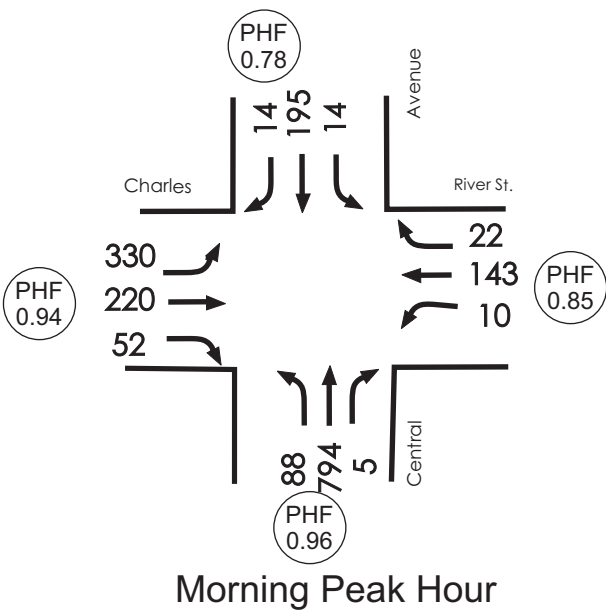
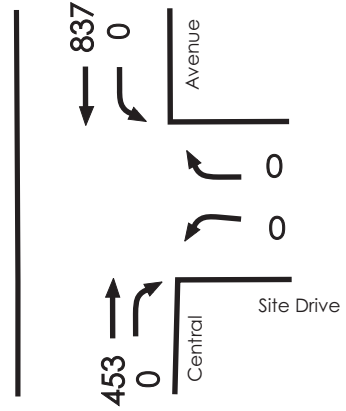
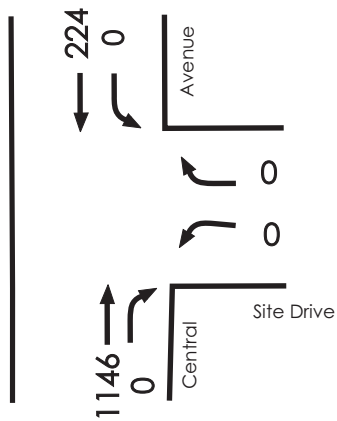


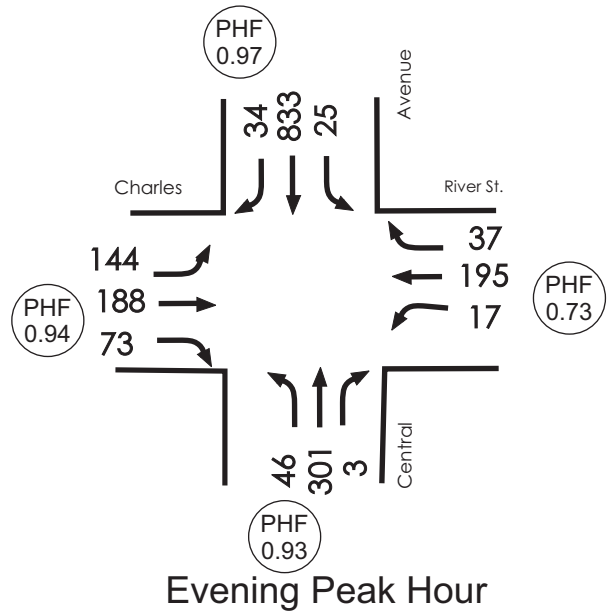
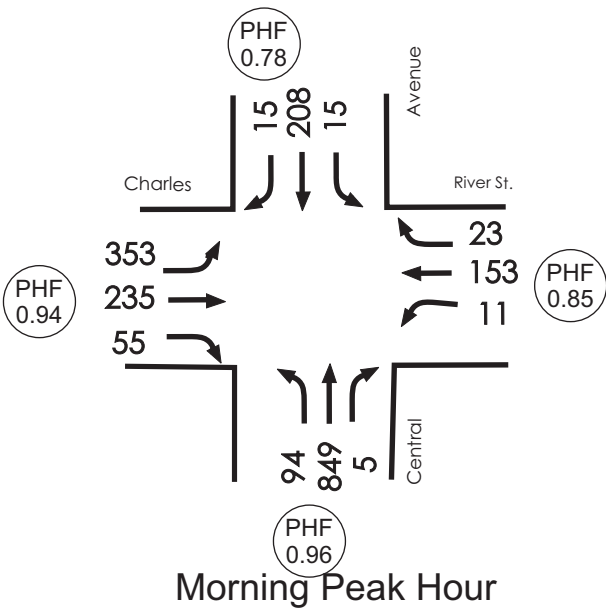
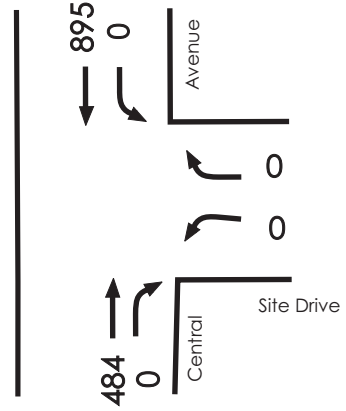
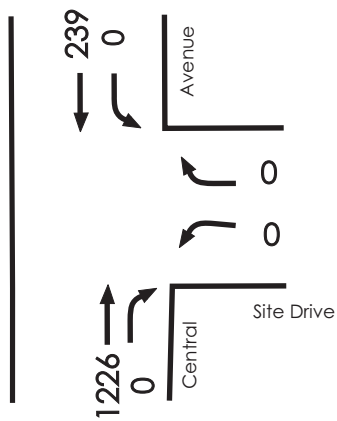
2021 Peak Hour Traffic Volumes
From New PDI Counts (October 2021)

Figure 2

	COMPARISON OF BASELINE APPROACH TRAFFIC VOLUMES									
	Central Avenue				Charles River St					
	N. Bd.		S. Bd.		E. Bd.		W. Bd.			
	AM	PM	AM	PM	AM	PM	AM	PM		
Existing October 2021	681	252	172	642	462	292	135	181		
Correct for Covid (+130.3%)	888	329	224	837	602	381	176	236		
Increase by 1% per yr. Growth Factor to 2028	950	352	240	896	645	407	188	253		
Current Assessment	950	352	240	896	645	407	188	253		
Previous Assessment*	-	412	-	1084	-	327	-	232		
An actual turning movement count was increased by 139% to reach an ADT count provided by Needham Engineering for 2016.										
The 2016 counts were increased by 5% to estimate 2021 counts. The 2021 counts were increased by 7% to establish no build in 2028.										
MassDOT Station #6161 shows a two-way count in 2020 of 141,295 which was 184,218 in 2019, a 30.4% difference										
To account for Covid-19, the Existing October 2021 counts were increased by 130.4%										
To identify 2028 Baseline volumes, Covid-Adjusted Counts were increased by 7% over 7 years.										

Figure 3

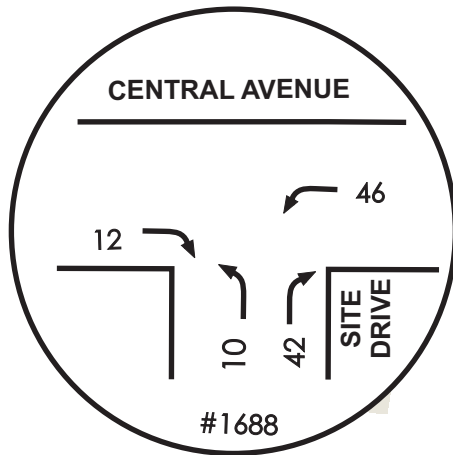




2028 Covid-Adjusted and Inflated by another 7 Percent for
Peak Hour Traffic Volumes

Figure 5

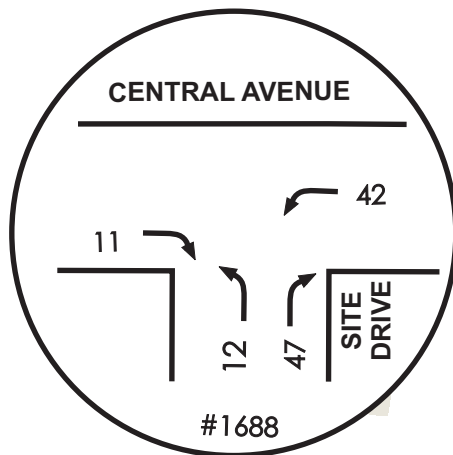
Gillon Associates
Traffic & Parking Specialists



IN	OUT	TOTAL
58	52	110

BASED ON ITE
10, 034 Sq. Ft.

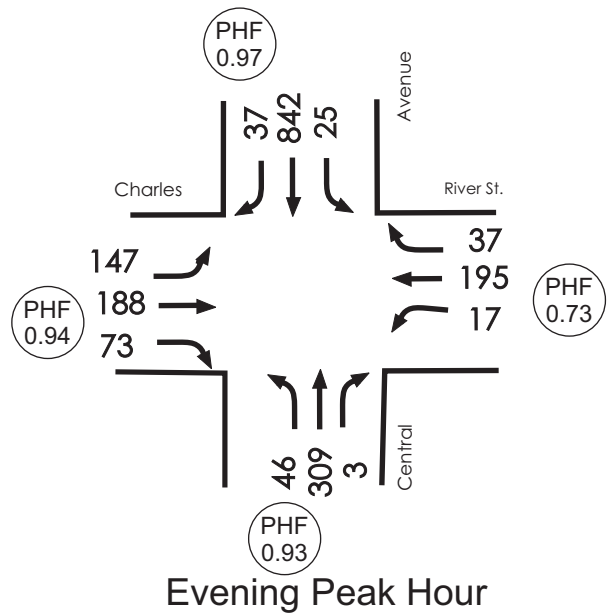
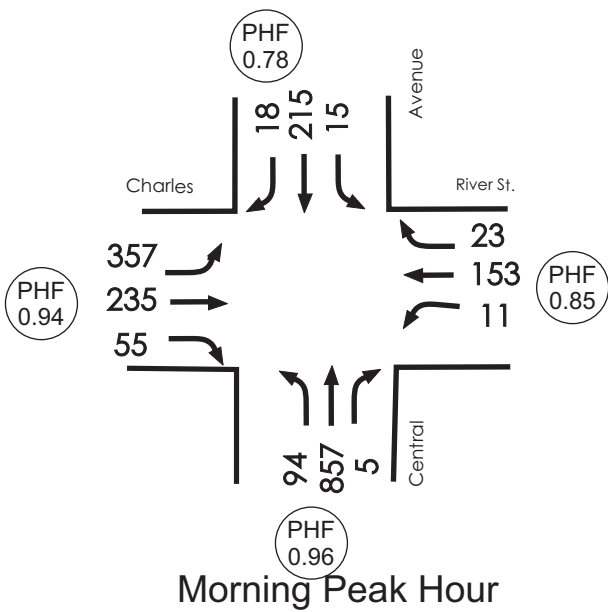
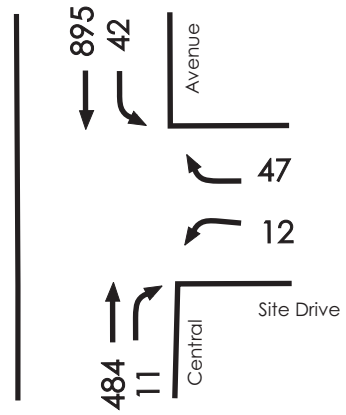
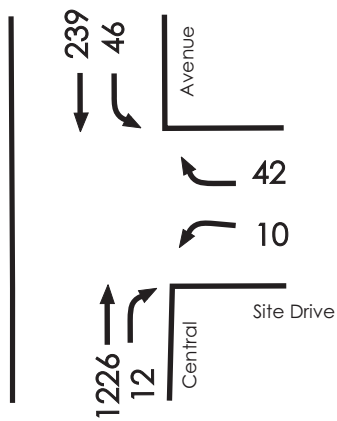
2028
MORNING PEAK HOUR



IN	OUT	TOTAL
53	59	112

BASED ON ITE
10, 034 Sq. Ft.

2028
EVENING PEAK HOUR



Projected 2028 Peak Hour Traffic Volumes

Figure 7

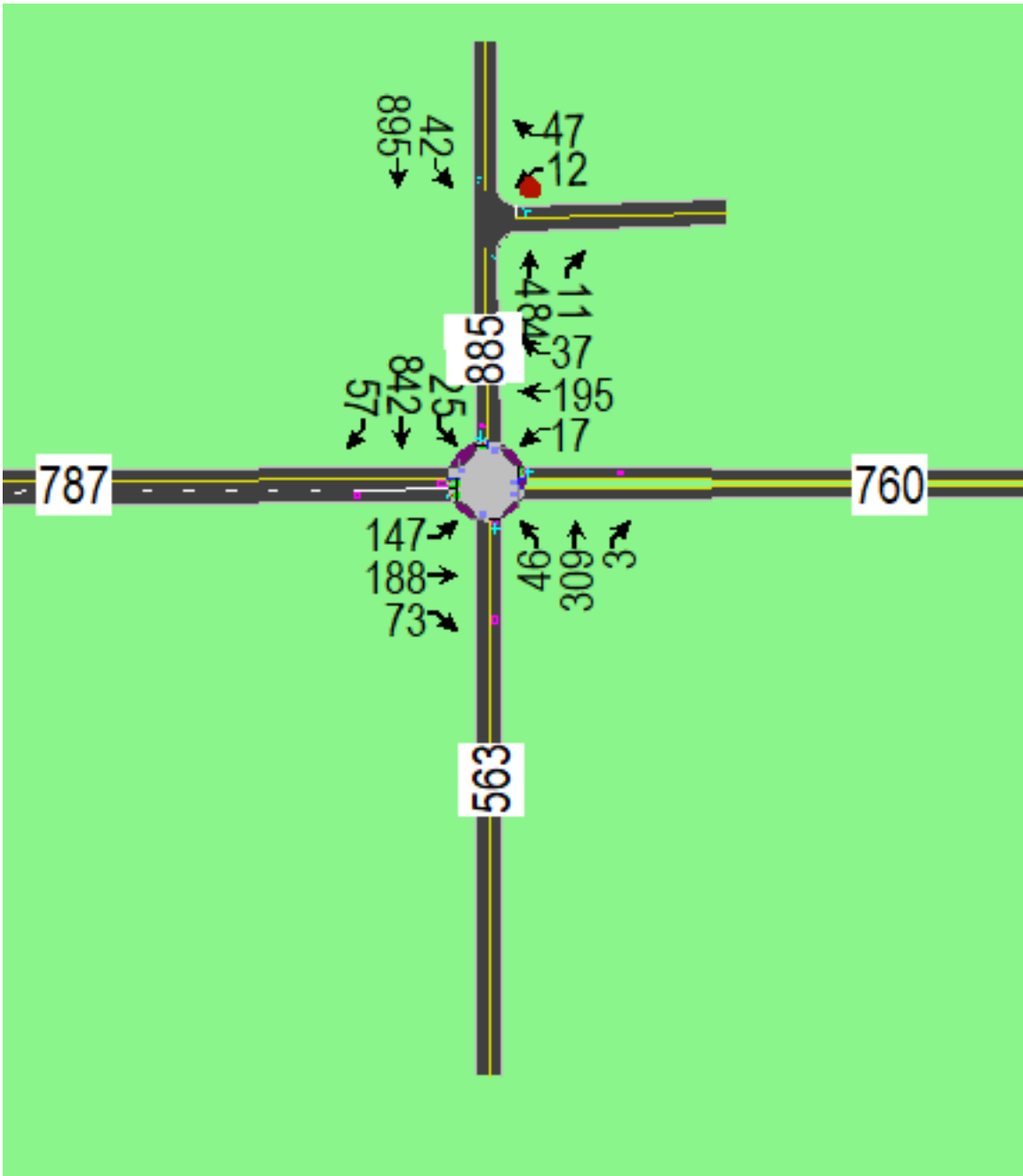
	Existing Covid-Adjusted 2021		Base 2028		Projected			
					Exist. Splits		Optimum	
	AM	PM	AM	PM	AM	PM	AM	PM
<u>Central Ave at Charles River St</u>								
Traffic Control Signal								
Overall Level of Service	E	D	F	E	F	F	E	C
Overall Delay (Seconds)	68.5	43.4	88.9	57.7	91.6	66.2	60.3	32.5
Charles River St East Bd.	C	B	C	B	C	B	E	C
(Overall Delay (Seconds)	24.4	16.2	27.3	16.4	27.9	16.4	68.4	31.1
Avg./95th % Queue Length (ft)	93/149	82/132	101/159	89/142	101/159	89/142	186/272	109/180
Charles River St West Bd.	D	D	D	D	D	D	F	D
(Overall Delay (Seconds)	38.4	39.7	39.0	41.3	39.0	41.4	102.7	54.1
Avg./95th % Queue Length (ft)	91/147	130/190	99/156	141/202	99/156	142/202	168/299	146/232
Central Ave. North Bd.	F	C	F	C	F	C	E	B
(Overall Delay (Seconds)	121.5	21.2	164.2	23.6	170	24.4	59.6	12.9
Avg./95th % Queue Length (ft)	558/856	121/248	633/948	139/277	643/959	144/286	780/1067	106/172
Central Ave. South Bd.	B	E	B	F	B	F	B	C
(Overall Delay (Seconds)	16.7	66.5	17.5	96.6	17.7	113.9	14.5	34.1
Avg./95th % Queue Length (ft)	86/139	466/830	94/152	548/907	99/159	588/950	118/151	390/670

Distance Between STOP LINE and Driveway ~ 885 Feet

	Projected LOS	
	<u>AM</u>	<u>PM</u>
<u>Central Avenue at Site Driveway</u>		

Stop Sign Controlled

Central Ave. Northbound (All Moves)	A	A
Central Ave. Southbound Through Movement	A	A
Left-Turn Movement	B	A
Site Drive West Bound (All Moves)	E	C



APPENDIX

Signalized Intersections

LOS	Control Delay per Vehicle (s/veh)
A	≤ 10
B	> 10–20
C	> 20–35
D	> 35–55
E	> 55–80
F	> 80

Un-Signalized Intersections

Level of Service	Average Control Delay (s/veh)
A	0–10
B	> 10–15
C	> 15–25
D	> 25–35
E	> 35–50
F	> 50

Intersection Levels of Service

draft

November 16, 2021

NEX-2021238.00

Town of Needham Planning Board
Town Hall
1471 Highland Avenue
Needham, MA 02492

SUBJECT: 1688 Central Avenue
Proposed Child Care Facility – Peer Review 3

Dear Ms. Newman:

The following items were submitted by the proponent on November 10, 2021.

- Site Plans dated June 22, 2020 rev. 11-08-2021
- 168 8Central Turning Maneuver Supply Van and Trash Truck Templates

In addition, GPI conducted a site visit during the morning, afternoon and evening peak periods to observe traffic operations on November 3, 2021.

The above materials have been reviewed against typical engineering practices, standards, and industry guidelines. We offer the following comments. (

SITE PLANS

The following highlights GPI's original comments from the July 15, 2021 Peer Review letter and our responses based on the revised site plan.

1. What is the purpose of the 12.67' loading zone? What size vehicle is expected to need access to the loading area. Truck turning templates should be provided showing access and egress from the loading area as well as the dumpster pad.

Comment has been addressed

2. The proponent should construct fully compliant ADA sidewalks along the property frontage and tie into existing sidewalks at the property limits.

GPI 11-11-21 response

The proponent has not indicated any sidewalk work on the plans.

3. The proponent should ensure that the construction of the site drive does not impact the drainage, particularly with the existing catch basin on the NW corner of the existing driveway.

It appears the existing CB will be in the center of the driveway on the gutter line. With the introduction of two wheelchair ramps the construction plans should consider relocating or providing additional drainage to ensure ponding in the vicinity of the wheelchair ramps does not occur.

GPI – 11-1-21 response

The proponent has modified the drainage as requested above. However, we still have comments as noted on the plans:

- a) Sheet 4 - Proposed grades of the centerline of the driveway apron do not make sense. It appears to slope DOWN from the edge of road to the front of crosswalk by more than 2% and then slope up to the back of the crosswalk by more than 4%
- b) Sheet 4 – The spot grades 200x68 and 200x74 indicate the apron slope of about 1% UP at the sidewalk openings and a 1.8%-2.0% slope across the sidewalk/crosswalk, the apron portion should be sloped greater than the crosswalk portion.
- c) Provide grades on sidewalk approaching driveway. It is unclear if the sidewalk slopes to the driveway or is level with the crossing.
- d) Sheet 4 – Limit of work on the sidewalks should be indicated (also relates to Comment 2)
- e) Sheet 6 – Detail should be provided for the proposed driveway apron.
- f) Sheet 8 & 9 – Proposed CBs should be labeled and Existing CB to be removed should be labeled
- g) Sheet 10 – Either delete labels on CBs (not relevant for lighting) or correctly label the Existing CB to be Removed

GPI – 11-11-21 response

The comments highlighted in green have not been addressed and there are still concerns over the grading. It appears that the cross slope of the crossing across the driveway exceeds 2% in some areas. The maximum slope should be 1.5% with a 0.5% +/- tolerance.

TRAFFIC ANALYSIS

On November 3, 2021, I went out with a GOPRO in the car in the morning from about 7:45-8:00, in the afternoon around 3:30 and then again from about 4:45-5:15. I also talked with a police officer who was monitoring traffic at the Transfer Station driveway around 5 to get his sense on traffic levels returning to normal.

Over the course of the 3 periods, I made left turns in and out of the driveway at least 7 or 8 times. The only time I saw any queue was at 5PM and while I crawled to the driveway, I didn't wait more than 5 seconds to make the left into the site.

While making a left out took a bit longer, it was actually easier to do at 5 when the traffic was queued past the driveway. Since there was no one traveling NB, SB vehicles gave a courtesy gap. By 5:15, the queue had dissipated.

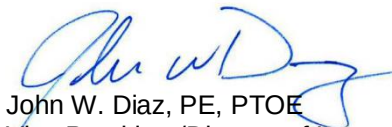
Based on the updated Traffic Memo and previous discussions, the following traffic mitigation is recommended:

1. The proponent should commit to a follow up traffic study after the site is open and operational to at least 80% of the student capacity.
2. The proponent should commit to provide police details during the peak morning and afternoon hours of arrivals and dismissals. The detail should remain in place, until the Police Chief believes the site is operating without significantly impacting operations along Central Ave.
3. The proponent should provide detailed traffic signal timing plans for optimized operations during the weekday morning and evening peak hours. The proponent should coordinate with Needham DPW on how to implement the revised signal times

Should you have any questions, or require additional information, please do not hesitate to contact me at (978) 570-2953 or via email at jdiaz@gpinet.com.

Sincerely,

GREENMAN-PEDERSEN, INC.



John W. Diaz, PE, PTOE
Vice President/Director of Innovation

The following testimony related to the proposal at 1688 Central Avenue was received before the close of the hearing and shared with the Board, but not added to the December 8, 2021 packet due to the late arrival, and is therefore included in this packet.

From: [Laurie Spitz - Smileboston Cosmetic and Implant Dentistry](#)
To: [Planning](#); [Selectboard](#); [Alexandra Clee](#); [Lee Newman](#)
Cc: [Matthew Heideman](#); [Holly Clarke](#)
Subject: Re: 1688 Central Avenue Project
Date: Tuesday, December 7, 2021 9:25:53 PM
Attachments: [December 7, 822am 188 Charles River Street .MOV](#)

To the Town of Needham Representatives:

As a 17-year resident of Needham, residing at 188 Charles Rivers Street, I am looking forward to speaking tomorrow night to share my experience and thoughts regarding the Borelli property, 1688 Central Avenue, and the idea of putting a school on the property.

Prior to tomorrow night, I wanted to share the attached a video of the traffic this morning outside of my home: I am three houses away from the stop light on Central and Charles River. This is a normal morning at a random time: December 7, 2021, at 8:22am.

Smile always,

Laurie Spitz
617 504 1028

From: [Rick Hardy](#)
To: [Planning](#)
Subject: 1688 Central Ave
Date: Wednesday, December 8, 2021 11:51:47 AM

My name is Rick Hardy 1347 South Street. I am writing to state my opposition to the proposal to allow a large child daycare center at 1688 Central Ave. The neighborhood is primarily residential with daily high traffic volume on Central Ave and the feeder roads during most times of the day and especially at rush hour makes the addition of a large child care center problematic for traffic and for the abutters in the neighborhood. Experiencing the traffic on Central Ave daily has me questioning most traffic studies I have seen. I know that the Planning Board has limitations in their powers to deny permits but anything that can be done to limit the impact, size and scope of this proposal would be greatly appreciated.

Sincerely

Rick Hardy

--



Rick Hardy
1347 South Street
Needham, MA. 02492
781-718-8876 (C)
rick@hardy1.com

The following testimony related to the proposal at 1688 Central Avenue has not been included in a prior packet.

Joe Abruzese
30 Bridle Trail Road
Needham, MA 02492
jabruzese@yahoo.com

December 12, 2021

Needham Planning Board
planning@needhamma.gov

Re: Presentation Points from Needham Planning Board Hearing, December 8, 2021

Dear Chair Alpert and Needham Planning Board Members,

Thank you again for allowing me the opportunity to speak during the public hearing on December 8, 2021. As discussed, I am sharing the materials I presented for your reference.

Many issues have been raised by residents regarding the proposed daycare center plan at 1688 Central Avenue. My comments during the December 8 hearing focused on three of those issues to explain them in a clear, factual manner.

Disharmony with the Existing Area

One of the key questions for the Planning Board is to assess how the applicant's plan – both the building and the property layout – align to the rest of the developed properties in the area. A practical and logical way to look at this is to examine the setbacks in relation to the size of the buildings.

In many neighborhoods that have large property sizes, larger buildings are usually set back further on the property than smaller buildings. In the area of 1688, it is nearly all residential, with the one exception of Temple Aliyah.

The chart I presented is an objective comparison of the size of existing buildings to the setbacks. The horizontal axis is the size of the building, and the vertical axis is the ratio of building square footage to the setback. This ratio normalizes the setback based on the size of the building.

As I mentioned, most of the buildings in the area are residential homes. The chart on page 6 shows they all have similar size and have similar setbacks. The Temple is a significantly larger building and as such it is set back much further. It makes sense that larger buildings, especially those that run commercial operations are set back further on the property. However the Temple's setback, given its size, is generally in line with the rest of the neighborhood. See the neighborhood range shown on page 7.

We plotted 1688's plans on the same chart. As you know, 1688 is either a 10,000 sq ft operation or a 14,800 sq ft operation if you include the barn. This property is proposed to be built at a 64 ft setback on

a 3.3 acre property that over 1000 feet long (deep). The front of the building will be on the first 6% of the total depth of the property.

1688 is a significant building or a building complex that – as planned – is nowhere near the rest of the neighborhood. See the chart on page 8.

To be in alignment and be harmonious with the neighborhood, the setbacks that should be used are:

- Between 148 and 228 feet, if the barn is eliminated where the total square footage is 10,000 square feet
- Between 171 and 235 feet, if the barn is retained where total square footage is 14,800 square feet

This Board has stated multiple times that the building needs to be setback 200 feet. The chart on page 9 illustrates why this is the case. Please consider these facts. This is the actual objective data, not a subjective opinion.

Require a plan that is congruent with the area.

Traffic Analysis is Based on Faulty Data and Incorrect Math

To date, the applicant has submitted five traffic assessments, each with different basis of data and different methods of analysis. The constant shifting and inconsistencies are concerning. Regardless, we examined the most recent traffic analysis and projections. The data they use for their analysis is extremely flawed, and those flaws are compounded by erroneous math calculations. I explained this in my presentation.

The one-hour peak times that are often referenced in the applicant's traffic reports are 7:30-8:30am and 4:45-5:45pm. The Town of Needham measured traffic in 2016 during these times using an automatic traffic recorder. This information is shown in the first row of the chart on page 10. The Town measured **1353** (273+1080) vehicles in the morning hour and **1430** (1028+402) in the evening hour.

The applicant's March traffic assessment references the Town data stating, "the ATR count obtained in 2016... proved to be the most useful."

Yet instead of using this data, the applicant's latest report uses a manual observation from a single day on October 13, 2021. The observations are **40% less** than the Town of Needham measurements. This is shown at the bottom of the chart on page 10. Any data analyst would question why there is such a big difference and resolve this difference before using the data as a basis for projections.

However, there are more significant problems with their projections.

The report projects traffic seven years in the future using a 1% annual growth rate. In addition, the report applied a 30% factor to account for COVID. There are three issues with this:

1. Applying a 30% adjustment is not aligned with the actual difference of 40%
2. The report does not mathematically apply the 30% adjustment correctly. They simply apply a 30% increase to their figures, when in fact the correct math is to apply 43%¹
3. The report does not apply 1% growth using compounding as required

The mathematical errors were also pointed out by Mr. Rob DiMasi during the hearing on November 2, 2021.

The incorrect basis and the mathematical errors result in traffic projections that are significantly lower than they should be. The 2028 projections that should be used are in bold at the bottom of the chart on page 11. Yet the applicant's projections have 335 fewer vehicles in the morning hour and 363 fewer vehicles in the afternoon hour.

The underestimating is significant and material. They are off by hundreds of vehicles. Their analysis of what Central Avenue traffic will look like, what the queue would be to turn into the property, and what the queue would be to turn out of the property is founded on faulty data and faulty math.

Do not take the projections in the traffic report as fact. Look at the underlying information, look at the methods used, look at the assumptions, look at their math. A traffic study and its conclusions need to be based on quality foundational information. The applicant's report does not do this.

Plans and Projections Must be Based on the Legal Capacity of the Building

The applicant has stated that the proposed tenant will have a maximum of 115 children, plus 18 staff and administrators. This is shown in the chart on page 12.

We looked at the regulations defined by the Massachusetts Department of Early Education and Care (EEC) to determine the rules about how many children can be accommodated in a facility such as this. In addition, we looked at the layout and rooms that are in the applicant's drawings. We also reviewed the proposed tenant's child care programs to understand how they may use the rooms.

The EEC legally allows either 199 children or 219 children to occupy the proposed building, depending on whether the childcare offers a half-day service. This is shown in the chart on page 13.

The Needham Planning Board needs to plan for up to 219 capacity, not 115. 219 is what the building is able to support and it is what is legally allowed.

115 is an artificial limit, and if this limit is set via conditions, it is not permanently binding.

Conditions can be easily revisited and/or removed due to a changing tenant, a changing environment or other circumstances. We recently saw this with the Cogswell building. This building was approved with the condition that the building would be unstaffed to alleviate traffic concerns. However, this condition was subsequently removed due to COVID, allowing 16 people to drive, park, and work from there. On October 19, this removal was extended through Aug 2022 as a de minimis change. A hearing was not required nor offered to the public.

¹ To illustrate, if 100 is reduced by 30%, the result is 70. In order for 70 to get back to 100, it would need to increase by 43%, not 30%. In other words, an increase of 30 on a basis of 70 is a 43% increase.

It is reasonable to assume that the same process would happen for 1688. The condition to limit capacity to 115 children can simply be revisited at anytime and be removed, potentially as a de minimis change. The building can legally handle up to 219 children. This is the legal fact.

The Planning Board and this application (including the traffic study) needs to plan for the actual physical capacity of the structure being built. A condition is a temporary measure that ignores the actual potential and actual legal limits.

Furthermore, conditions set by the Planning Board are vulnerable to be challenged as an impermissible regulation of the daycare use under the Dover Amendment, should the tenant decide that they do not wish to agree to the condition anymore.

In closing, I discussed these aforementioned issues in the December 2 hearing. These issues are not the only ones that are unremediated. Other material issues include:

- Whether the barn is allowed to remain as a second building; Why the barn is needed for storage and storage was not designed into the main building
- Whether the barn is a customary element of a daycare center
- Incomplete plans for sidewalk construction and integration with existing horse trails
- Absence of analysis of soil for toxic contamination from previous use (pending Board of Heath review)
- Incomplete plan to manage lighting & car headlight trespass (latest plan has not been reviewed by DRB)
- Incomplete water drainage plan (latest plan has not been reviewed by DPW)
- Unaddressed parking deficiencies; Parking requirements must be based on the actual building size, not on a particular tenant's plan

I ask that the Planning Board require the applicant to create an appropriate, reasonable design that directly resolves these issues. The Planning Board must look at the details of the proposed solutions so that the Board can make sound judgements.

Moreover, the Board should mandate the applicant submit a final comprehensive design that this Board and the public can see and review. It is unreasonable to issue a permit based on generalities with details to be figured out later with less public transparency.

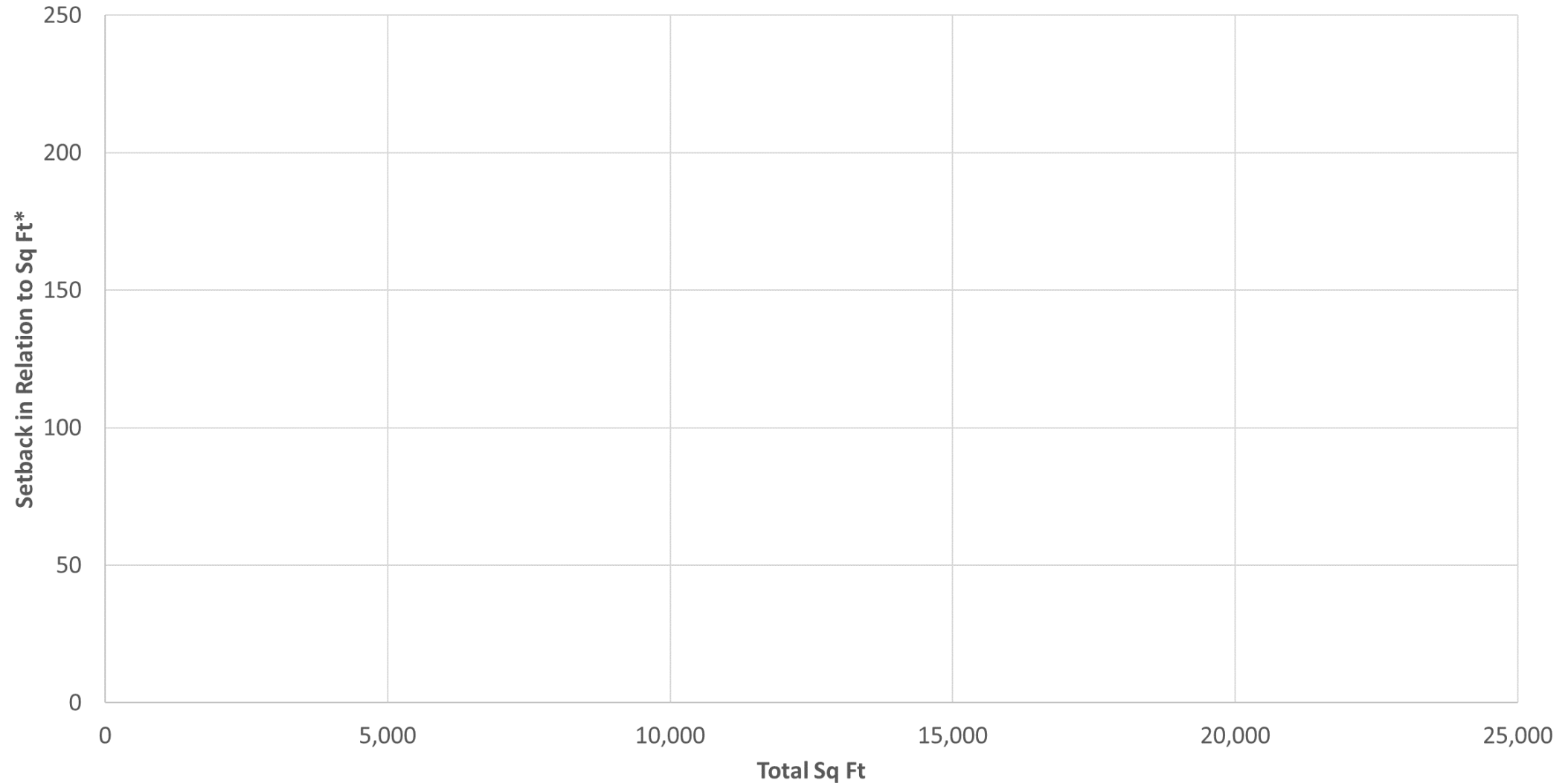
We are in the planning process. This is the time to work through the issues and get specific resolutions.

Sincerely,

Joe Abruzese

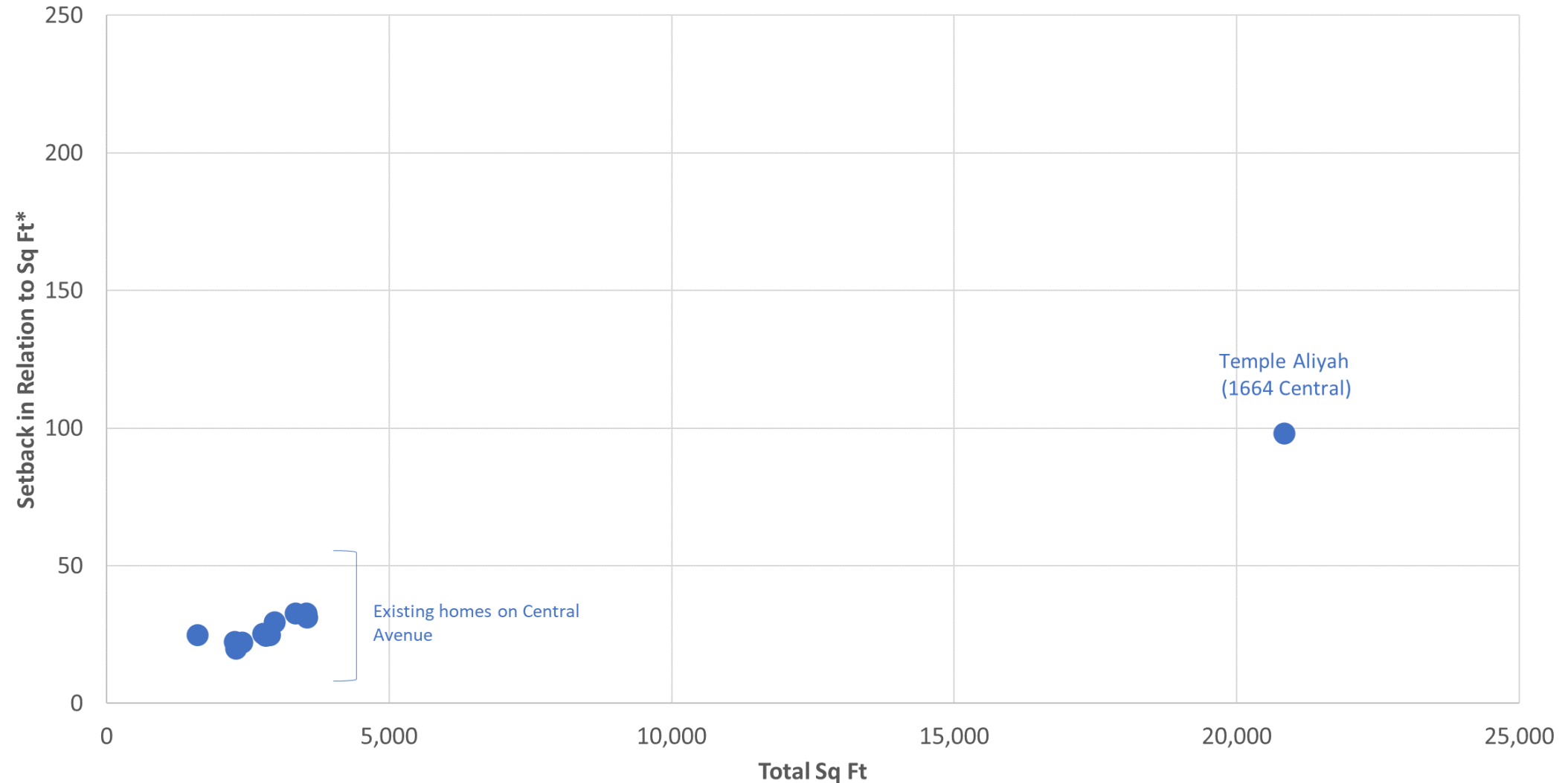
cc: Lee Newman, lnewman@needhamma.gov
Alex Clee, aclee@needhamma.gov

Disharmony of the Plan with the Existing Area



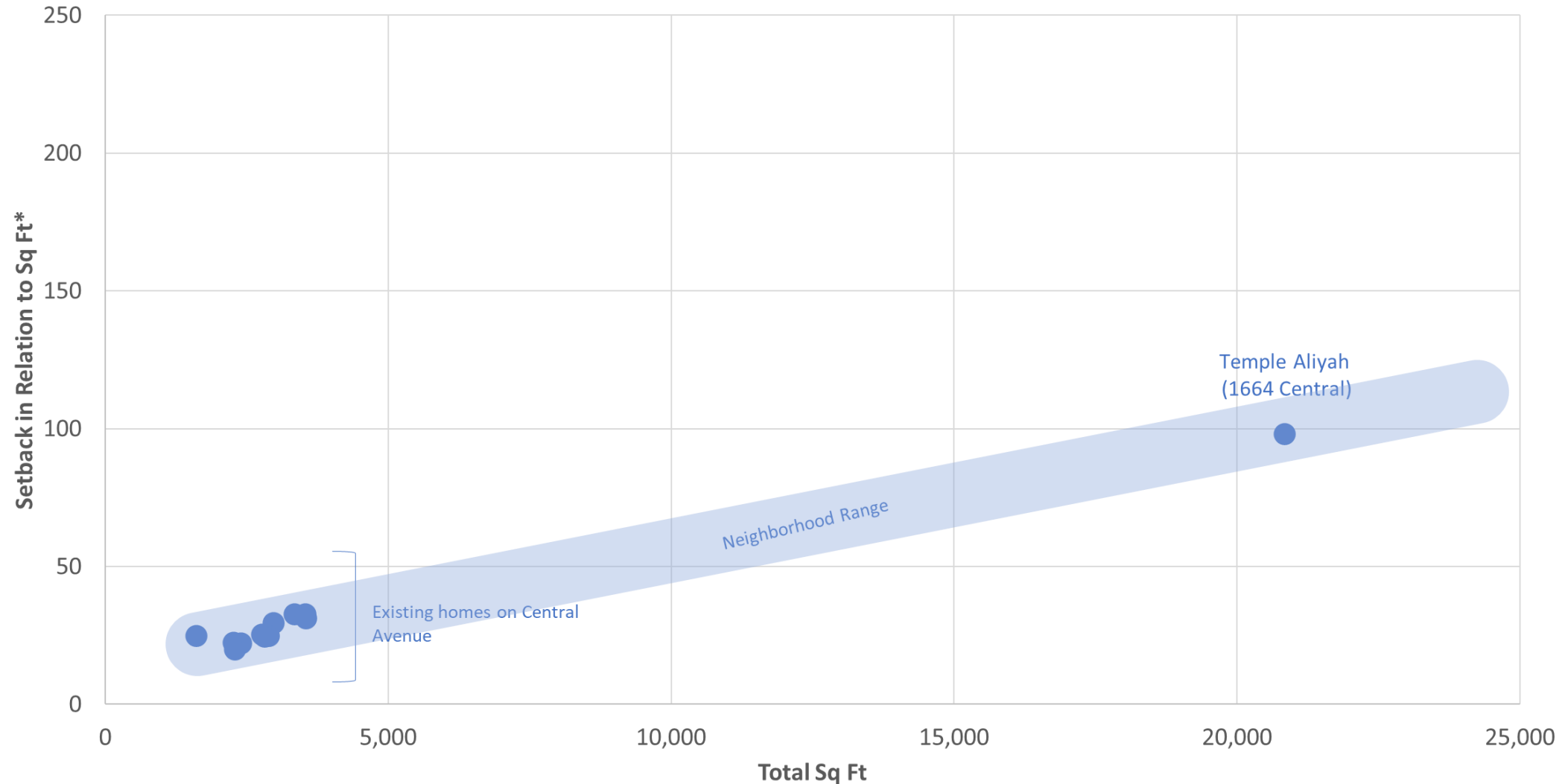
* determined as Total Sq Ft / Setback

Disharmony of the Plan with the Existing Area



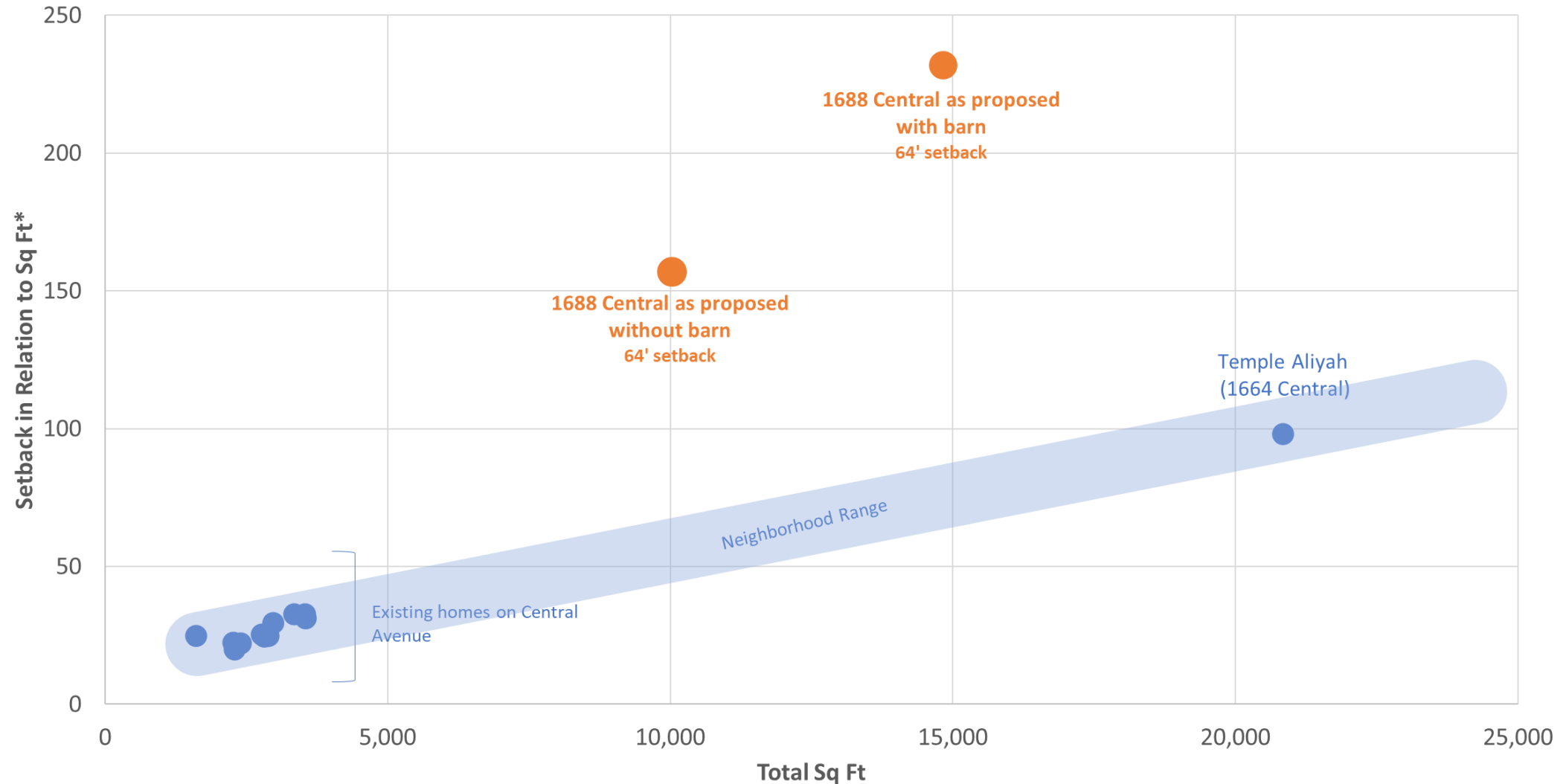
* determined as Total Sq Ft / Setback

Disharmony of the Plan with the Existing Area



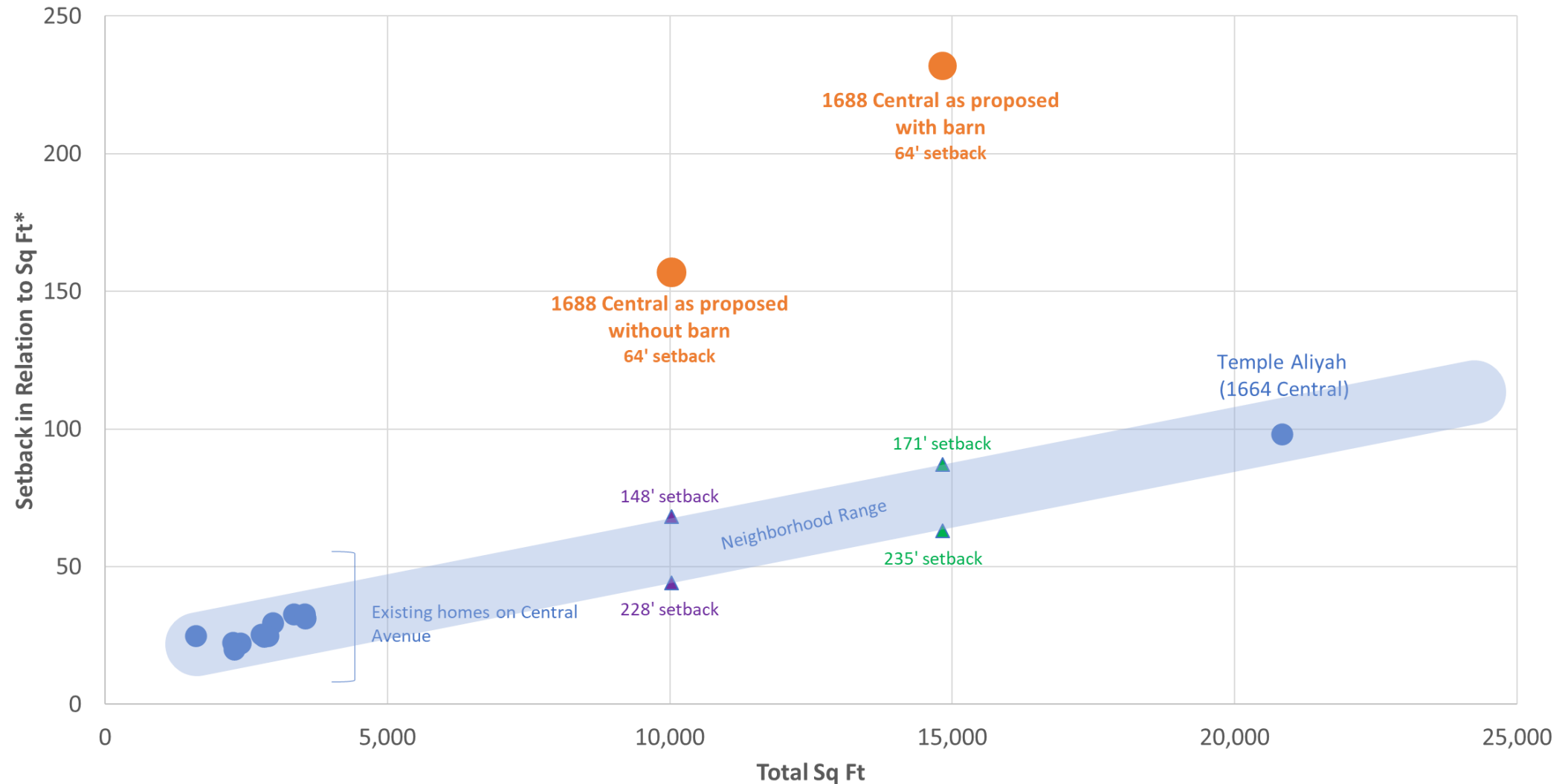
* determined as Total Sq Ft / Setback

Disharmony of the Plan with the Existing Area



* determined as Total Sq Ft / Setback

Disharmony of the Plan with the Existing Area



* determined as Total Sq Ft / Setback

Why the Traffic Projections are Unfounded

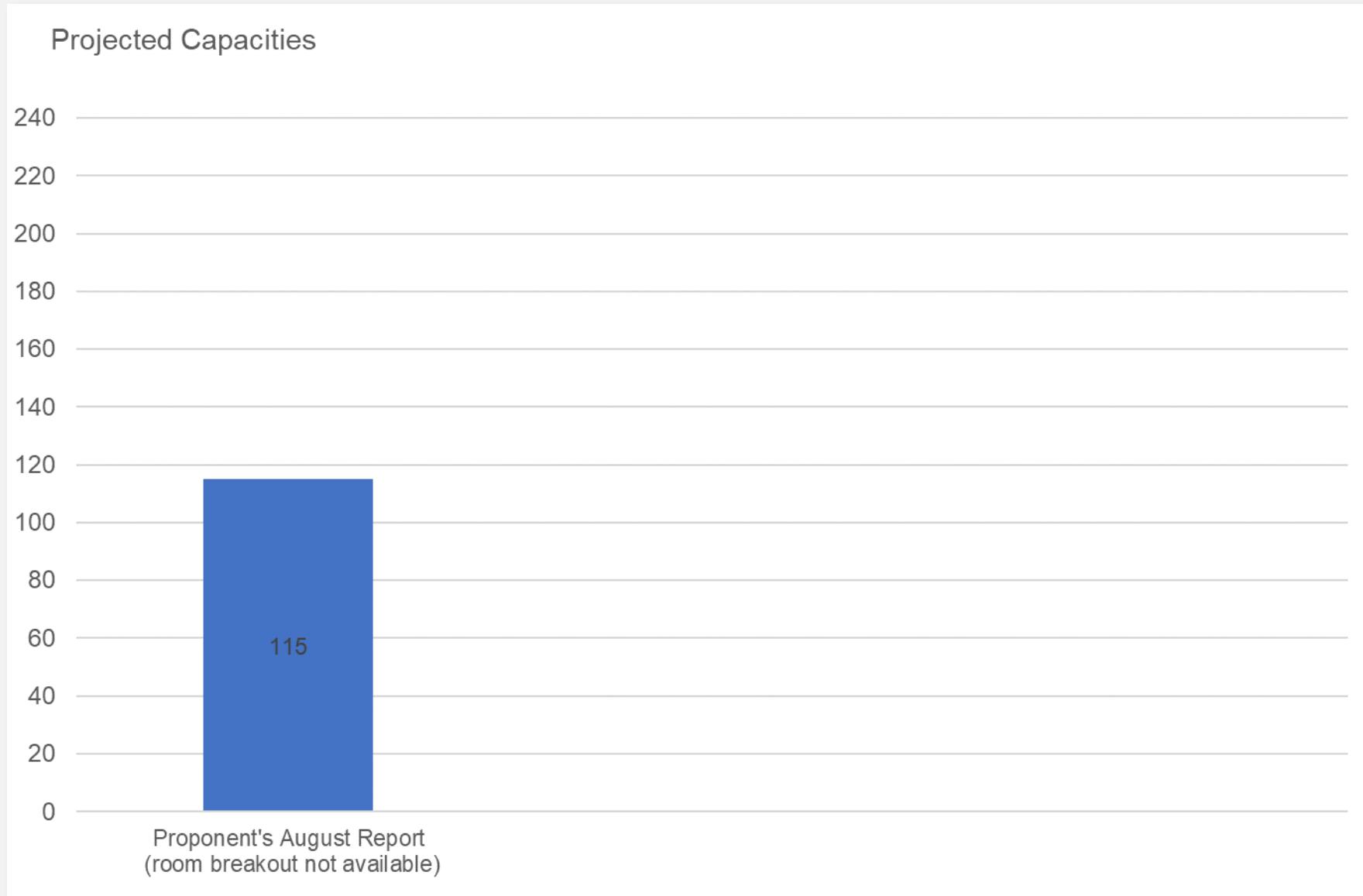
	# of vehicles 7:30am-8:30am		# of vehicles 4:45pm-5:45pm	
	Central Avenue Southbound	Central Avenue Northbound	Central Avenue Southbound	Central Avenue Northbound
Town of Needham Traffic Count 5/19/16	273	1080	1028	402
Town Count scaled to 2021 using 1% annual growth	287	1135	1080	423
Proponent's Traffic Count 10/13/21	172	681	642	252

Proponent's Figures are 40% Less than Town of Needham Data

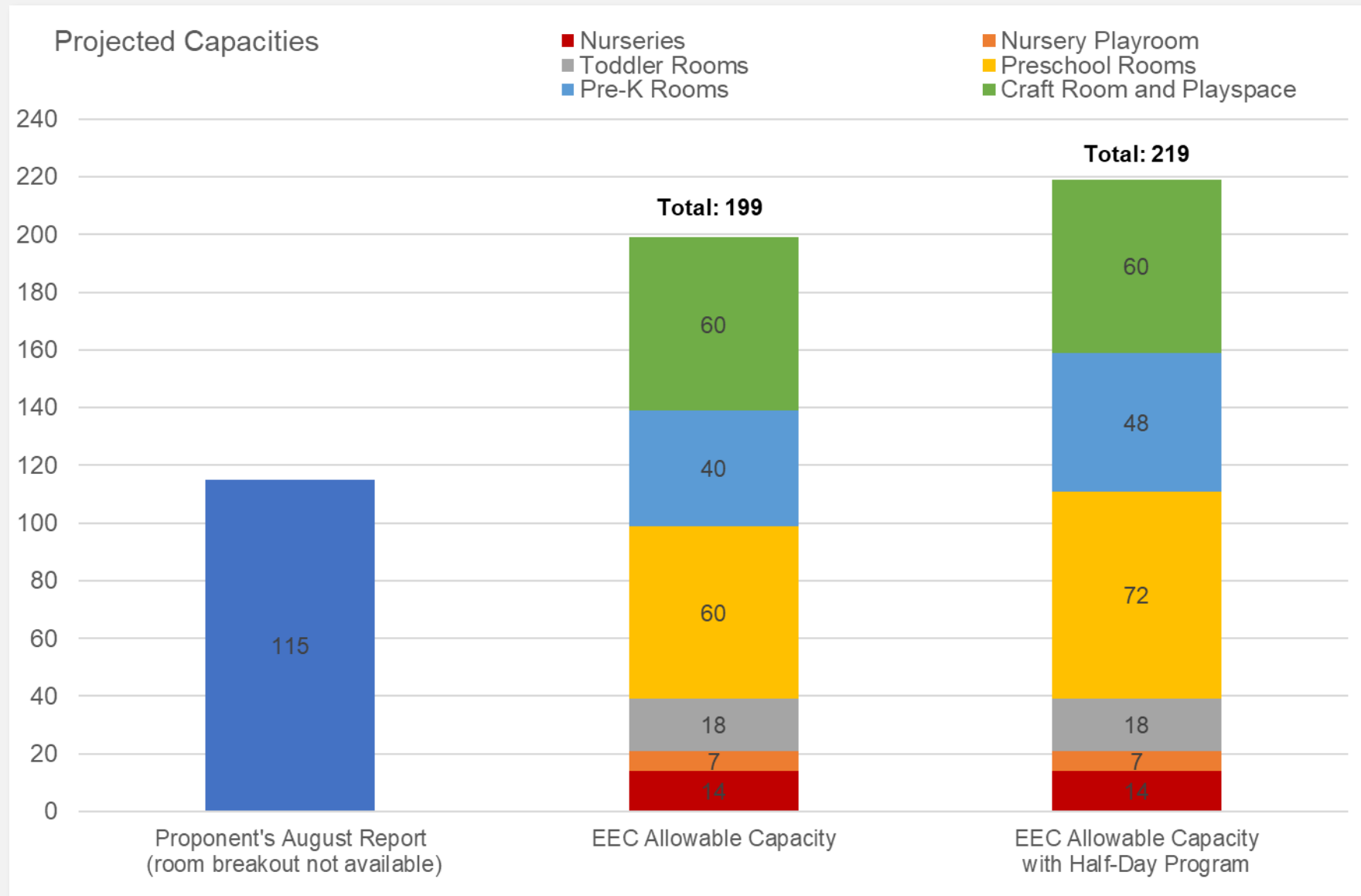
Why the Traffic Projections are Significantly Unfounded

	# of vehicles 7:30am-8:30am		# of vehicles 4:45pm-5:45pm	
	Central Avenue Southbound	Central Avenue Northbound	Central Avenue Southbound	Central Avenue Northbound
Proponent's Traffic Count 10/13/21	172	681	642	252
Proponent's Count adjusted for COVID & scaled to 2028 using 1% annual growth	240	950	896	352
Town Count scaled to 2028 using 1% annual growth	308	1217	1158	453
Proponent underestimated by:	(68)	(267)	(262)	(101)

Planning for the Legally Allowable Capacity



Planning for the Legally Allowable Capacity



Unremediated Issues

- Disharmony with the Area
- Traffic: projections, analysis, queues, turns, sidestreets...
- Planning for the Allowable Physical Capacity
- Barn / 2 Buildings(?) / What does a customary daycare center require?
- Public Safety / Sidewalk construction plan
- Soil Contamination & Remediation (pending Board of Health review)
- Lighting & Car Headlight trespass (should be reviewed by DRB)
- Water Drainage plan (should be reviewed by DPW)
- Parking: requirements for the actual building size, not a tenant's plan

From: [Maggie Abruzese](#)
To: [Planning](#); [Alexandra Clee](#); [Lee Newman](#)
Subject: 1688 Central Avenue - December 8 followup
Date: Sunday, December 12, 2021 11:57:27 PM
Attachments: [LIGHTING 1688 submission.pdf](#)
[MMA talking points december 8.pdf](#)

Dear Chair and Members of the Planning Board,

Thank you for the opportunity to speak and express my concerns about the building proposal for 1688 Central Avenue.

Attached please find the requested submission on Lighting and a copy of my presentation from December 8, 2021.

Sincerely,

Maggie Abruzese
30 Bridle Trail Rd

LIGHTING at 1688 Central Avenue

The Design Review Board wanted to review the lighting at its August meeting. You can see the exchange between DRB member Bob Dermody and Attorney Evans Huber at this link:

<https://youtu.be/S8iEplZMgiU?t=2694> (DRB meeting of August 9, 2021 at 44:54)

The DRB wanted to follow up on its March comments on the partial lighting plan that was submitted at that time. The developer's attorney couldn't discuss lighting with the DRB because the developer didn't have a lighting plan (even though it is a required aspect of the application). The developer wants to downplay the importance of lighting, saying the lights will be shut off in the early evening. New England has dark mornings and dark afternoons for much of the year. This center is going to be open for staff early in the morning and at night after the last pick up. Presumably a cleaning crew would service the center after hours each night. Lighting is not an insignificant issue.

Despite the fact that the bylaws require the developer to submit a lighting plan for site review (see bylaw 7.4.4), the developer did not submit a formal lighting plan until November 8, 2021, six months after his application for Major Project review. Even then, it did not incorporate the DRB's comments into its design, submit the plan to the DRB, or address the concerns the DRB raised. You can view the DRB discussion of the first partial lighting plan at this link:

<https://youtu.be/4K1Ad1TK3l8?t=3484> (DRB meeting of March 22, 2021 at 58:04)

The new plan still does not show any **lighting at the entrance** which was one of the deficiencies that the DRB pointed out.

Uniformity of the lighting was another area of concern expressed by the DRB. When the lighting is not uniform, you have bright spots and dark spots and that is not good for visibility and safety. Uniformity of lighting is measured by the max/min ratio (i.e. how big a difference there is between the maximum footcandle and the minimum footcandle). You can find the max/min ratio in the Calculation Summary of the lighting plan. A copy of the lighting plan is attached as Exhibit A. The higher the ratio number the spottier the lighting. The November 8 lighting plan has a max/min ratio of 45, meaning the maximum footcandle (9 fc) is 45 times higher than the minimum footcandle (.2). This is a very high ratio and shows that DRB's concerns about lack of uniformity were not resolved with this plan.

The DRB was also concerned about the fact there was **light trespass** onto the Temple property. This plan still shows significant light trespass onto the Temple property. It also shows trespass onto the Darish property.

Needham's zoning bylaws at 5.1.3 require there to be an average of 1 fc in the parking area. The developers lighting plan has an average of **3.24 fc**. This can be seen in the Calculation Summary of the lighting plan.

Another important aspect of lighting is the **BUG rating**. The BUG rating measures backlight, uplight and glare. “B” Backlight is how much light is thrown behind the fixture which can lead to light trespass, as it does in this plan. “U” Uplight is how much light is thrown into the sky. “G” Glare is the sensation of seeing a too bright light which causes annoyance, discomfort or loss in visual performance and visibility. The scale goes from 0-5. The lower the number the better. A few different articles about BUG ratings are attached as Exhibit B.

The developer’s lighting plan calls for 4 fixtures with a BUG rating of **B3 U1 G4**. It also calls for a fixture on the barn with a BUG rating of **B3 U0 G3**. The information sheets for the two different fixtures the developer proposes are attached as Exhibit C. These are very high BUG ratings and are not appropriate for a residential area, especially when the lighting is placed so close to the property line as it is on the Temple side. Those high ratings are more appropriate for a large city business district or a high-intensity industrial zone as you can see on the chart on page 3 of the Lighting Fundamentals article in Exhibit B.

I would ask that the Planning Board submit the lighting plan to the DRB for comment. I request lighting (and all other aspects of the plan) not be left to be “worked out” out of sight of the public.

The Planning Board should seek guidance and comment on the lighting plan and any feedback or guidance given should be written and public. The applicant should be required to submit a new plan in accordance with the guidance and comments, and the public should have the opportunity to review and comment on that new lighting plan as a part of the public hearing process before any permit is issued.

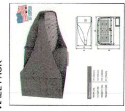
While the developer may consider the details of lighting, sidewalks, parking layout, landscaping, setback, emergency vehicle, delivery truck and trash truck access, snow removal and the like to be insignificant, they are not insignificant to those who live in this area. The developer is focused on building quickly and economically for his own financial interest. He is not focused on the impact that each of these plan decisions will have on the neighbors.

Please do not take away the public’s role in scrutinizing each aspect of the plan for how it will affect the neighborhood. Please do not allow the developer to work out details “off-line” with town departments out of view of the public eye. The Planning Board is permitted to take the time it needs to review this application and the developer can hardly claim delay when it is he who has not submitted sufficient information about details required to be reviewed by the Planning Board.

Sincerely,

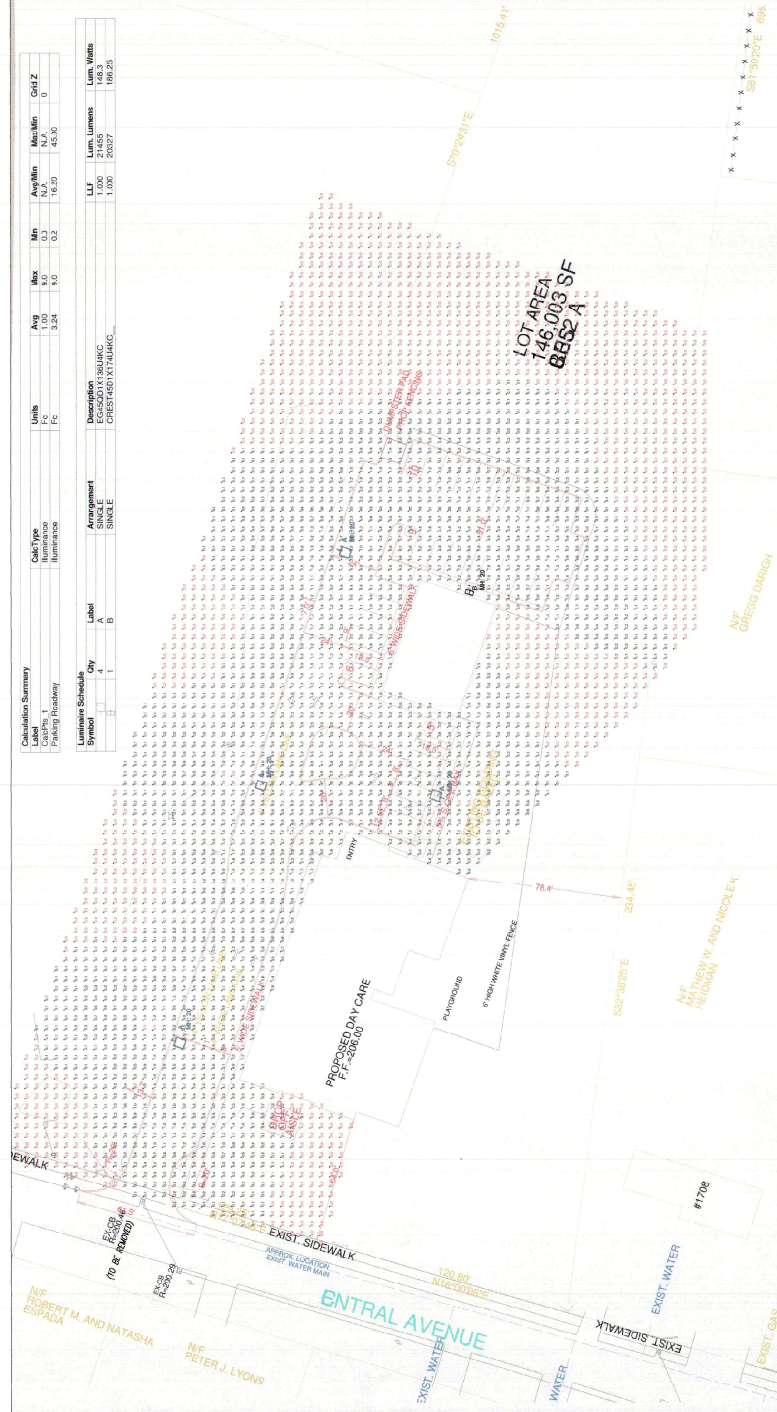
Maggie Abruzese
30 Bridle Trail Rd

Exhibit A



LIGHT FIXTURE MODEL NUMBER
CREST45D1X174LU4<C
AS MANUFACTURED BY PEMCO LIGHTING PRODUCTS

LIGHT FIXTURE MODEL NUMBER
EG450D1X136U4C
AS MANUFACTURED BY EMCO LIGHTING PRODUCTS

[illegible]

NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-9-21	REV. BUILDING LOCATION
3	7-26-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-9-21	PER TOWN COMMENTS
	11-22-21	PER TOWN COMMENTS



APPENDIX
PHOTOMETRIC AND SITE LIGHTING
PLAN
1688 CENTRAL AVENUE
IN
NEEDHAM MA
SCALE 1"=30' JUNE 22, 2020

SCALE 1"=30' JUNE 22, 2020 NEEDHAM MA

Exhibit B

800-468-9925

 Request A Quote 0 Items

Search



What Does BUG Rating Mean?

To the untrained ear, hearing the words “BUG rating” may bring to mind swarms of insects or bad reality TV. However, the BUG rating has nothing to do with either, and everything to do with lighting. BUG is simply an acronym coined by the Illuminating Engineering Society (IES) and the International Dark Sky Association to better explain how light trespass can be measured. The BUG rating of a luminaire determines how much light trespass that a light fixture produces. The BUG rating replaced the old measuring system known as the “cutoff system” around 2005 and is more comprehensive, taking **B**acklight, **U**plight, and **G**lare into account (the B, U, and G, of BUG).

[Send message](#)

- **Backlight** – This category takes into account the light that is spilled from *behind* the fixture into areas where it is unwanted. This is the opposite area to the area where light is intended to be. Backlight is mostly a problem regarding light trespass on adjacent sites and areas.
- **Uplight** – Uplight is the resulting light spill above the top of the fixture. Uplight contributes greatly to light pollution, sky glow, and is generally not “dark-sky friendly.” Minimizing uplight in commercial lighting fixtures can make the stars more visible at night.
- **Glare** – Have you ever driven past a really bright streetlight that almost seemed to blind you for a moment? That’s glare. Light glare is the amount of front light in the forward zones but happens when the light is too strong or concentrated. Glare is a safety issue as well as a light trespass issue near adjacent properties.



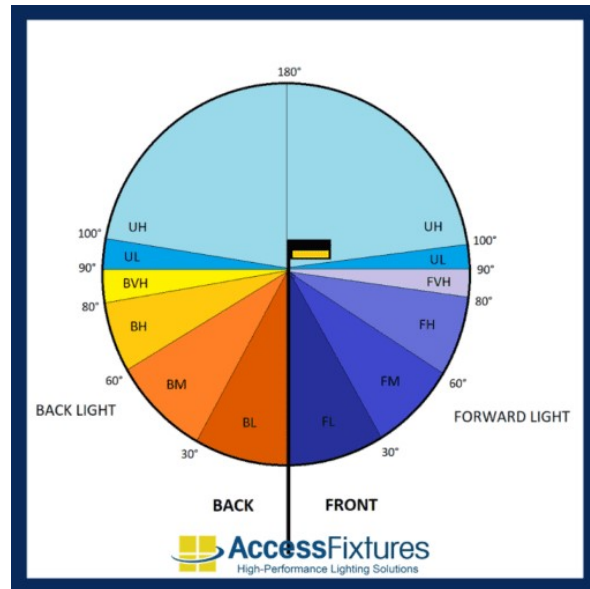
Request a Photometric Analysis

Why Does it Matter?

BUG rating is a system that allows luminaires with photometric data to be measured. It works in tandem with the International Dark Sky Association’s light zones, which are accepted levels of light, or light limitations, in certain outdoor areas. The following light zones represent all the possible degrees of ambient light in an outdoor area, ranging from complete darkness (LZ0) to very bright municipal areas (LZ4).

- **LZ0:** No Ambient Lighting
- **LZ1:** Low Ambient Lighting
- **LZ2:** Moderate Ambient Lighting
- **LZ3:** Moderately High Ambient Lighting
- **LZ4:** High Ambient Lighting

Different luminaires have different BUG ratings. Obviously, the BUG rating for an outdoor luminaire in a LZ0 no ambient lighting zone will need to be much lower than that of a fixture in a LZ4 high ambient lighting zone. BUG rating and light zone requirements work together to ensure that local and municipal codes are met when installing outdoor light fixtures. Certain levels of glare are more permissible in some locations over others.



A diagram depicting backlight, uplight, and glare zones of a light fixture.

Overall, the lower the BUG rating, the fewer light trespass problems the fixture will cause. It is best to aim for the least amount of light trespass possible while still maintaining the required amount of footcandles for your project. BUG rating can be a helpful determinant in both commercial and residential outdoor lighting projects to reduce light trespass and uplight glow.

In order to determine the BUG rating of your outdoor lighting project, request a photometric analysis from Access Fixtures. Contact your local building code department to find out what the light trespass requirements are in your jurisdiction and we can design a lighting plan to fit those parameters.



Lighting Fundamentals – BUG Ratings

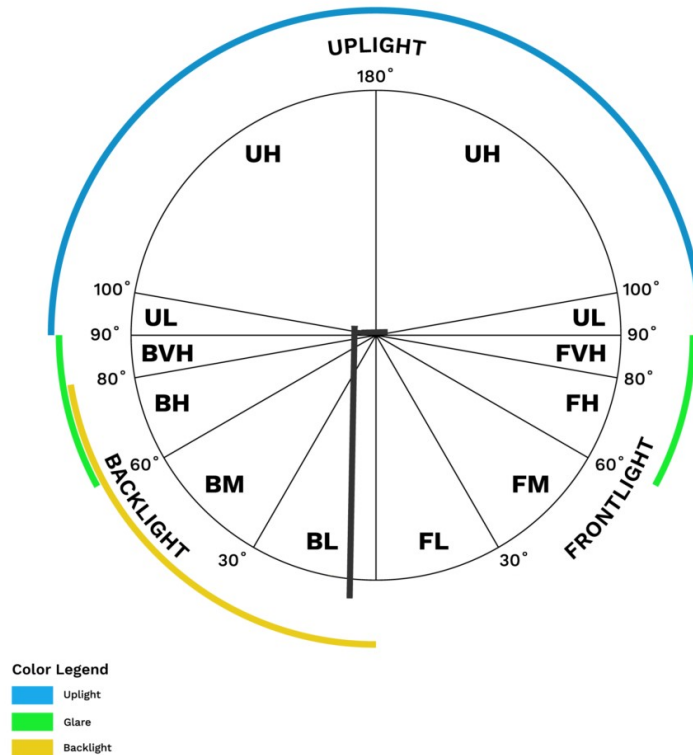


A BUG Rating stands for backlight, uplight, and glare. **Backlight (B)** is the light directed behind the fixture, **uplight (U)** is any light directed upward above the horizontal plane of the luminaire, and **glare (G)** is the amount of light emitted from the luminaire at high angles.

The backlight, uplight, and glare ratings are assigned a value between 0 and 5 (with lower of the scale being more desirable) depending on the maximum amount of light in these zones based on thresholds defined by the [Illuminating Engineering Society \(IES\)](#) and enforced by the [International Dark-Sky Association \(IDA\)](#).

A BUG Rating gives a simple way to quantify where the light goes in a light. In most cases, **you want lower numbers as an indicator that light goes where it's supposed to versus unintended areas.** When

you don't control the light well you get into situations where there may be consequences – such as in sensitive wildlife areas or residential neighbourhoods.



So What BUG Rating Should I Look For?

The short answer is that the lower the value, the better the rating. The IES and [Dark-Sky Association's Model Lighting Ordinance](#) has clear definitions outlined below for what recommended rating levels should be. Each area may also have their own requirements that can supersede these standards.

Below is the detailed information around BUG Ratings however the ratings in the zones defined by this system are intended to be just one of the metrics used to evaluate luminaire distribution and the potential for light pollution and obtrusive light.

Maximum Allowable BUG Ratings (Defined by the Model Lighting Ordinance)

	Lighting Zone				
	LZ0	LZ1	LZ2	LZ3	LZ4
BACKLIGHT					
> 2 mounting heights from lighting boundary	B1	B3	B4	B5	B5
1 to 2 mounting heights from lighting boundary and properly oriented	B1	B2	B3	B4	B4
0.5 to 1 mounting height to lighting boundary and properly oriented	B0	B1	B2	B3	B3
< 0.5 mounting height to lighting boundary and properly oriented	B0	B0	B0	B1	B2
UPLIGHT					
Allowed uplight ratings	U0	U1	U2	U3	U4
GLARE					
Allowed uplight ratings	G0	G1	G2	G3	G4

- **LZ0:** No ambient lighting – Areas such as wilderness areas, parks and preserves, and undeveloped rural areas.
- **LZ1:** Low ambient lighting – Areas such as rural and low-density residential areas.
- **LZ2:** Moderate ambient lighting – Areas such as light commercial business districts and high density or mixed-use residential districts
- **LZ3:** Moderately high ambient lighting – Areas such as large cities' business districts
- **LZ4:** High ambient lighting – Special case areas such as high-intensity business or industrial zone districts.

A detailed evaluation of the lighting should also consider the overall system design, including luminaire locations, utilization of light

where it is needed, lighting quality, visual tasks, aesthetics, safety requirements, and security issues.

Our [IPL series](#), [SCL series](#), and [SCL2 series](#) luminaires are all intentionally designed for optimum light performance taking all aspects of good lighting design into account – one of these being keeping the BUG Rating as low as possible. All of our lights have a BUG Rating of 2 or less. In addition, all of our luminaires have an uplight rating of U0, in compliance with the [International Dark-Sky Association \(IDA\)](#) recommendations to reduce light pollution by only lighting the area needed.

We are here to help with any lighting project, and we can create lighting layouts and provide product recommendations that ensures your project is lit in the most efficient way keeping your BUG Rating the lowest level possible.

Need Help on Your Project?

Contact Us Now!

Search

[Sign Up for Our Newsletter!](#)



BUG Rating System & Nighttime LED Lighting



Quality lighting becomes even more important when you're outdoors. When the sun goes down, it is the only thing separating you from total darkness. But that lighting needs to be usable, as excessive amounts of stray light will send illumination every place except where you need it. Using the BUG exterior system can help you choose the best exterior lighting for street lights, area lights, walkway lights, wall packs, and other systems while reducing wasted light and light pollution.

What is a BUG Rating?

The BUG lighting classification system is a useful measurement of nighttime luminaire performance. The system was developed by the Illuminating Engineering Society (IES) and the International Dark Sky Association as a way of evaluating any [outdoor light fixture](#). It was first added to the Luminaire Classification System (LCS) in 2009, replacing the previous system that was mainly geared toward street lights.

In the case of these ratings, the word "BUG" is an acronym for **Backlight, Uplight and Glare**. All three are forms of stray light that can be emitted from a fixture. Although each does have positive uses in certain applications, they are generally considered "bad" light, as they often are not light you can practically use. But each is noticeably worse for some tasks than others, and the BUG rating helps to quantify this.

LED Fixture Backlight (B)

Backlight, also known as light trespass, refers to the light emitting from behind a fixture. This light usually protrudes outwards or towards the ground, illuminating an area that is not intended to be illuminated. Backlight is great when you're talking about improving the visibility of wristwatches or viewing your smartphone. But when you can't sleep at night because of the light shining out from behind a streetlight into your room, you might think twice about enjoying backlight. In order to get more light to head towards the front, manufacturers can use optics, reflectors, or glare shields to redirect it.

Luminaire Uplight (U)

Uplight is the light that shines upwards from a fixture towards the sky — hence the alternate term "skyglow". This stray light is responsible for the light pollution often seen in large cities. In exterior lighting, any uplight is wasted light, as it is not going towards where people are. It will also block out the view of the stars and moon. Skyglow can be cut down by fully shielding your fixture and by making sure it's pointed towards the ground. This will also reduce energy use and cost. The IDA is particularly concerned with limiting uplight so more people can enjoy the stars at night.

Nighttime Glare (G)

Glare, or forward light, is sometimes called "offensive light" because that's exactly what it does for most people. This light, which can be reflected or directed, makes it very difficult for people to see — especially when it shines directly into their eyes. It is especially dangerous when operating a motor vehicle at night. Glare can be reduced by using lights that aren't as bright or by selecting a light with a distribution pattern that's appropriate for your intended use.

How to Calculate a BUG Rating

The BUG system might seem complicated at first, but it actually has an intuitive setup. Every zone of stray light is divided into subzones as follows:

Backlight Subzones

- BVH: Backlight Very High (80-90 degrees)
- BH: Backlight High (60-80 degrees)
- BM: Backlight Mid (30-60 degrees)
- BL: Backlight Low (0-30 degrees)

Uplight Subzones

- UH: Uplight High (100-180 degrees)
- UL: Uplight Low (90-100 degrees)

Glare Subzones

- FVH: Forward light Very High (80-90 degrees)
- FH: Forward light High (60-80 degrees)
- FM: Forward light Mid (30-60 degrees)
- FL: Forward light Low (0-30 degrees)

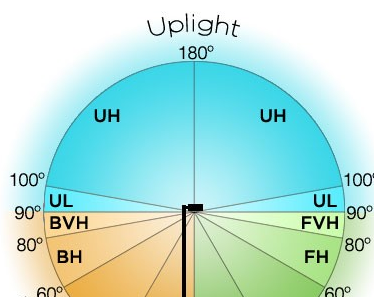


Exhibit C



IES ROAD REPORT

PHOTOMETRIC FILENAME : EG45QD1X136U4KC.IES

DESCRIPTIVE INFORMATION (From Photometric File)

IESNA:LM-63-1995

[TEST] s17050021h-01 - scaled from 167w 5K improved 101819

[TESTLAB] LEADING TESTING LABORATORIES

[ISSUE DATE] 2017-07-21 17:02:23

[MANUFAC] PEMCO

[LUMCAT] EG45QD1X136U4KC

[LUMINAIRE] EG45 WITH ONE 136W QSSI LED ARRAY, TYPE IV OPTICS, CLEAR GLASS LENS

CHARACTERISTICS

IES Classification	Type IV
Longitudinal Classification	Short
Lumens Per Lamp	N.A. (absolute)
Total Lamp Lumens	N.A. (absolute)
Luminaire Lumens	21455
Downward Total Efficiency	N.A. (absolute)
Total Luminaire Efficiency	N.A. (absolute)
Luminaire Efficacy Rating (LER)	145
Total Luminaire Watts	148.3
Ballast Factor	1.00
Upward Waste Light Ratio	0.00
Maximum Candela	14878.229
Maximum Candela Angle	32.5H 65V
Maximum Candela (<90 Degrees Vertical)	14878.229
Maximum Candela Angle (<90 Degrees Vertical)	32.5H 65V
Maximum Candela At 90 Degrees Vertical	5.519 (0.0% Luminaire Lumens)
Maximum Candela from 80 to <90 Degrees Vertical	2170.22 (10.1% Luminaire Lumens)
Cutoff Classification (deprecated)	N.A. (absolute)

LUMINAIRE CLASSIFICATION SYSTEM (LCS)

	Lumens	% Lamp	% Luminaire
FL - Front-Low (0-30)	1017.7	N.A.	4.7
FM - Front-Medium (30-60)	8327.6	N.A.	38.8
FH - Front-High (60-80)	8506.2	N.A.	39.6
FVH - Front-Very High (80-90)	117.1	N.A.	0.5
BL - Back-Low (0-30)	551.6	N.A.	2.6
BM - Back-Medium (30-60)	1415.9	N.A.	6.6
BH - Back-High (60-80)	1384.5	N.A.	6.5
BVH - Back-Very High (80-90)	134.2	N.A.	0.6
UL - Uplight-Low (90-100)	0.1	N.A.	0.0
UH - Uplight-High (100-180)	0.0	N.A.	0.0

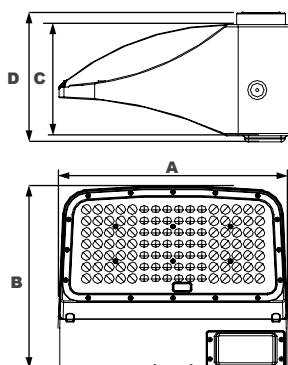
Total	21454.9	N.A.	100.0
-------	---------	------	-------

BUG Rating	B3-U1-G4
------------	----------



POWERPACK FULL CUTOFF WALL PACK

L70
25°C 646,000 Hours



Dimensions

Width (A)	15" (380mm)
Length (B)	12" (302mm)
Height 1 (C)	5 1/4" (146mm)
Height 2 (D)	6" (154mm)

Specifications and Features:

Housing:

Die Cast Aluminum Housing with Full Cutoff Front Frame, Integral Heat Sinking and Driver Compartment. UV-Stabilized Polycarbonate Vandal-Resistant Lens Area on Housing for Use with Microwave Sensors. Twist-Lock Photocell/Smart Controls Adaptable. Nickel-Plated Stainless Steel Hardware.

Listing & Ratings:

CSA: Listed for Wet Locations, ANSI/UL 1598, 8750; IP66 Sealed LED Compartment.

Finish:

Textured Architectural Bronze Powdercoat Finish Over a Chromate Conversion Coating. Custom Colors Available Upon Request.

Lens:

Clear One-Piece Molded Type IV UV-Stabilized Polycarbonate Lens.

Mounting Options:

Mount Directly Over a 4" Recessed Outlet Box, Includes Easy-Hang "Two Hands Free" Wall Mounting Bracket with Built-In Level. Optional Trim Plate is Available for Use in Retrofit Applications to Cover Wall Surface Blemishes.

EasyLED LED:

Aluminum Boards

Wattage:

81w: Array: 80.8w, System: 92.8w (175w HID Equivalent)
112w: Array: 111.9w, System: 131w (250w HID Equivalent)
174w: Array: 174.1w, System: 187.5w (400w HID Equivalent)

Driver:

Electronic Driver, 120-277V, 50/60Hz or 347-480V, 50/60Hz; Less Than 20% THD and PF>0.90. Standard Internal Surge Protection 6kV. 0-10V Dimming Standard for a Dimming Range of 100% to 10%; Dimming Source Current is 150 Microamps.

Controls:

Fixtures Ordered with Factory-Installed Photocell or Motion Sensor Controls are Internally Wired for Switching and/or 1-10V Dimming Within the Housing. Remote Direct Wired Interface of 1-10V Dimming is Not Implied and May Not Be Available, Please Consult Factory. Fixtures are Tested with LEPG Controls and May Not Function Properly With Controls Supplied By Others. Fixtures are NOT Designed for Use with Line Voltage Dimmers.

Warranty:

5-Year Warranty for -40°C to +50°C Environment.

See Page 2 for Projected Lumen Maintenance Table.

Order Information Example:

CREST45D1X174U5KCZSP

CREST45	D				C		
Model	Optics	Wattage	Driver	CCT	Lens	Color	Options
CREST45= PowerPack Wall Mount	D=Type IV	1X81=81w 1X112=112w 1X174=174w	U=120-277V H=347-480V	4K=4000K 5K=5000K	C=Clear Molded UV-Stabilized Polycarbonate Lens	Z=Bronze C=Custom (Consult Factory)	SF =Single Fuse* DF =Double Fuse* SP =Surge Protection R3 =3-Pin Twist Lock Photocell Receptacle R5 =5-Pin Twist Lock Photocell Receptacle R7 =7-Pin ANSI C136.41—2013 Twist Lock Photocell Receptacle PC3 =Photocell, 120-277VAC S2 =Microwave Sensor with Dimming for Mounting Heights of 8' to 40'.* S4 =Microwave On/Off Motion Sensor for Mounting Heights of 8' to 19'.* BU =Battery Backup, 90 Minutes (81w only)* BUC =Cold Start Battery Backup, -20°C, 90 Minutes (81w only)* *120-277V Models Only.



Contact Factory for DLC Part#s





POWERPACK FULL CUTOFF WALL PACK

Accessories & Replacement Parts:



WPC45TPZ*

P18103



P17117

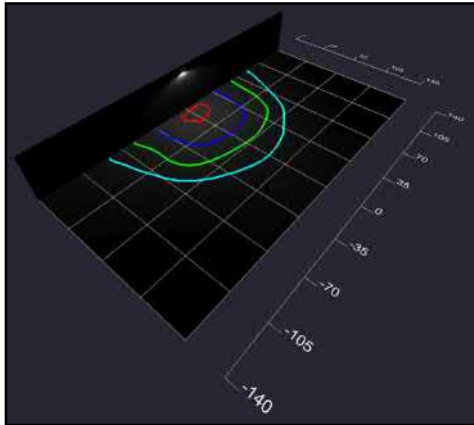
P17123

*Shown Mounted.

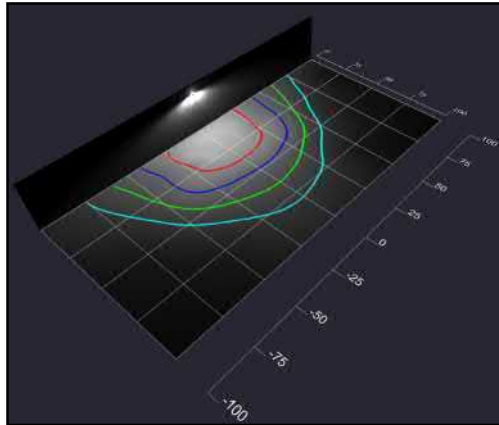
Accessories (Order Separately, Field Installed)	
P18131	Twist Lock Non-Shorting (Open) Cap Disconnects Service to Fixture for Temporary or Permanent Disabling (Fixture Always Off). IP65, 480V Maximum.
P18132	Twist Lock Shorting Cap Provides Fixed Service to Fixture (Fixture Always on). IP65, Rated Load 7200w Tungsten.
P18140	110-120VAC Instant Twist Lock Photocell
P18150	120VAC Time Delay Twist Lock Photocell
P18152	277VAC Time Delay Twist Lock Photocell
P18156	120-277VAC Universal Twist Lock Photocell
P18157	480VAC Time Delay Twist Lock Photocell. For 480V use only.
WPC45TPZ	Aluminum Two-Piece Trim Plate, Bronze Powdercoat Finish, 16½" W x 8½" H

Replacement Parts (Order Separately, Field Installed)	
P18103	120-277VAC Photocell
P17117	Internal Microwave Sensor with Dimming for Mounting Heights of 8 to 40'. 120-277VAC, 50/60Hz.
P17123	Internally Mounted Microwave On/Off Motion Sensor for Mounting Heights of 8' to 19', 120-277VAC, 50/60Hz
For Replacement Battery Backup, see the LEPG LED Battery Backup Specification Sheet.	

Photometric Data



CREST45D1X174U5K
Type IV
Grid in MH
MH=35 Feet



CREST45D1X174U5K
Type IV
Grid in MH
MH=25 Feet

Photometric Performance

LED Board Watts	Drive Current (mA)	Input Watts	Optics	5000 CCT 80 CRI					4000 CCT 80 CRI				
				Lumens	LPW	B	U	G	Lumens	LPW	B	U	G
EasyLED 81w	525	93	Type IV	10,402	112	3	3	3	9,700	104	3	3	3
EasyLED 112w		131		14,049	107	3	0	3	13,636	104	3	0	3
EasyLED 174w		188		20,704	110	3	0	3	20,327	108	3	0	3

Projected Lumen Maintenance

Data shown for 5000 CCT		Compare to MH				
TM-21-11	Input Watts	Initial	25,000 Hrs	50,000 Hrs	100,000 Hrs	Calculated LED Life
L70 Lumen Maintenance @ 25°C / 77°F	All wattages up to and including 188w	1.00	0.99	0.98	0.95	646,000
L70 Lumen Maintenance @ 50°C / 122°F		1.00	0.98	0.97	0.93	455,000
L80 Lumen Maintenance @ 40°C / 104°F		1.00	0.98	0.97	0.94	320,000

NOTES:

1. Projected per IESNA TM-21-11. Data references the extrapolated performance projections for the 525mA base model in a 25°C ambient, based on 10,000 hours of LED testing per IESNA LM-80-08.
2. Compare to MH box indicates suggested Light Loss Factor (LLF) to be used when comparing to Metal Halide (MH) systems.

SETBACK

This is a large commercial building. If it is built this close to the street, it will become the most prominent thing in the neighborhood. It will significantly alter the character of the area, changing it from a semi-rural quaint residential road into a more urban commercial-looking area.

The change that this building will bring in the neighborhood will be forever.

The prominence of the commercial aspect of this building is accentuated by the massive amount of pavement that is called for in this plan. Instead of a quaint driveway heading back into the property, this current design has a 22 foot wide driveway abutted by an additional 8 foot wide drop off area – that is a 30 foot wide swath of pavement stretching up from Central Avenue. Central Avenue itself is only 25' wide according to Mr. Gillan. This amount of pavement so close to the road is hardly in keeping with the residential character of the neighborhood.

In fact the bylaws that pertain to commercial uses in a SRA zone (bylaw 4.2.4) prohibit having this type of drop off area within the front setback of the property. The bylaw provides that the setback area shall be kept open and landscaped with grass or other plant materials and that it shall be unpaved, except for walks and driveways. The drop off lane is not a driveway. It should not be in the front setback.

The only way to lessen the impact of putting a large commercial building in a residential neighborhood is to require the building to be set back from the street at least as far as the temple and for there to be significant natural screening put in place to reduce the building's prominence. Additionally, the parking and drop off area must be moved out of the setback, away from the street and designed to be shielded from Central Avenue like Temple Aliyah.

The board must be careful to implement these requirements in a way that ensures that any new designs are fully vetted by the planning board review process and that the public has the opportunity to see and comment on any new plans. The board should not give final approval to the project unless and until it sees final plans that comply with all of the requirements of site plan review and special permit.

ONSITE PARKING

This piece of property has more than 3 acres of land. **There is no space crunch or other reason to crowd the street with the large building or to skimp on parking.**

The only access to this property is by car. There is no public transportation out this way. There are no crosswalks or sidewalks – only narrow, uneven, unmaintained walking paths.

1) ALL UNDERGROUND UTILITIES MAY NOT BE SHOWN ON THIS PLAN AND THE LOCATION OF THE UNDERGROUND UTILITIES SHOWN MAY VARY FROM THEIR FIELD LOCATION. THE CONTRACTOR SHALL VERIFY THE EXISTENCE AND LOCATION OF ALL UNDERGROUND UTILITIES PRIOR TO THE CONSTRUCTION. THE CONTRACTOR SHALL NOTIFY DIG SAFE AT LEAST 72 HOURS PRIOR TO THE START OF THE CONSTRUCTION.

EXISTING GRADE
EXISTING SPOT GRADE
EXISTING GAS MAIN
EXISTING SEWER MANHOLE
EXISTING DRAIN MANHOLE
EXISTING CATCH BASIN
EXISTING ELECTRIC MANHOLE
EXISTING UTILITY POLE
EXISTING TEST PIT
EXISTING BOUND
EXISTING FENCE
EXISTING FIRE HYDRANT
EXISTING GATE VALE
PROPOSED GRADE
PROPOSED SPOT GRADE
PROPOSED CATCH BASIN
PROPOSED DRAIN MANHOLE
PROPOSED TAPPING SLEEVE

- | |
|---------------------------|
| EXISTING GRADE |
| EXISTING SPOT GRADE |
| EXISTING GAS MAIN |
| EXISTING SEWER MANHOLE |
| EXISTING DRAIN MANHOLE |
| EXISTING CATCH BASIN |
| EXISTING ELECTRIC MANHOLE |
| EXISTING UTILITY POLE |
| EXISTING TEST PIT |
| EXISTING BOUND |
| EXISTING FENCE |
| EXISTING FIRE HYDRANT |
| EXISTING GATE VALE |
| PROPOSED GRADE |
| PROPOSED SPOT GRADE |
| PROPOSED CATCH BASIN |
| PROPOSED DRAIN MANHOLE |
| PROPOSED TAPPING SLEEVE |

1) THE PROJECT DOES NOT REQUIRE AN ELECTRICAL TRANSFORMER AND WILL NOT HAVE A GENERATOR.

1) THE PROJECT DOES NOT REQUIRE AN ELECTRICAL TRANSFORMER AND WILL NOT HAVE A GENERATOR.

N/F
TEMPLE ALYAH, INC.N/F
TEMPLE ALYAH, INC.ROBERT M. AND
ESPADAROBERT M. AND
ESPADA

PETER J. LYONS

PETER J. LYONS

EILEEN MARIE SULLIVAN

EILEEN MARIE SULLIVAN

N/F
SARAH W. MCKENCHNIE

N/F
SARAH W. MCKENCHNIE

N/F
MATHEW W. AND NICOLE K.

N/F
MATHEW W. AND NICOLE K.

N/F
GREGG DARIGH

N/F
GREGG DARIGH

N/F
NICOLE M. O'CONNOR

N/F
NICOLE M. O'CONNOR

ELLIOT B. AND KIMBERLY

ELLIOT B. AND KIMBERLY

N/F
JOSEPH AND GRETCHEN
SALETTO

N/F
JOSEPH AND GRETCHEN
SALETTO

N/F
STIMPT O KLIMANN/F
STIMPT O KLIMAN

LOT AREA
146,003 SF
3.352 ACRES

LOT AREA
146,003 SF
3.352 ACRES

115 kid Daycare
Preschool. Pre-K

115 kid Daycare
Preschool. Pre-K

• 5" WIDE SIDEWALK

storage

• 5" WIDE SIDEWALK

storage

staff parking

staff parking

NO.	DATE	REVISION
1	4-15-21	REV. BUILDING LOCATION
2	6-2-21	REV. BUILDING LOCATION
3	7-28-21	REV. ACCESS DRIVE
4	9-28-21	REV. CATCH BASIN AT ACCESS
5	10-28-21	PER PEER REVIEW COMMENTS
6	11-8-21	PER TOWN COMMENTS

1688 CENTRAL AVENUE
SITE PLAN
IN
NEEDHAM MA

SCALE: 1"=30' JUNE 22, 2020
GLOSSA ENGINEERING INC.
46 EAST STREET
EAST WALPOLE, MA
508-668-4401

Furthermore, there is no “on-street” parking available at this property. It would be very dangerous for someone to park on Central or Country Way or Carlton and try to navigate with their children to get to or from the daycare. The daycare site **itself** has to be designed so that it can handle the fact that every family and every staff member will be arriving by car.

The applicant proposes a model that skimps on on-site parking and instead relies heavily on a live drop off line where the front car drops off its infant or child and the rest of the cars wait behind it, moving up one car at a time until it is their turn at the head of the line. This is not a tenable model for two reasons:

1. the emissions generated by parents idling in the drop off queue waiting to make it to the front of the line will be bad for the neighborhood and terrible for the developing minds of the babies and children at the child care center. The applicant is proposing having a ten car queue that will keep refilling with cars idling while they wait to drop-off their child or pick them up. The ITE numbers which are based on the size of the building and not on the peculiarities of the proposed tenant’s program, show that **you can expect 58 cars to arrive at the property within a 60 minute period in the morning**. If they are using the drop off queue, those cars will have to wait their turn in line and they will be idling the whole time. The emissions output from all those cars idling is an unacceptable pollutant and hazard for the neighbors and for the children.
2. it is not realistic to think that live drop off daycare model will be utilized after COVID.

Live drop off works during COVID because it had to, state law did not allow parents to enter the childcare building. But this building will be operational after covid is over. Children are not suitcases that can be drop off at a steady pace without a hiccup. Daycare teachers and parents are people who are supposed to be a partnership working together for the best interests of the child.

Separation can be hard for parents, for toddlers, babies and preschoolers. The parents want to make sure their child is settled. The child wants one more hug, one more kiss, one more reassurance. They want to feel the snow on the ground on the way in, or stomp in a puddle. Parents want to communicate special concerns they might have for their child that day or snag a few minutes with a fellow parent. They may want to follow up on questions they have about their child’s care. Daycares are communities and communities require communication. A model that depends on a drop off line that was described by the applicant at a previous hearing - with a harried daycare provider taking your child from the car, grabbing your child’s stuff and running them into the building like a football to pass them off to another provider so they can run out and grab the next kid and the parent can hightail it out of the drop off line, all in 60 seconds or less, is not a successful model. The daycare that runs that model will not be able to compete with the many loving, open and warm daycares in the area and it will quickly change its practices to be more open to parents.

Even if Needham Children’s Center promises that they will always stick to a live drop off model, they are not the applicant here. The planning board must **plan** based on what the building allows, not on the promises of a potential tenant.

The Building must be able to accommodate a daycare that allows parents to park and go in to the daycare to drop off and pick up their child.

There has been some confusion about the amount of parking that the bylaws require in Needham for daycares.

The applicant has told the traffic engineer and the peer reviewer that Needham only requires a small number of parking spaces for daycares. This is incorrect. The Needham zoning bylaws set forth off street parking requirements in Section 5.1.

In section 5.1.2 there is a schedule of uses and associated parking requirements. Daycares are not listed. It states that when a use is not listed, the Building Commissioner should use the most similar use or the planning board should designate the required number of spots according to the ITE parking manual, 2nd edition or a different technical manual determined by the Planning Board to be equally or more applicable.

Twenty four years ago, in 1997, the building commissioner asked the planning board to tell it how many parking spaces to require for the application of After School Inc. at 72 School Street. The 2nd edition of the ITE parking manual didn't have guidelines for that so the board used guidelines suggested for daycares in a 1996 article from the ITE journal. That is the guideline that Needham Enterprises seeks to use today.

However, in giving that opinion in 1997 and telling the Building Commissioner to use that calculation for After School Inc, the planning board specifically stated that the guideline should only be used for that project and that it was not a universal standard. What the planning board recommended for After School Inc in 1997 is NOT what the bylaw requires today.

It is now almost a quarter century later. The ITE parking manual has been updated. It now includes parking information for daycare facilities. The zoning bylaws direct the board to use the ITE parking manual to calculate the required parking.

It is industry standard to design a site's parking supply to match the 85% peak parking rate.

ITE requires: 3.7 spots for every 1000 square feet of building. For a 10,034 square foot building, that comes out to 38 parking spaces. If the applicant keeps the barn, that means the square footage is 14,834 which works out to 55 parking spaces.

In the traffic report, the applicant acknowledges that this is what the ITE standards require, but goes on to say that they don't really need that many spaces because of the specific way that Mrs. Day has structured her programs in the past.

You cannot regulate this building based on the unique specifics of any one program. You have to regulate based on what the building holds. The zoning bylaws require you to go with the ITE standards which are **38 parking spaces** for the new building and **55 parking spaces total** if they are keeping the barn.

THE CONVENIENCE AND SAFETY OF VEHICULAR AND PEDESTRIAN MOVEMENT ON THE SITE

The interior roadway has many chokepoints and opportunities for conflicts or accidents. It doesn't allow parents to enter and exit freely. All cars are corralled together, cars can get stuck with no place to go because it is a dead-end design. There is no open parking lot or circular design.

The back lot will be filled with teacher and administrator parking. The few spots available to parents at morning drop off or evening pick up essentially will be the 6 spots next to the barn. The spots closest to the door are only going to be accessible if you wait in the drop off line.

If you don't wait to get through the drop off line, there is no easy way to turn around and exit this property. You can't access the circle, except by going through the drop off lane. If you tried to go in the thru lane and then cut into the circle, that would create a dangerous situation for the staff, parents and children trying to enter and exit their car at the drop off spot. To turn around without going through the drop off line, you either have to pull into a parking space and back out into the exit lane or you have to do a three point turn somewhere.

If the spots next to the barn are full, parents will have to wait for a spot to open. They can't wait in the roadway directly behind the parked cars because the cars need that space to back out of their spots. They can't pull forward beyond the barn spots because they'll miss their opportunity to park and then they'll be stuck in a dead-end.

The cars will naturally stop before the barn spots and wait for someone to leave. While the cars are sitting there waiting, they will be blocking people at the stop sign who have gone around the island and are trying to make a left to exit.

Also, as the DRB pointed out, the people from these cars are unlikely to take the long way around to the door. They are going to take the most logical, direct route which with this design increases the likelihood of pedestrian accidents.

Apart from all these areas of conflict and restricted flow, there are several things that this proposal does not account for:

- It does not account for fire trucks coming to the property. Where would a fire truck turn around. Particularly if there is a dumpster fire, a fire in the barn, or an emergency in the back lot. How would a fire truck access those areas or extricate itself once it goes up there.
- It is a poor plan for the dumpster to be emptied. According to the turning patterns the developer submitted, the developer is planning for the trash truck to drive up to the dumpster, empty it and then to back up all the way past the barn, back into oncoming traffic and into parking spaces where cars may be parked, to then pull forward and exit. Why is the design making it so complicated? There are more than 3 acres on this lot. There is no shortage of room for a sensible design that allows cars to circulate and trash trucks and emergency vehicles to have adequate, unimpeded access.

- The plan also doesn't account for school van parking. Needham Children's Center has three school vans. The plan does not provide any information about where those vans would park and where they would be kept on site.
- The plan also doesn't include unimpeded access to the loading zone as is required by bylaw 5.1.3(b). If Amazon, or UPS or another delivery service comes during the day when parents are in the drop off/pick up line, the truck will not have access to the loading zone without waiting in line. And it would be unsafe to have delivery trucks backing out of the loading zone right where kids are dropped off and picked up.
- Snow. There is no provision on this plan for snow removal. The dead-end design makes it very difficult to clear snow. Where will the snow be put? How will a snow plow turn around, particularly if it snows during the day and there are cars in the parking lot.

For all of these reasons, the parking plan needs to be reworked.

LIGHTING

The design review board wanted to review the lighting at its August meeting. It wanted to see how the developer took into account its March comments on an old lighting plan. But the developer didn't have a lighting plan. The developer wants to downplay the importance of lighting saying the lights will be shut off in the early evening. But, New England has dark mornings and dark afternoons for much of the year. This center is going to be open for staff early in the morning. Lighting is not an insignificant issue.

The developer did not submit their lighting plan until November 8. And It did not incorporate the DRB's comments into its design or address the concerns the DRB raised. The new plan still does not show any lighting at the entrance which was one of the deficiencies that the DRB pointed out.

Uniformity of the lighting was another one of the things that the DRB was concerned about. When the lighting is not uniform, you have bright spots and dark spots and that is not good for visibility and safety. Uniformity of lighting is measured by the max/min ratio. You can find the max/min ratio in the Calculation Summary of the lighting plan. The higher the number the spottier the lighting. The November 8 lighting plan has a max/min ratio of 45 which is very high and shows that DRB's concerns were not resolved with this plan.

The DRB was also concerned about the fact there was light trespass onto the temple property and this plan still shows significant light trespass onto the temple property. It also shows trespass onto the Darish property.

Needham's zoning bylaws at 5.1.3 require there to be an average of 1 fc in the parking area. The developers lighting plan has an average of 3.24 fc.

Another important aspect of lighting is the BUG rating. The BUG rating measures backlight, uplight and glare. "B" Backlight is how much light is thrown behind the fixture. "U" Uplight is

how much light is thrown into the sky. "G" Glare is the sensation of seeing a too bright light which causes annoyance, discomfort or loss in visual performance and visibility. The scale goes from 0-5. The lower the number the better.

The developer's lighting plan calls for 4 fixtures with a BUG rating of B3 U1 G4. And a fixture on the barn with a BUG rating of B3 U0 G3. These are very high ratings and are not appropriate for a residential area. They are more appropriate for a large city business district.

I would ask that the Planning Board submit the lighting plan to the DRB for comment.

ARCHITECT

It is a real problem here that the developer is not making the architect available to answer questions about design. It is his seal on the drawings, if the developer wants to use those drawings to support his application, the architect is obligated by virtue of sealing the drawings, to be answerable for questions about them.

The inquiry in this matter has suffered because the architect cannot answer for his drawings.

The design review board had important questions about these drawings. They wanted to know how this building footprint came to be, exactly what other footprints were considered and what the architect's decision making process was that led to this design. The DRB never got satisfactory answers because the architect was not there to testify.

Now the developer is suddenly claiming that the child care center needs the barn for storage. At the first hearing, much ado was made of the fact that Mrs. Day sat down with Mr. Gluesing so that he could design the building specifically to meet her needs. I would think if the architect were here, this board would have some pretty pointed questions about how and why Mr. Gluesing designed a building that Mrs. Day is already saying is inadequate to meet her needs. Why is there a lack of storage in the building design? Are there alterations of the drawings, like adding a basement that could remedy the problem? These are some of the questions that the Board naturally would be asking of the architect if he were here. Vice Chair Adam Block requested at the close of the July 20 hearing that the developer have all of his consultants at all of the remaining hearings on this matter.

Needham has the right to have this application be thoroughly examined. The developer short circuited that inquiry by using an architect that cannot answer for his work. This is not acceptable and the Board should not allow that to happen. The Board should disregard the architectural drawings of Mark Gluesing and consider this application incomplete in that regard.

BARN

I submitted a written brief on the barn that is the packet from November 2.

I will not go through that filing in detail. I will say here merely that the zoning bylaw is clear.

It prohibits more than one non-residential building on a residential lot, even if one of those buildings is considered an accessory building.

40A s. 3 does not apply here. The developer has made it exceedingly clear that the intent regarding the barn is to keep it. Period. Not because they need it for child care purposes. The reason they want to keep the barn is not disclosed, but clearly it has some impact the developer's investment in this property. They have admitted on the record that it is their DESIRE TO KEEP THE BARN that causes them to say that they will only use it for child care storage. While Mrs. Day now professes a need for storage, the developer has not shown ANY need for the child care to have storage in this particular configuration. There is no reason that the developer could not incorporate adequate storage into a single building with the child care center. There is no need for storage to be separate and apart from the daycare center.

The bylaw that prohibits more than one non-residential building on the lot does not impact in any way the establishment of a child care center at this property.

For these reasons, the planning board should enforce the zoning bylaw and require the developer to have only one non-residential building on the lot.

MAJOR PROJECT SPECIAL PERMIT

The bylaws require the developer to get a major project special permit based on the bulk of the building he seeks to build. I have submitted filings on this issue and I would ask you to consider those. I won't repeat my arguments here.

The zoning bylaws give you, the Planning Board, the responsibility and the authority to protect the interests of the Town of Needham. We beseech you to fully and appropriately wield all of your regulatory authority in this case.



Needham Public Health Division

178 Rosemary Street, Needham, MA 02494
www.needhamma.gov/health

781-455-7940 ext. 504
781-455-7922(fax)



Memo

To: Lee Newman, Planning Board
Alex Clee, Planning Board

From: Tara Gurge, Public Health Division
Tiffany Zike, Public Health Division

Date: 12/16/2021

Re: #1688 Central Ave. – Recommendation to the Planning Board

The Needham Board of Health had their monthly meeting on Tuesday evening (12/14), which all five members of the Board were present in-person at the meeting. The Board heard all the citizens comments and at the end of that 30-minute comment session, the Board continued their discussion of the #1688 Central Ave. project and all were unanimous on this recommendation (see attached agenda.) As you requested, we have typed up the following recommendation below.

The Needham Board of Health has the following recommendation to the Planning Board re: the project located at #1688 Central Avenue –

The Board of Health would like the Town to hire an independent third party, licensed site professional to conduct an independent evaluation only. This professional must oversee this project and confirm that the soil testing work, along with the proposed capping work to be conducted, meets all local, state and Federal requirements. Rob, the Board of Health chair, stressed the need for an independent and qualified evaluator. They must conduct a complete site assessment, give their recommendations on whether soil testing is required and what types of testing need to be conducted due to the history of this site. This licensed site professional must also determine what type of barrier or capping measures may be necessary on this site. Also need to offer their guidance on what mitigations to the new building will be required to ensure the building air quality is adequate and safe. Then they must offer their guidance on what will be required going forward to ensure the site is deemed safe for the children at this pending new Daycare facility.

Please let us know if you have any follow-up questions for us on that recommendation.

Please contact me if you have any additional questions on these requirements. You can reach me at (781) 455-7940, Ext. 211.



Needham Board of Health



REVISED AGENDA

Tuesday December 14, 2021

7:00 p.m. to 9:15 p.m.

**Multipurpose Conference Room
Rosemary Recreational Complex Building
178 Rosemary Street, Needham MA 02494**

Or via Zoom

To listen/view this meeting, download the "Zoom Cloud Meeting" app in any app store or at [www.zoom.us](https://us02web.zoom.us/j/88548277940?pwd=RC9zVXdYZithYVBGckxKby9EV3NIUT09). At the above date and time, click on "Join a Meeting" and enter the meeting ID **851-8968-0264** or click the link below to register: <https://us02web.zoom.us/j/88548277940?pwd=RC9zVXdYZithYVBGckxKby9EV3NIUT09>

- **7:00 to 7:05 – Welcome & Review of Minutes (November 16th)**
- **7:05 to 7:40 – Staff Reports (November)**
- **7:40 to 8:00 – COVID-19 Update**
- **8:00 to 8:15 – Discussion of Tobacco Free Generation Policy**
- **8:15 to 8:30 – Controlled Substance Decriminalization presentation/discussion**
- **8:30 to 9:00 – Continued discussion of #1688 Central Avenue – Citizens Comments**
- **9:00 to 9:15 – BOH Discussion/Recommendation to Planning Board for #1688 Central Ave. project**
- **Topics for Upcoming BOH Meetings**
 - *Continued Discussion about Sira Naturals Staff Request for Modifications to Operating Permit and Underlying Regulations*
 - *Status Update on BOH FY 21-22 Goals*
 - *Discussion on NEW 314 CMR 16.00: Notification Requirements to Promote Public Awareness of Sewage Pollution/Combined Sewer Overflow Notifications*
- **Next BOH meetings**

○ Regular Monthly Meeting	January 20, 2022	9:00 a.m.
○ Regular Monthly Meeting	February 10, 2022	5:00 p.m.
- **Adjournment**

(Please note that all times are approximate)

FRIEZE CRAMER ROSEN & HUBER LLP
C O U N S E L L O R S A T L A W

60 WALNUT STREET, WELLESLEY, MASSACHUSETTS 02481
781-943-4000 • FAX 781-943-4040

EVANS HUBER
781-943-4043
EH@I28LAW.COM

December 16, 2021

Via Electronic Mail
Members of the
Needham Planning Board
c/o

Lee Newman
Director of Planning and Community Development
Public Services Administration Building
500 Dedham Ave
Needham, MA 02492

Re: 1688 Central Avenue, Needham

Dear Planning Board Members and Ms. Newman:

I am writing on behalf of Needham Enterprises LLC, to provide (as discussed at the last meeting of the Board) some additional information regarding the barn, and to submit my “closing argument” regarding Needham Enterprises’ application.

I. The Barn.

As this Board is well aware, opponents of this project have urged this Board to require the applicant to demolish the barn and move the primary building back to the area currently occupied by the barn (or even further back). These arguments are legally and factually untenable.

A. Legal Issues:

The legal arguments why this Board does not have the authority to require demolition of the Barn (independent of the setback issue) are set forth at length in my letter to the Board of September 30. I will not repeat those arguments in detail here, but in light of the importance of this issue, I am forwarding to the Board, with this letter, a copy of that letter. If the Board has not yet had an opportunity to read the arguments on that subject on pages 4 and 5 of the enclosed letter, I urge the Board to do so.

In brief, those arguments are (1) the language of M.G.L. c. 40A, § 3 explicitly prohibits this Board from requiring the demolition of the barn as a condition of approving this

Needham Planning Board
December 16, 2021
Page 2

application, as long as the barn is being used for purposes relating to the child care facility; and (2) the Appeals Court decision in *Petrucci v. Bd. of Appeals of Westwood*, 45 Mass. App. Ct. 818 (1998) compels the conclusion that the Needham zoning bylaw that would otherwise preclude more than one non-residential structure on a lot in this district is superseded by M.G.L. c. 40A, § 3. In addition, since the date of the attached letter, the Board has received a letter from the Building Commissioner, Mr. Roche, dated December 7, 2021, in which he opines that, in his view, “the use if the barn if used specifically by the child care facility would be a permitted use and not a violation of zoning.”

I would also note that to my knowledge, this Board has not been provided with a single case in which a town board required the demolition of a permitted accessory structure that was going to be used solely for purposes related to child care facility, much less a decision where a town board imposed such a requirement and was upheld on appeal.

If this Board has any doubt on this issue, I respectfully reiterate my request conveyed to the Board by email dated October 7, 2021:

In an effort to resolve this disagreement, the Applicant respectfully requests that the Board seek an opinion from Town Counsel on the following questions:

"Where the Applicant intends to use the existing barn on the property at 1688 Central Ave solely for purposes relating to the proposed child care facility, (1) does the Board have the authority, as a condition of issuing the special permit in this case, to directly or indirectly require the Applicant to demolish the barn for any reason, including but not limited to in order to implement a Board-imposed front setback requirement for the proposed new building, and (2) relatedly, does the Board have the authority to indirectly require demolition of the barn by imposing a setback requirement for the proposed new building that cannot be complied with unless the existing barn is demolished?"

As has been previously acknowledged, if the Board does not have the authority to require demolition of the Barn, then the question of requiring, as has been urged, a 200-foot setback for the building, or anything like that, is moot.

B. Factual Issues

If, notwithstanding all of the foregoing, the Board is of the view that it does, at least in principle, have the legal authority to require demolition of the barn, there are myriad factual reasons why it cannot and should not do so. At the hearing on December 8, Mr. Alpert, noting that the Board’s authority under M.G.L. c. 40A, § 3 is limited to imposing “reasonable restrictions” with respect to matters such as setback, asked whether there were factual reasons why the imposition of requirements that the barn be demolished and the building moved back to a setback comparable to that of the Temple Aliyah would be unreasonable.

Needham Planning Board
December 16, 2021
Page 3

Submitted herewith is an estimate from the applicant's engineer, Mr. Glossa, that provides a partial answer to that question. If the Board were to impose such requirements, that would mean that the applicant would incur an estimated additional **\$540,000 to \$604,000** in costs on this project for (1) additional site preparation, engineering and construction costs resulting from demolishing the barn and simply moving the currently proposed building back from Central Ave another 140 to 160 feet, (2) additional fees for engineers, architects, landscape design, peer review fees (including but not limited to fees for all these professionals to appear at multiple additional hearings¹), and property carrying costs; and (3) duplicating the loss of 2000 s.f. of storage elsewhere on the property, either in the form of another accessory storage building or enlarging the proposed main building. In this regard it is worth noting that building an accessory storage building elsewhere on the property would certainly be less expensive than enlarging the building to replace the lost storage, but could only be accomplished if the Board agrees that the applicant has the right to have a separate accessory structure on the property.

In addition to these costs, requiring such a substantial redesign of the project would essentially mean "going back to the drawing board," to create a new site design and either an enlarged building design or a new storage facility elsewhere on the property. Simply sliding the entire current design back another 150 feet (which is not plausible given the shape of the property) would also place the parking and drop off areas directly behind the abutters on Country Way; to avoid this outcome the parking areas would have to be moved to the front of the building, which would not only be unsightly, but require a complete redesign of parking and vehicular site circulation. And regardless of whether the parking is placed in front of or behind the new building location, increasing the setback by this much will require new engineering and architectural design work, a new landscaping plan; new review by town boards, and presumably multiple additional public hearings. In short, requiring a change of this magnitude would constitute a *de facto* denial of the current application which, even if it were not prohibited by M.G.L. c. 40A, § 3, would result in at least 3-4 months of additional delay on this project.

It is the applicant's position that imposing additional costs of an estimated \$540,000 to \$604,000 on the applicant, and imposing at least 3-4 months of additional delay to redesign the project and get the new design approved, is *per se* unreasonable, simply to achieve 140 to 150 feet of additional setback of the building. In addition to these monetary burdens on the applicant, however, there are other reasons why the imposition of a requirement to demolish the barn and move the building back another 140-150 feet would be unreasonable. These include:

1. The project is already set back almost twice the minimum required by the bylaw, and set back the same distance as the adjacent property to the south.
2. The comparison to Temple Aliyah is not appropriate. The footprint of the Temple is more than twice as large as the proposed building for this project. The side of

¹ The additional legal fees that Needham Enterprises will incur if it is forced to go through this type of red-design and a new set of hearing are not included in this estimate.

Needham Planning Board
December 16, 2021
Page 4

the Temple facing Central Ave is considerably wider and higher than the proposed building. The sanctuary roof portion of the Temple is higher than the peak of the proposed building roof. And, the base elevation of the Temple is higher than the proposed building, which adds to its visual impact on the neighborhood, in a way that the proposed new building will not.

3. To the extent the concern about setback is driven by the visibility of the building from Central Avenue, additional landscaping can mitigate the visual impact of the proposed new building. The current landscaping plan has the approval of the Design Review Board, but if the Board is concerned that the current landscaping plan does not sufficiently screen the building, the landscaping plan can but further increased to provide additional screening. This would be a far more reasonable requirement than requiring the demolition of the barn and moving the proposed structure back another 140 to 150 feet.
4. Moving either a larger building or the current building plus a new storage building, and at least some of the parking areas, will place significant elements of this project directly behind the properties on Country Way. It is reasonable to assume that these neighbors would be opposed to revising the design and site plan in this way.
5. If the new parking areas are not placed directly behind the neighbors on Country way, they will have to be moved to a location between the building and Central Ave, where the cars will be parked every day, and more visible than with the current design. This would degrade the aesthetics of the design and reinforce the non-residential nature and appearance of the building.
6. Moving the principal building back 140 to 140 feet, and possibly another storage structure and parking areas behind it, will require the destruction of many tall, mature trees on the rear of the property. These are healthy trees that do not otherwise need to be removed. The Board has already heard from one neighbor commenting negatively on the removal of trees (which were diseased) from the front of the property, on the boundary with the Temple property.

For all of these reasons, the applicant submits that it would be legally improper and factually unreasonable for the Board to require the demolition of the barn, and moving the main building back another 140 to 150 feet, as conditions of approving this application.

II. Closing Argument

The Planning Board's permitting process on this project began in March of 2021, when Needham Enterprises submitted an application for Minor Project Site Plan Review. At that time, the site layout and proposed parking area was considerably different, with only 24 parking spaces. The building was proposed to be set back 40 feet from Central Ave; the

Needham Planning Board
December 16, 2021
Page 5

façade of the building was different (more plain); and the landscaping plan was much simpler. There was no plan to change the sidewalk along the front of the property.

Since that time, it is an understatement to say that this project has been extensively reviewed and commented upon. The project has been before the Design Review Board three times. There have been two different traffic analyses, both of which have been peer reviewed by a traffic engineer selected by the Board. There have been two hearings before the Board of Health concerning potential soil contamination issues at the property, and how those should be addressed. This Board has had the benefit of review and comment from numerous Town boards and departments, including the DRB and BoH, and the Engineering, Building, Police, and Fire Departments. The Board has received input and advice from Town Counsel and outside counsel. This matter has been scheduled for hearings before this Board at least none time, and public hearings have been conducted on at least seven of those occasions.

In response to comments, concerns and the peer review process, the Applicant has made numerous changes to the proposed project, including:

- a. Increasing the proposed setback twice, to the current proposal of 64 feet;
- b. Adding a drop-off and pick-up lane to the site entrance drive;
- c. Increasing the number of parking spaces and adding a new parking area behind the barn
- d. Improving the site circulation design;
- e. Changing the façade of the building facing Central Ave;
- f. Substantially increasing the proposed landscaping; and
- g. Adding an ADA-compliant sidewalk along the entire frontage of the property.

In addition, while Needham Enterprises respectfully does not agree that the Board has the authority to impose some of the conditions and restrictions that have been discussed during this process, Needham Enterprises is willing to agree to the following conditions:

- The building can only be used for the purpose of operating a child care facility.
- No more than 115 children can be enrolled at the facility at any given time.
- The barn can only be used for purposes ancillary to the operation of the child care facility.
- An ADA-compliant sidewalk will be installed with the final design and installation to be determined in conjunction with the Engineering Department.
- The traffic mitigation measures recommended by the Town's peer reviewer in his letter dated November 16, can be included, as written, as conditions. In this regard, please note that the applicant's position is that the Town's peer reviewer has recommended that the end point for the police detail on Central Ave during peak traffic hours should be determined by the Police Department. The applicant would further agree that this could be determined by the Police Department working in conjunction with GPI. The applicant does not agree that it is either necessary or reasonable that the police detail continue in place until this Board (presumably after additional public hearings) determines that the police detail should be discontinued.

Needham Planning Board
December 16, 2021
Page 6

- The exterior lighting plan will be modified and installed based on input from the Engineering Department.
- A wooden or brown vinyl fence will be used to enclose the play area on the south side of the property.
- A snow storage plan approved by the Engineering Department will be implemented.
- The recommendation of the Board of Health submitted by letter dated December 15, 2021, can be incorporated -- as written in that letter -- as a condition of approval, and the applicant will comply with any reasonable requirements regarding soil testing and remediation that are consistent with industry norms and practices.

In all of the materials and arguments that have been presented to this Board, it bears remembering that the project before this Board already more than complies with all existing Needham Zoning Bylaws, including all bylaws relating to the topics listed in M.G.L. c. 40A, § 3 as to which this Board is authorized to impose “reasonable regulations,” namely, “the bulk and height of structures and [...] yard sizes, lot area, setbacks, open space, parking and building coverage requirements.” The applicant is not before this Board asking for a waiver of any of the current requirements of the Needham Zoning Bylaw, as the project as proposed already complies with all such requirements, including front, side, and rear setbacks, frontage, FAR, lot coverage, lot size, building height, number of stories, and parking.

That is why the argument advanced by attorney Moore on behalf of Mr. Darish, one of the abutters of this project, is misplaced. In his remarks to this Board on December 8, Attorney Moore cited *Trustees of Tufts Coll. v. City of Medford*, 415 Mass. 753 (1993) for the proposition that an applicant challenging the application of an existing town bylaw to its “Dover amendment” project will bear the burden of proving that the local requirements are unreasonable as applied to its proposed project. That statement, while true, is inapplicable here. *Trustees of Tufts College* and other subsequent cases relying on that proposition involve fact patterns where the applicant was challenging the application of an existing dimensional bylaw, arguing that by virtue of the Dover amendment, the dimensional requirements of the bylaw in question were unreasonable as applied to the project in question. Nothing in *Trustees of Tufts College* and its progeny suggests, much less holds, that if this Board chooses to impose **additional or more stringent** requirements than those already in the Needham Zoning Bylaw, concerning “the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements,” it will still be the applicant’s burden to demonstrate that such **additional or more stringent** requirements are unreasonable.

This is not to argue the question of whether the Board has the right to impose restrictions more stringent than those imposed by the Bylaw. The Board may have that right as a general proposition, in non-Dover amendment cases involving site plan review, but not necessarily in a Dover Amendment case, in which any restriction or regulation imposed on this project must be reasonable. The existing bylaws certainly provide guidance as to what is reasonable. To the extent this Board considers imposing restrictions or conditions beyond what the Needham Zoning Bylaw requires, beyond what Needham Enterprises has set forth above as conditions to which it will agree, and/or beyond what M.G.L. c. 40A, section 3 and

Needham Planning Board
December 16, 2021
Page 7

the cases decided thereunder allow, we ask that the Board keep this closely in mind.

In conclusion, Needham Enterprises asks that the Board approve this application with the conditions listed above. I appreciate your attention to the points raised in this letter.

Sincerely,

A handwritten signature in blue ink, appearing to read "Evans Huber", with a long horizontal flourish extending to the right.

Evans Huber

FRIEZE CRAMER ROSEN & HUBER LLP

C O U N S E L L O R S A T L A W

60 WALNUT STREET, WELLESLEY, MASSACHUSETTS 02481

781-943-4000 • FAX 781-943-4040

EVANS HUBER

781-943-4043

EH@I28LAW.COM

September 30, 2021

Via Electronic Mail
Members of the
Needham Planning Board

And

Lee Newman
Director of Planning and Community Development
Public Services Administration Building
500 Dedham Ave
Needham, MA 02492

Re: 1688 Central Avenue, Needham

Dear Planning Board Members and Ms. Newman:

I am writing on behalf of Needham Enterprises LLC, to address certain issues that have been raised at the most recent hearing on this matter. We recognize that the process has, at times, become contentious and has raised a number of questions about the impact of M.G.L. c. 40A, Section 3 (the so-called "Dover Amendment") on the Town's zoning procedures and Bylaws that might otherwise be applicable to this project. We appreciate the Board's careful attention to these matters, but we feel it is important to keep in mind, throughout the remainder of this hearing process, that this project falls squarely within the protections afforded to child care facilities by the Dover Amendment, which, as this Board has previously acknowledged, limits this Board's ability to impose conditions on the project.

In particular, we would like to draw the Board's attention to the following:

1. Allegations of Violations of the State Ethics Law.

There are obviously strongly differing views on (1) whether there have been violations of M.G. L. c. 268A in connection with this application; and, (2) if any such violations are found to exist, what the appropriate consequences, if any, should be. It is not the purpose of this letter to attempt to persuade the Planning Board of the merits of the Applicant's position on those two issues.

Needham Planning Board
September 30, 2021
Page 2

What is abundantly clear, however, is that it is not within the jurisdiction or expertise of the Planning Board to consider, much less resolve, these alleged violations of M.G.L. c. 268A. As stated on the Planning Board's page on the Town website, "the Board is legally mandated to carry out certain provisions of the Subdivision Control Law (M.G.L., c. 41, s. 81K-81GG) and of the Zoning Act (M.G.L., c. 40A)." Nothing in either of those statutes even discusses potential violations of M.G.L. c. 268A, much less suggests that the Planning Board has the authority and jurisdiction to consider and resolve such issues.

On the contrary, the statute establishing the State Ethics Commission, M.G.L. c. 268B, specifically states in Section 3(i) that the State Ethics Commission "shall . . . act as the primary civil enforcement agency for violations of all sections of chapter two hundred and sixty-eight A and of this chapter." Indeed, even the Needham residents actively pursuing this issue have, citing the Board, Commission and Committee Member Handbook for the Town of Needham, argued to the *Select Board* that it is the *Select Board* that has the authority and responsibility to address this issue ("The Select Board is an overseeing entity for the Town of Needham. It has general supervision *over all matters that are not specifically delegated by law or vote to some other officer or board.*" (emphasis added)). Whatever the merits of that argument may be as applied to the facts of this case (and the Select Board has taken no action in response to the assertion that it has the authority and responsibility to address these alleged violations), this argument by the opponents of the application is a clear acknowledgement that the responsibility for addressing this issue has **not** been "*specifically delegated by law or vote to some other officer or board,*" i.e., the Planning Board.

It is not surprising, then, that by email dated July 16, 2021, Town Counsel, attorney Christopher Heep, advised this Board that "as previously discussed, I don't believe that Mrs. Abruzese's arguments relative to the *State Ethics Law* provide a basis for the Board to stop, or postpone, its hearing on a zoning application." And while the Board has nominally allowed the hearing to move forward on the merits, at the last hearing an inordinate amount of time was spent listening to and discussing these allegations, and then concluding that the Board needed to hire outside counsel to further advise it on these issues.

It is unfortunate that by the time of the last hearing, the Board did not have the benefit of the written opinion of attorney Heep issued pursuant to M.G.L. c. 268A section 22, to Mr. Borrelli (on the same date as the hearing) to the effect that Mr. Borrelli's ongoing connection to the Applicant, Needham Enterprises LLC, did not mean that Mr. Borrelli was "acting as an agent of Needham Enterprises LLC," and that, based on the facts recited in that letter, by continuing to pursue this application, Mr. Borrelli is "not acting in violation of M.G.L. c. 268A, section 17(c)." Perhaps having that written opinion would have expedited discussion of this issue at the last hearing.

In any event, for the reasons stated above, this is not a topic that the Board should be spending any additional time on, particularly where the hearing on this application has been rescheduled/postponed, and continued multiple times already.

Needham Planning Board
September 30, 2021
Page 3

Furthermore, as the Board is well aware, certain opponents of this project continue to insist that, while it may not be this Board's responsibility to address the merits of these allegations, this Board should nevertheless suspend this hearing while it awaits resolution of these allegations before the State Ethics Commission, and/or further opinions from outside counsel. The applicant wishes to clearly state its position on this point, that any further delay in the hearing(s) as a result of, or for reasons related to, this issue, including but not limited to spending any meaningful time discussing it during the remainder of the hearing; continuances or delays to await the results of the opinion of outside counsel; or suspending the hearing to await the outcome of action by the State Ethics Commission, will constitute an unreasonable delay in the completion of the hearing, raising the possibility of constructive grant of the Special Permit pursuant to M.G.L. c. 40A, section 9. See, e.g., *Merrimac Plan. Bd. v. Moran*, 2009 WL 191840 (Mass. Land Ct. Jan. 28, 2009), in which the Land Court affirmed the decision of the local Zoning Board of Appeals, which had ruled that the failure of the local Planning Board to act within the time required resulted in constructive approval of the application for Site Plan Review. In doing so, the Court specifically rejected the argument that the necessity of seeking an opinion of counsel on an issue raised by the applicant justified an extension of the time within which the Planning Board had to act:

It is clear that the application was constructively approved. Accordingly, I rule that the decision of the Merrimac Zoning Board of Appeals is affirmed. Plaintiffs argue that the circumstances surrounding the Planning Board's review of the application merit an extension of time set for review. Specifically, plaintiffs argue that applicant's consulting engineer informed the Planning Board that the town's designated consulting engineer had a conflict of interest. The Planning Board, therefore, had to seek a new engineering firm for consultation. Plaintiffs also argue that because Defendant L.T. was questioning whether a special permit was required, the Town sought legal counsel. These matters not having been resolved in time for a public hearing scheduled for September 26, 2006, the Planning Board continued the hearing. The Court is not persuaded by these excuses for inaction. The timing requirements of town bylaws for municipal action on review applications are strict and stringently adhered to by the Courts.

Merrimac Plan. Bd., *supra*, 2009 WL 191840, at 6. See also *Pheasant Ridge Assocs. Ltd. P'ship v. Town of Burlington*, 399 Mass. 771, 783 (1987)(the period within which the Board must act "runs from the date of the last session at which interested persons presented information and argument. [citations omitted] The date may be even earlier if a board of appeals has not conducted the public hearing expeditiously, scheduling adjourned sessions at reasonable intervals in the circumstances.")

Accordingly, we urge the Board to forego any further discussion of the alleged ethical violations, and to conduct and complete the remainder of the hearing "expeditiously," focusing only on the remaining issues that relate to the project itself.

Needham Planning Board
September 30, 2021
Page 4

2. The Existing Barn.

Several arguments have recently been raised to support the idea that the applicant should be required to take down the existing barn and move the proposed new building to the location where the barn used to be. First, it has been argued that Section 3.2.1 of the Town Bylaw prohibits more than one non-residential structure on a lot in this zoning district, and that the barn, even if used solely for purposes relating to the child care facility, is prohibited by this portion of the Bylaw.¹ This argument is incorrect, and was explicitly rejected by the Appeals Court in *Petrucci v. Bd. of Appeals of Westwood*, 45 Mass. App. Ct. 818 (1998). In that case, the property had an existing residence and a separate barn that the applicant sought to convert to a child care facility. The application was rejected on the grounds, among others, that the town Bylaw prohibited more than one primary use on a lot. The Appeals Court stated: “Even were the board correct in its assertion that the Westwood by-law does not permit multiple primary uses on a single lot, such a prohibition is exactly what the statute [c.40A sec. 3] declares impermissible with respect to child care facilities.” *Id.*, 45 Mass. App. Ct. at 822. Similarly, in this case the portion of the Needham Bylaw that prohibits more than one non-residential structure on a lot is overridden by M.G.L. c. 40A, section 3, which states:

No zoning ordinance or bylaw in any city or town shall prohibit, or require a special permit for, the use of land or structures, or the expansion of existing structures, for the primary, accessory or incidental purpose of operating a child care facility; provided, however, that such land or structures may be subject to reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements. (emphasis added).

In sum, this Board cannot prohibit the Applicant from using the barn for purposes relating to the child care facility, on the grounds that Section 3.2.1 of the Town Bylaw prohibits more than one non-residential structure or use on a lot in the SRA district.

Second, it has been suggested that the Board has the authority to require the applicant to demolish the barn because (a) demolishing the barn will allow the main building to be moved further back from Central Ave; and/or (b) the barn is “too big” to be used as a storage facility. Again, this is incorrect. The statutory language quoted above clearly prevents the Town from “prohibit[ing], or requir[ing] a special permit for, the use of land or structures, or the expansion of existing structures, for the primary, accessory or incidental purpose of operating a child care facility.” Particularly given that the statute repeatedly refers to the use of *structures* (plural), it is hard to think of a more clear example of violating that statutory prohibition than if the Town were to say “we will give you a special permit to operate a child care facility in structure A, but only if you demolish structure B and locate structure A where

¹ As a preliminary matter, before even considering the argument that follows this footnote, this Board would have to conclude that the prohibition against “more than one non-residential structure or use on a lot” found in Section 3.2.1 applies to accessory structures. In this context, the barn would meet the definition of an accessory structure, and the proponents of this argument would need to demonstrate that the Bylaw has been interpreted to prohibit non-residential accessory structures in this zoning district.

Needham Planning Board
September 30, 2021
Page 5

B was previously located” (where structure B is also intended to be use for accessory purposes relating to operating a child care facility).

In addition, with respect to the barn, it is worth noting that it has been argued to this Board that because the main building will be new construction, the Board has the authority to require the Applicant to apply for a Special Permit, notwithstanding the language of M.G.L. c. 40A, Section 3 quoted above. This argument clearly does not apply to the use of *existing* structures for purposes relating to a child care facility, meaning that with respect to the barn, the Board does not even have the authority to require a Special Permit in order for the Applicant (or the tenant) to use the barn for purposes relating to the child care facility, much less require the Applicant to demolish it.

Nor is the view that the barn is “too big” to be used as a storage facility a valid basis to require the Applicant to tear it down. *Rogers v. Town of Norfolk*, 432 Mass. 374 (2000) is instructive on this point. In *Rogers*, the applicant proposed to use a 3200 s.f. home as a child care facility, even though the town had a Bylaw limiting child care facilities to 2500 s.f.. The SJC held that while the 2500 s.f. limitation might be “facially valid,” it was invalid as applied to that case, because there was no practical way to use the house as a child care facility if the 2500 s.f. limit on child care facilities were to be enforced. The *Rogers* Court even noted that it would be possible to make the structure comply with the 2500 s.f. limit set forth in that town’s bylaw, by demolishing certain portions of the building, but that doing so would weaken the structure, and serve no valid municipal interest. Accordingly, the applicant in that case was not required to comply with the town’s “facially valid” limit of 2500 s.f. for child care facilities.

In this case, Needham does not even have a Bylaw limitation on the size of child care facilities (much less for accessory structures used for child care facilities) but even if such a limitation existed, and the barn exceeded it, there is no practical way to make the barn smaller without destroying it. As applied to the facts of this case, then, *Rogers* stands for the proposition that this Board cannot require the demolition of the barn on the grounds that it is “too big” for storage for the proposed facility.

Furthermore, “storage” is only one of the uses relating to operating a child care facility to which the barn can be put. The roof provides a good platform for the installation of solar panels. Equipment used to maintain the property could also be stored there. In the future, other uses relating to operating the child care facility can be imagined. As long as the barn is used solely for purposes relating to operating the child care facility, it is protected by M.G.L. c. 40A, section 3, and this Board cannot require the applicant to take it down.

3. Moving Forward With This Application

This process began with the Applicant’s initial request for Minor Project Site Plan Review in March of this year. Since that time, the applicant has made multiple revisions to the project in an effort to address concerns that have been raised by this Board, by the Design Review Board, by neighbors, and by the peer reviewer hired by the town, whose services the

Needham Planning Board
September 30, 2021
Page 6

applicant has agreed to pay for, even though there is clear authority for the proposition that that traffic and vehicular access are not among the matters as to which this Board may issue “reasonable regulations.” See *Primrose Sch. Franchising Co. v. Town of Natick*, 2015 WL 3477072, at 9 (Mass. Land Ct. May 29, 2015) (“Based upon the clear language of G.L. c. 40A, § 3, ¶ 3, this court, in Land Court Decision 1, noted that imposing reasonable frontage and lot size requirements was within the authority of the ZBA. **However, G.L. c. 40A, § 3, ¶ 3 is silent as to issues relating to site access and vehicular traffic.** Moreover, the statute is clear that such regulations may apply only to the “land and structures” to be used in connection with the Dover Amendment facility. *Id.* Thus, Defendants’ broad suggestion that this court “endorsed the imposition of access related conditions under the aegis of the Dover Amendment” is mistaken” (emphasis added)).

The revisions that the applicant has made to the initial proposal, in order to address the concerns raised by various interested parties, include:

1. Increasing the setback from Central Ave twice, from 40 feet to 50 feet, and then to 64 feet;
2. Making the landscaping plan significantly more robust;
3. Increasing the number of parking spaces from 24 to 30;
4. Adding a new parking area behind the barn;
5. Redesigning and widening the access drive to include a drop-off and pick-up lane;
6. Redesigning, while retaining, the pick-up and drop-off area adjacent to the main entrance to the building, to maximize the smooth flow of traffic into and out of the site;
7. Changing the design of the side of the building facing Central Ave to include multiple gabled and projecting front surfaces and bayed windows, in order to break up the overall façade and provide more architectural interest; and
8. Agreeing to accommodate other changes suggested by the Design Review Board.

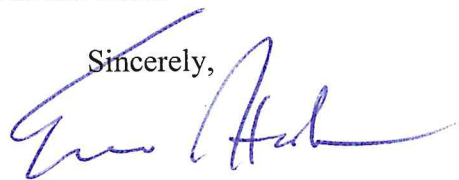
As noted above, the applicant has also agreed to pay for the peer review process, and has spent considerable time, effort, and money to address the concerns and issues raised by the town’s peer reviewer, John Diaz of GPI. The applicant has also agreed to a cap on the number of children at the facility (115) even though (1) under applicable Massachusetts regulations the size of the proposed building would allow a higher number of children at this facility, and (2) it is our position that this Board does not have the authority to impose **any** limit on the number of children at the facility. See *Primrose Sch. Franchising Co. v. Town of Natick*, *supra* (“While local zoning authorities may apply limited restrictions to the “land and structures” used in connection with a Dover Amendment facility, authority to regulate the actual use of said facility is vested in the Massachusetts Department of Early Education Care (“MassEEC”). See G.L. c. 15D, §§ 2(c), 6(a). . . . In view of the foregoing, G.L. c. 40A, § 3, ¶ 3 did not give the ZBA authority to limit the amount of students that the Facility may house as a means of reducing vehicular traffic to and from Locus. As such, I find that Condition 4 is unreasonable to the extent that it purports to condition approval of the Project upon a cap in the maximum number of enrollees in the Facility.”).

Needham Planning Board
September 30, 2021
Page 7

In sum, we believe that throughout this process the Applicant has acted in good faith in an effort to address neighborhood and Board concerns, and, as part of addressing those concerns, has agreed to things that it is not legally obligated to agree to, and which this Board does not, in light of M.G.L. c. 40A, section 3, have the authority to require. These changes and accommodations have significantly lengthened this process, which is now in its seventh month. In light of the foregoing points, we ask that the Board make every effort to conduct the upcoming hearing as expeditiously as possible, and, if possible, complete the public hearing portion of this process at the upcoming meeting on October 5.

I appreciate your attention to the points raised in this letter.

Sincerely,

A handwritten signature in blue ink, appearing to read "Evans Huber", with a stylized flourish at the end.

Evans Huber

GLOSSA ENGINEERING INC
46 EAST STREET
EAST WALPOLE, MA 02032
PHONE 508-668-4401
FAX 508-668-4406
EMAIL glossaeng@AOL.com

DATE: December 15, 2021

At the request of Needham Enterprises, LLC, I am providing the following estimates for the additional costs that will be incurred if the barn is demolished and the existing building is moved to approximately match the setback of the adjacent Temple. Two alternative costs are shown below.

RE: Estimated additional costs to relocate Proposed Daycare Building to match adjacent non-residential building (Temple) setback. These costs are in addition to current anticipated construction costs.

- | | |
|--|-------------|
| 1) Additional site construction cost (see attached breakdown) | - \$215,500 |
| 2) Additional Professional fees for site redesign
(engineering, architect, landscape design, peer review fees) and
3-4 Month estimate for carrying costs | - \$115,000 |
| 3) Cost to add 1800- 2,000 s.f. storage to proposed building | - \$270,000 |

TOTAL ESTIMATED ADDITIONAL COST TO INCREASE SETBACK AND ENLARGE BUILDING TO REPLACE LOST STORAGE	- <u>\$604,500</u>
---	---------------------------

NOTE: The cost to build a new storage facility at site in lieu of creating storage in the proposed childcare building (Item 3 above) is as follows:

- | | |
|--|--------------------------|
| New building cost | - \$190,000 to \$210,000 |
| Professional fees to design and engineer new structure | - \$21,000 |

TOTAL ESTIMATED ADDITIONAL COST TO MOVE EXISTING DESIGN BACK AND CREATE NEW STORAGE ELSEWHERE	- <u>\$541,500-\$561,500</u>
--	-------------------------------------

John F. Glossa

SUBMITTED – JOHN F. GLOSSA P.E.

12/15/2021

DATE



December 17, 2021

NEX-2021238.00

Town of Needham Planning Board
Town Hall
1471 Highland Avenue
Needham, MA 02492

SUBJECT: 1688 Central Avenue
Proposed Child Care Facility – Peer Review 4

Dear Ms. Newman:

The following items were submitted by Joe Abruzese.

- December 12, 2021, *Presentation Points from Needham Planning Board Hearing, December 8, 2021*

As requested by the Board, GPI is responding to the section entitled *Traffic Analysis is Based on Faulty Data and Incorrect Math*.

As previously mentioned, at the direction of the board, GPI met with John Gillon, the proponent's Traffic Engineer, to determine how to best represent realistic traffic levels along Central Avenue, as a result of the impacts of Covid on traffic flows and patterns. As such, we discussed a number of alternatives, including procedures in place by MassDOT to utilize older traffic levels to project where traffic normally would be without Covid.

These procedures include using a number of factors and comparisons to evaluate the data. As such, the traffic levels used in the report were based on prior 2006, 2016 and new 2021 volumes both at the intersection of Central Avenue at Charles River Street and data collected along Central Avenue nearly a mile away from the site near the Transfer Station. The results were reviewed by GPI and found to be reasonable.

As there may be some concerns about the proponent's methodology, GPI has undertaken an independent assessment of the available traffic volumes, MassDOT procedures and a review of the streets and neighborhoods surrounding the area.

The following outlines this procedure.

1. There are 3 data sets that were compared
 - a. Turning Movement Counts at Central Ave and Charles River St
 - i. October 2006 – PM
 - b. Turning Movement Counts at Central Ave and Charles River St
 - i. October 2021 – AM
 - ii. October 2021 – PM
 - c. ATR Counts on Central Ave south of Transfer Station
 - i. May 2016
2. Based on MassDOT's April 2020 "Guidance on Traffic Count Data" the following procedures should be used to estimate precovid (2019) volumes.

Procedures for Estimating Average Annual Daily Traffic (AADT)

To estimate existing AADT from an historical count, the count location should be classified by Geographic Area Type, Functional Class, and Region per the descriptions from the previous section. Once the classification has been completed, the following steps are required.

1. Axle Correction

(Please note this step is required only if the original count did not include vehicle classification data, typically a single pneumatic tube. If classification data has been included, please proceed directly to Step 2.)

- Identify the year the count was taken.
- Open the Weekday Seasonal Axle Correction file for the year that corresponds to the raw count data.
- Multiply the average daily traffic (ADT) taken from the raw count data by the Axle Factor for the corresponding Factor Group.

2. Seasonal Factor

- Identify the month and year the count was taken.
- Open the Weekday Seasonal Axle Correction file for the year that corresponds to the raw count data.
- Multiply the number obtained in Step 1 (or the raw count data if it contains vehicle classification data) by the Monthly Factor for the corresponding Factor Group.

3. Yearly Growth

- Identify the year the count was taken.
- Open the Yearly Growth Rate file. Note that MassDOT considers 2019 data to be existing.
- The Growth Factors are set up to factor count data to the year shown in the header column from the previous year. Therefore, using the appropriate Factor Group, multiply the number obtained in Step 2 by the growth factor for the year after it was taken. Repeat the factoring until it is grown to 2019.
 - A count taken in 2018 will only need the 2019 factor applied to it.
 - A count taken in 2015 will need to go through four steps of factoring: the 2016 factor, then the 2017 factor, then the 2018 factor, and finally the 2019 factor.

Once these steps have been completed, the existing AADT may be estimated.

- a. Based on Central Avenue being a Rural Principal Arterial and the cited growth rates, 2016 volumes would be **multiplied by and overall factor of 0.99**. Essentially indicating that **volumes from 2016 to 2019 pre-covid are basically equal**.
3. It's important to understand that the intersection of Charles River Street is approximately 4,200 feet south of the Transfer Station. There are several neighborhoods and roadways, including Pine Street that cuts from Central Ave to Charles River St SB, between the intersection and the location of the 2016 ATR count. In addition, there are more than 125 homes (Pine Street, Carleton Drive neighborhood, Country Way neighborhood) with access to and from Central Avenue between the intersection and the ATR count location. Therefore, it would be expected that the traffic levels in general would be higher near the transfer station, than at the intersection of Charles River St at Central Ave.
 4. Since the site is approximately 900 feet north of the signalized intersection of Central Avenue/Charles River Street intersection, **the volumes recorded at the intersection are more relevant than those collected nearly a mile north**.
 5. Therefore, since there were already turning movement counts available at the Central Avenue/Charles River Street intersection for the PM period from 2006, GPI requested that the proponent conduct new traffic counts in October 2021 to see if traffic movement trends were similar at the intersection.
 6. The 2016 ATR counts at the Transfer Station were then simply used as a reference to assist with the Covid adjustments.
 7. Below is a comparison of the PM Turning Movement Count data compared between October 2006 and October 2021.

Oct-06					Oct-21				
	L	T	R	Total		L	T	R	Total
NB	30	227	8	265	NB	33	217	2	252
SB	30	636	30	696	SB	19	598	25	642
EB	82	88	40	210	EB	104	136	53	293
WB	3	119	27	149	WB	13	141	27	181
	145	1070	105	1320		169	1092	107	1368

% Change				
	L	T	R	Total
NB	110%	96%	25%	95%
SB	63%	94%	83%	92%
EB	127%	155%	133%	140%
WB	100%	100%	100%	100%
	110%	100%	102%	101%

8. Based on the volumes above, the evening traffic passing the site is reflected below

	Oct-06	Oct-21	% Change
NB Passing Site	336	348	104%
SB Passing Site	696	642	92%
TOTAL	1032	990	96%

9. If we were to factor the 2006 volumes by 15 years at 1% annual growth rate, the equivalent multiplier would be 1.16.

Oct-06				
	L	T	R	Total
NB	30	227	8	265
SB	30	636	30	696
EB	82	88	40	210
WB	3	119	27	149
	145	1070	105	1320

October 2006 Factored to October 2021				
	L	T	R	Total
NB	35	264	9	308
SB	35	738	35	808
EB	95	102	46	244
WB	3	138	31	173
	168	1242	122	1532

10. A comparison between the As-Counted 2021 volumes and the 2021 volumes projected from 2006 values shows that the As-Counted 2021 volumes are lower than would be expected.

% Change				
	L	T	R	Total
NB	95%	82%	22%	82%
SB	55%	81%	72%	79%
EB	109%	133%	114%	120%
WB	373%	102%	86%	105%
	100%	88%	88%	89%

11. GPI therefore recommended increasing the current 2021 Counts by 30% to account the impacts of Covid on traffic volumes.

	October 2021 factored by 30%			
	L	T	R	Total
NB	43	282	3	328
SB	25	777	33	835
EB	135	177	69	381
WB	17	183	35	235
	220	1420	139	1778

12. Comparing the 2006 counts projected to 2021 against the as counted 2021 volumes factored by 30%, the 2021 factored volumes are extremely conservative.

October 2006 Factored to October 2021						October 2021 factored by 30%			
L	T	R	Total			L	T	R	Total
35	264	9	308		NB	43	282	3	328
35	738	35	808		SB	25	777	33	835
95	102	46	244		EB	135	177	69	381
3	138	31	173		WB	17	183	35	235
168	1242	122	1532			220	1420	139	1778

	% Change			
	L	T	R	Total
NB	123%	107%	28%	106%
SB	71%	105%	93%	103%
EB	142%	173%	148%	156%
WB	485%	133%	112%	136%
	131%	114%	114%	116%

13. Therefore, factoring the 2021 counts by 30% provided an overly conservative estimate of traffic during the evening peak hour. The same methodology (a 30% increase in the 2021 as counted volumes) was used to factor the morning peak hour counts to account for covid.
14. As a result, the following volumes were used for the analysis.

	AM Peak Hour October 2021 factored by 30% (2021 Base Conditions)					PM Peak Hour October 2021 factored by 30% (2021 Base Conditions)			
	L	T	R	Total		L	T	R	Total
NB	88	792	5	885	NB	43	282	3	328
SB	14	195	14	223	SB	25	777	33	835
EB	329	220	52	601	EB	135	177	69	381
WB	13	141	27	181	WB	17	183	35	235
	444	1348	98	1890		220	1420	139	1778

15. As a final check, the volumes at the Transfer Station were used to check the assumptions.

2016 Transfer Station AM Peak		2016 Transfer Station PM Peak	
NB Past Site	1080	NB Past Site	402
SB Past Site	273	SB Past Site	1028
Total Past Site	1353	Total Past Site	1430
2021 AM Peak Hour		2021 PM Peak Hour	
NB Past Site	1138	NB Past Site	452
SB Past Site	223	SB Past Site	835
Total Past Site	1361	Total Past Site	1287

16. As discussed in Item 2, based on MassDOT procedures, the 2016 volumes are representative of pre-covid traffic levels.
- During the morning peak hour the total volumes are nearly identical, with the projected volumes used in the analysis, slightly higher (i.e. more conservative).
 - During the evening peak hour, the volumes in front of the site are approximately 143 vehicles lower than at the transfer station, with about 193 fewer southbound vehicles and actually an increase of 50 vehicle NB.
 - Given that Pine Street is a one-way southbound connection between Central Avenue and Charles River Street and the fact that there are over 125 homes off Central Avenue between the Transfer Station and Charles River Street, it would be expected that the SB approach volumes at the intersection of Charles River Road would be several hundred vehicles lower than at the transfer station.
17. Therefore, given the impacts of Covid, the methodology used to project the base 2021 traffic levels by utilizing newer data collected at the closest major intersection and using a combination of factoring and MassDOT methodology, provides the best estimate of "normal" traffic along Central Avenue in front of the proposed site.
18. The 2021 volumes noted above were factored by a compounded 1% annual growth rate, which mathematically is equivalent to a 1.072135 multiplier over 7 years.
19. Therefore, the following values represent the 2028 conditions that are appropriate for the analysis. (note these were all calculated independently by GPI)

	AM Peak Hour October 2021 factored to 2028					PM Peak Hour October 2021 factored to 2028			
	L	T	R	Total		L	T	R	Total
NB	94	849	5	949	NB	46	302	3	351
SB	15	209	15	239	SB	26	833	35	895
EB	353	236	56	644	EB	145	190	74	408
WB	14	151	29	194	WB	18	197	38	252
	476	1445	105	2026		236	1522	149	1907

When compared against Figure 3 in the 10-27-2021 Traffic Memo, the results are virtually the same.

GPI Calculations												
		NB		SB		EB		WB				
		AM	PM	AM	PM	AM	PM	AM	PM	AM TOTAL	PM TOTAL	
Existing October 2021		681	252	172	642	462	293	135	181	1450	1368	
30% Covid Factor		885	328	223	835	601	381	181	235	1890	1778	
1% Compounded growth for 7 years		949	351	239	895	644	408	194	252	2026	1907	
Traffic Study Calculations												
		NB		SB		EB		WB				
		AM	PM	AM	PM	AM	PM	AM	PM	AM TOTAL	PM TOTAL	
Existing October 2021		681	252	172	642	462	292	135	181	1450	1367	
30% Covid Factor		888	329	224	837	602	381	176	236	1890	1783	
1% Compounded growth for 7 years		950	352	240	896	645	407	188	253	2023	1908	
Discrepancy (Traffic Study vs GPI) (+) = Traffic Study Volumes higher than GPI/(-) = Traffic Study Volumes lower than GPI												
		NB		SB		EB		WB				
		AM	PM	AM	PM	AM	PM	AM	PM	AM TOTAL	PM TOTAL	
Existing October 2021		0	0	0	0	0	-1	0	0	0	-1	
30% Covid Factor		3	1	1	2	1	0	-5	1	0	5	
1% Compounded growth for 7 years		1	1	1	1	1	-1	-6	1	-3	1	

Therefore, we again feel that the methodology used to estimate the “normal” existing and future traffic levels along Central Avenue is valid.

Should you have any questions, or require additional information, please do not hesitate to contact me at (978) 570-2953 or via email at jdiaz@gpinet.com.

Sincerely,
Greenman-Pedersen, Inc.



John W. Diaz, PE, PTOE
Vice President/Director of Innovation

December 18, 2021

Paul Alpert
Chair of Needham Planning Board,

Members of the Needham Planning Board,

Lee Newman
Director of Planning and Community Development
500 Dedham Avenue
Public Services Administration Building
Suite 118
Needham, MA 02492

RE: Site Review of Proposed Project at 1688 Central Avenue

Dear Chair Alpert and All Planning Board Members,

Attached please find the detailed comments of neighbors of 1688 Central Avenue for consideration during the Planning Board's site review process of the proposed project at that location. The submission answers the legal arguments offered in the proponent's December 16, 2021 letter.

We ask that you give careful consideration to these comments and enter them, along with their attachments, into the formal record of your meeting should there need to be further proceedings on the matter. Thank you for your consideration.

Yours truly,

Holly Clarke

The proponent's December 16, 2021 letter does nothing to address the fundamental deficiencies of the project identified in detail in the neighbors' prior submissions and presentations. The letter does recast five arguments in ways entirely inconsistent with applicable law which we address briefly here.

First, as we have pointed out before, the applicant's plan does not comply with the requirements of Needham Zoning By Law (NZBL) s.3.2.1, which prohibits two non-residential buildings or uses on a single residential lot in this district. The developer is free to choose if he wants to keep the barn or build another building. But he may not have two non-residential buildings or uses on a single lot. The developer tries to navigate that rule by arguing that the barn is an "accessory building" to the child care facility. The bylaw still requires there be only one non-residential building, even if one were an accessory building (which it is not). The Planning Board invited him to make a factual showing under 40A, s.3 that having a second non-residential building on the lot is essential to the child care operations and that the application of the bylaw to this project would not protect legitimate municipal interests. The developer chose to ignore that invitation and the letter is notable in its failure to point to any facts that would support a 40A s.3 showing. For that reason, as well as those stated in prior submissions and presentations, the Planning Board must conclude that NZBL s.3.2.1 applies and requires the rejection of the proposal to both build a new building and retain the barn.

Second, the applicant argues that *Petrucci v. Bd. of Appeals of Westwood*, 45 Mass. App. Ct. 818 (1998) supports the conclusion that the barn is exempt from Needham Zoning By Law 3.2.1 because of its intended use as storage for a child care facility. *Petrucci* neither says nor supports anything of the sort. *Petrucci* did not declare s.3 superseded local bylaws. In fact, the court applied the fact-specific balancing test established in *Tufts v. Medford*, 415 Mass. 753 (1993) and found that in the circumstances of that case – where the pre-existing barn itself was to be the child care facility -- moving the barn was not justified as it would harm rather than protect municipal interests. *Petrucci* did not involve a request both to build a new building and to keep the barn on a single lot in the face of a bylaw which prohibits multiple non-residential buildings in a single lot in a residential district.

Third, the applicant argues that the Planning Board cannot order a setback greater than the minimal dimensional set back requirements in the town's bylaws. That is not the law. "That the by-law contains minimum dimensional requirements is not dispositive of whether, in accordance with site plan approval criteria set forth in the by-law, the board may impose reasonable conditions that result in stricter dimensional requirements than would otherwise be the case." *Muldoon v. Planning Board of Marblehead*, 72 Mass. App. Ct. 372 (2008). The instant project is subject to site plan review under NZBL s.7.4 and 7.5 as well as Design Review under 7.7 because of its bulk. The proponent conceded as much when he filed his initial application for site plan review and claimed to meet the site plan criteria set forth in NZBL. Each of the Design Review Board's (DRB) three reviews concluded, largely- but not solely- because the project's setback is so out of keeping with the neighborhood, that the project is not in harmony with the

surrounding area, as required by the bylaws. The DRB also pointed out that an appropriate setback could be obtained even while keeping the barn, and invited any presentation to show why this could not be done. No such presentation has ever been shared. The barn does not control the setback.

Fourth, there is no legal or equitable basis for the applicant's complaint that he will incur substantial costs to bring the project into compliance with the requirements of the Needham Zoning Bylaws. Neither M.G.L. ch. 40a s.3 nor the NZBL contain any provision protecting a developer's economic interests in this fashion. Most fundamentally, this is a problem of the developer's own making. He designed the proposal. He chose not to consult with the Planning Board at a public meeting or to solicit community input prior to submission. He largely ignored the neighbors' input, going as far as to object to their participation at the DRB, ignored significant comments by the DRB itself, and ignored concerns about the design raised by members of the Planning Board and the public during the hearing process. He instead chose to press forward with this design. Assuming that the proposal is even permitted to go forward at all, the cost of rectifying the deficiencies in the proposal are properly and equitably borne by the developer. The complaint that the changes will take time to make falls by the same logic. Having chosen to ignore earlier feedback, the developer should not be heard to complain that incorporating the requirements of the bylaws will take two to four months.

Finally, the proponent suggests that it does not have the burden of proof when he objects to the application of bylaws to this project. This is incorrect as a matter of law. *Rogers v. Norfolk*, 432 Mass. 374 (2000) and *Tufts v. Medford* set the test for evaluating the reasonableness of town bylaws: Bylaws are presumed valid, and apply to all projects under the uniformity requirements of MGL ch 40a s.4. Proponents seeking protection under s.3 bear the burden of proving the application of any challenged bylaw would obviate the protected use without protecting a legitimate municipal bylaw. There is no case that even remotely suggests otherwise. There is no blanket zoning exception for a developer seeking to build a child care facility, and the proponent is incorrect when he suggests otherwise. Simply put, the Planning Board is charged with and authorized to protect the municipal interests in this and every other project.

Thank you for your consideration of these issues.



Hemenway
& Barnes LLP

75 State Street
16th Floor
Boston, MA 02109-1466
t 617 227 7940
f 617 227 0781
www.hembar.com

M. Patrick Moore, Jr.
Direct Dial (617) 557-9715
pmoore@hembar.com

December 20, 2021

Trustees

Counselors at Law

Michael J. Puzo
Edward Notis-McConarty
Stephen W. Kidder
Arthur B. Page
Joan Garrity Flynn
Nancy B. Gardiner
Kurt F. Somerville
Teresa A. Belmonte
Brian C. Broderick
Charles Fayerweather
Nancy E. Dempze
Joseph L. Bierwirth, Jr.
Dennis R. Delaney
Mark B. Elefante
John J. Siciliano
Sarah M. Waelchli
M. Bradford Bedingfield
Charles R. Platt
M. Patrick Moore, Jr.
Ryan P. McManus
Kevin M. Ellis

Michael E. Porter
Eleanor A. Evans
Johanna W. Schneider
Jennifer Grace Miller

Donna A. Mizrahi
Paul M. Cathcart, Jr.
Vanessa A. Arslanian
Steven L. Mangold
Meaghan E. Borys
Keirsa K. Johnson
Leni B. Nulsen
Emma Wright
Clinton R. Prospere
Shannon M. Nelson

Lawrence T. Perera
George T. Shaw
Michael B. Elefante
Susan Hughes Banning
Frederic J. Marx
Deborah J. Hall
R. Robert Woodburn
Thomas L. Guidi
Diane C. Tillotson

Town of Needham Planning Board
Needham Town Hall
1471 Highland Avenue
Needham, MA 02492

Re: 1688 Central Avenue (the “Site”)

Dear Members of the Board:

I write on behalf of Gregg Darish, owner of the property located at 34 Country Way, which abuts the Site on which Needham Enterprises LLC (the “Applicant” or the “Proponent”) has proposed to develop a 9,996 sf child care center with a 4,800 sf accessory barn (the “Project”).

Throughout the application process, the Applicant has asserted that the Board is constrained by the Dover Amendment, G.L. c. 40A, § 3, para. 3, to a greater degree than the law provides. The purpose of this letter is to clarify the scope of the Board’s review—and the extent of its power—as it acts on this application.

In addition, the Board should be mindful of the anomaly of this application. The Proponent is not a daycare operator. Nor does the Proponent have a lease in place with any such operator; nor, even, a memorandum of understanding with an operator relating to how the property will be used if the sought-after permit is granted. Typically, when an applicant seeks the benefit of G.L. c. 40A, § 3, they do so as the operator of the Dover-protected program or, at minimum, in a contractual relationship with the operator. Where a question arises as to how a particular part of the proposed structure will be used by the operator, the question is not theoretical. The Board is presented with detailed plans concerning the proposed program and the expected uses. As addressed below, those are missing here, which inhibits the Board’s review, and, importantly, precludes the Proponent from meeting its burden to show that it should be excused from conditions that otherwise

Needham Planning Board
December 20, 2021
Page 2

would be imposed on this parcel by the Board pursuant to the Town's Zoning By-law.

I. Legal Framework

As this Board knows, G.L. 40A, § 3 provides that:

No zoning ordinance or bylaw in any . . . town shall prohibit, or require a special permit for, the use of land or structures, or the expansion of existing structures, for the primary . . . purpose of operating a child care facility; provided, however, that such land or structures may be subject to reasonable regulations concerning the bulk and height of structures and determining yard sizes, lot area, setbacks, open space, parking and building coverage requirements.

Interpreting this language, the Massachusetts Land Court has recognized that while a proposal to use or renovate *existing* structures for day care use may not require a special permit, the construction of a *new* day care facility may be conditioned on receipt of a special permit (where, as in Needham, a special permit otherwise would be required for the construction). *Primrose School Franchising Co. v. Town of Natick*, 2013 WL 3057432 (Mass. Land Ct. Jun. 17, 2013); see *Prime v. Zoning Board of Appeals of Norwell*, 42 Mass. App. Ct. 796, 802-803 (1997) (board may require special permit for new construction of building housing a Dover-protected agricultural use).

Where an applicant proposing a child care facility seeks exceptions from otherwise applicable local zoning requirements, that applicant bears “the burden of proving that the local requirements are unreasonable as applied to its proposed project.” See *Rogers v. Town of Norfolk*, 432 Mass. 374, 383 (2000), quoting *Trustees of Tufts College v. Medford*, 415 Mass. 753, 759 (1993). This burden may be met by a demonstrating that compliance would substantially diminish or detract from the usefulness of the proposed structure, or significantly impede the use without appreciably advancing the municipality's legitimate concerns. *Campbell v. City Council of Lynn*, 415 Mass. 772, 784-85 (1993). When an applicant fails to sustain this burden, a town may require a child care facility to comply with local zoning requirements.

This analysis extends to special permit requirements for construction of new child care facilities. Most recently, in *Primrose School Franchising Co. v. Town of Natick*, 2013 WL 3057432 (Mass. Land Ct. Jun. 17, 2013), Judge

Needham Planning Board
December 20, 2021
Page 3

Sands found that the Town of Natick appropriately required a special permit for construction of a new structure to be used as a child care facility within a residential zoning district and, moreover, that such special permit could impose conditions on both the structure and the use that “bear a reasonably direct relation to significant considerations of public health, safety and welfare based on findings justified by substantial evidence.”

Based on the foregoing legal framework, it is clear that, contrary to the assertions of the Applicant’s counsel, it is both permissible and appropriate for this Board to evaluate the Project in reference to the review criteria applicable to any Major Project pursuant to Sections 7.4.6 and 7.5.2 of the Zoning By-law.

II. The Board’s Review

The Applicant, my client, and this Board all concur that the Project is a Major Project under Section 7.4.3 of the By-law. As a Major Project, the Project requires both a special permit and site plan review. *See* By-law, Section 7.4.3 (“No building, use or occupancy permit for any improvement to real property which constitutes a Major Project [...] shall be issued, except in accordance with the terms of a special permit for such project, after site plan review as further set forth herein”). Thus, the Project must meet both the site plan review criteria set forth in Section 7.4.6 and the special permit criteria set forth in Section 7.5.2.2.

A. Site Plan Review

As this Board knows well, Section 7.4.6 of the Zoning By-law provides that “in conducting site plan review, the Planning Board shall consider the following matters:

- (a) Protection of adjoining premises against seriously detrimental uses by provision for surface water drainage, sound and sight buffers and preservation of views, light, and air;
- (b) Convenience and safety of vehicular and pedestrian movement within the site and on adjacent streets, the location of driveway openings in relation to traffic or to adjacent streets and, when necessary, compliance with other regulations for the handicapped, minors and the elderly;
- (c) Adequacy of the arrangement of parking and loading spaces in relation to the proposed uses of the premises;

Needham Planning Board
December 20, 2021
Page 4

- (d) Adequacy of the methods of disposal of refuse and other wastes resulting from the uses permitted on the site;
- (e) Relationship of structures and open spaces to the natural landscape, existing buildings and other community assets in the area and compliance with other requirements of this By-Law; and
- (f) Mitigation of adverse impacts on the Town's resources including the effect on the
Town's water supply and distribution system, sewer collection and treatment, fire protection, and streets[....]"

The record before the Board is rife with examples of the Project's deficiencies in each of these review categories, all of which "bear a reasonably direct relation to significant considerations of public health, safety and welfare." *Primrose School Franchising Co.*, 2013 WL 3057432 at *8. For example:

- The Design Review Board ("DRB") in its August 13, 2021 memorandum raised concerns that the Project proposes a relatively large building sited closer to the street than other buildings in the neighborhood and, moreover, made specific requests regarding the location and height of light poles to mitigate light trespass onto neighboring properties. These are matters that go directly to criteria (a) and (e) of Section 7.4.6.
- Like the DRB, neighboring property owners also have raised the issue of the Project's inadequate setback, which is inconsistent with the development pattern of the neighborhood and further, creates hazards for pedestrians and cyclists by reducing site line visibility. These are legitimate municipal concerns¹ falling within the scope of Section 7.4.6(b) and (e).
- Evidence in the record further indicates that new traffic generated by the Project warrants careful scrutiny by this Board consistent with Section 7.4.6(b). Drop off and pick up for 115 children, plus employees going to and from the site – by at least one estimate, generating 480 daily vehicle trips – will have a material impact on the surrounding street network in an area that already has a high volume of accidents.

¹ The Supreme Judicial Court has expressly held that a town's interest in preserving the residential appearance of its neighborhoods is legitimate for purposes of a Dover Amendment analysis. *Rogers*, 432 Mass. at 384.

Needham Planning Board
December 20, 2021
Page 5

- Serious questions have been raised by residents of the surrounding neighborhood regarding the adequacy of parking in terms of number and arrangement, which bear on the Board's review of criterion 7.4.6(c). Rather than providing 38 spaces (the number suggested by review of ITE parking data), the Project proposes only 30 spaces, which may result in queuing of cars on Central Avenue as parents await open parking spaces and/or parents of the facility parking on nearby residential streets.
- Evidence in the record also indicates that the Project will require significant regrading – a nearly six foot increase on the southern side of the site, close to a residential abutter. This grade change should be considered by this Board in its evaluation of review criterion 7.4.6 (e), in that it is a key component of the relationship of this project to both the natural landscape and existing residential buildings. Moreover, to the extent that the grade change will have an impact on surface water drainage which may be detrimental to adjoining properties, it is within the purview of criterion 7.4.6(a) and incumbent upon this Board to review.

B. Special Permit Criteria

Section 7.5.2.1 of the By-Law sets forth the findings and determinations that must be made in order for any special permit to issue. Among these are the following findings, which the Project cannot meet:

- The proposal must be “*designed in a manner that is compatible with the existing natural features of the site and is compatible with the characteristics of the surrounding area.*” Section 7.5.2.1(c). As detailed above, the current proposal requires a change in the existing grade of the Site and, by failing to provide an adequate front yard setback, is wholly inconsistent with the development pattern and character of the surrounding neighborhood.
- *The circulation patterns for motor vehicles and pedestrians which would result from the use or structure which is the subject of the special permit will not result in conditions that unnecessarily add to traffic congestion or the potential for traffic accidents on the site or in the surrounding area.* Section

Needham Planning Board
December 20, 2021
Page 6

7.5.2.1(c). The Project as proposed will create a substantial number of new vehicle trips on a roadway network that is already congested and has been the site of numerous accidents. In addition, by failing to provide adequate parking, the Project risks creating problems with vehicular queuing on Central Avenue at pick up and drop off times and burdening the surrounding neighborhood with overflow parking on residential streets.

- *The proposed use, structure or activity will not constitute a demonstrable adverse impact on the surrounding area resulting from, inter alia, emission or discharge of noxious or hazardous materials or substances, or pollution of water ways or ground water.* Section 7.5.2.1(e). This Site has a long history of industrial use (including the building, maintenance and repair of race cars, antique vehicles, and other automobiles), and lacks clean bill of health with respect to its current environmental condition. As such, it is unknown whether the Site poses a hazard to surrounding properties and, perhaps more critically, to the young children who would occupy the proposed day care facility. To that end, on December 16, 2021, the Needham Board of Health voted to recommend to this Board that the Town hire an independent, third party licensed site professional to conduct a site assessment and evaluate whether further environmental investigation of the Site is warranted. A special permit that is not conditioned to ensure that this analysis is completed and that any recommendations arising from such analysis are implemented will not withstand judicial scrutiny.

C. Conditions of Approval of a Special Permit

Section 7.5.2.2 of the By-Law specifically provides that a special permit may impose conditions or limitations including but not limited to:

- (a) screening or landscaping of structures or of principal or accessory uses from view from adjoining lots or from a street, by planting, walls, fences or other devices; planting of larger planting strips, with more or larger plant

Needham Planning Board
December 20, 2021
Page 7

materials or higher walls or fences than that required in Sections 4.2.14 and 4.4.8.5;

(b) modification of the exterior features or appearance of a building or structure to ensure compatibility with surrounding buildings and uses;

(c) limitations on the size, number of occupants or employees, method or hours of operation, extent of facilities or other operating characteristics of a use;

(d) regulation of the number, design and location of access drives or other traffic features of the proposed use; and

(e) provision of a greater number of parking spaces or loading bays with estimates based on the ITE Parking Generation Manual, 2nd Edition [...].

The foregoing conditions are reflective of the legitimate municipal concerns – including health, safety, and the preservation of neighborhoods – that the courts consistently have said may be brought to bear when a town imposes zoning regulations on child care facility uses pursuant to G.L. c. 40A, § 3.

In the matter before the Board, reasonable conditions could require the Project to increase the proposed building's setback from the street, take steps to reduce the number of vehicle trips, and increase site parking to alleviate impacts to the neighborhood. Acceptable conditions might also include requirements that any site lighting not create undue impacts on adjacent properties and that the Applicant increase landscaping in order to provide meaningful buffers between the Project and its residential neighborhood. A condition that the Applicant investigate and remediate hazardous environmental conditions is critically necessary and appropriate here.

Massachusetts case law is clear that the Board has the authority to impose reasonable conditions on this Project in its special permit/site plan review decision. Should the Applicant claim that any such conditions have the effect of prohibiting or unreasonably impeding the proposed child care use, it must provide to the Board evidence to support such contention.

D. The Applicant's Burden & the Missing Daycare Operator

In the typical application for a Dover-protected use, the Board would have before it the actual daycare operator; or, at minimum, a developer who has formally agreed to develop a daycare for a specified operator should the

Needham Planning Board
December 20, 2021
Page 8

requisite permit be obtained. In rare cases, we are aware of a developer presenting a proposal to a planning board without an operator under contract, but in those limited circumstances the developer's application demonstrates why industry standards require that the proposal meet certain requirements (e.g., a drop-off area, adequate indoor play space).

None of the above have been presented to the Board. We implore the Board to consider (and possibly probe with Town counsel): (i) why is it that the Needham Children's Center is identified as the likely tenant, but there is no agreement in place with that entity?; (ii) when is the last time Needham recognized a Dover-protected use without formal documentation of the operator of the use? The answers to these questions will not reflect well on the application.

These are substantive matters—as the absence of an operator affects the Board's analysis. Each time the Board considers a requirement that otherwise would apply to this project or a condition that otherwise would be placed on it, the Board must consider whether the Applicant has adequately demonstrated that the operation of *any* daycare would be unreasonably impeded by that requirement or condition. That is broad inquiry and a difficult burden to meet, particularly given that the Applicant has provided the board with scant information. The analysis would be different if a specific program—or a specific operator—were before the Board, with detailed plans as to how the proposed structure will be used. That simply has not occurred, by the Developer's own choice. The Applicant, not the Board, must bear the consequences of that choice.

Take the barn on the parcel, for example. Initially, the Applicant indicated that the barn would not be used in connection with the daycare; indeed, the Applicant planned to exclude the barn from the lease entirely. Now, however, the Board is told that the daycare requires the barn—a structure that is more than twice the size of the average residence in Needham—to be available for storage, even though there is still no evidence the barn will be included in any future daycare lease. The Applicant's most recent submission goes so far as to claim that unless the barn is allowed to remain on the site, the Board will have “de facto deni[ed]” a permit. Letter of Evans Huber (Dec. 16, 2021) at 3. These evolving narratives are atypical for a Dover proposal. How is it that applying the Town's By-law (specifically, § 3.2.1) prohibiting two non-residential structures on this residentially zoned property unreasonably impedes the operation of a daycare, particularly when the daycare, as initially proposed, would not have used the barn at all?

Needham Planning Board
December 20, 2021
Page 9

For a project under review for many months, these should not be open questions. Indeed, the Board has invited the Developer to come forward with some evidence to demonstrate that the barn is integral to the proposed daycare use; the Developer has declined that invitation. That failure is demonstrative of the Applicant's general inability to meet its burden to show that requirements or conditions that otherwise would apply somehow unreasonably impede its proposed use.²

Last, we noted that in its closing letter, the Applicant has asserted that removing the barn from the parcel would have a substantial estimated cost, including costs of demolition and redesign of the parcel. Letter of Evans Huber (Dec. 16, 2021) at 3. This, of course, is a factual assertion, and the Board closed the record to further factual development on December 7, 2021, at the Applicant's own request. It also does not square with prior representations concerning said costs, which we understand were multiples lower. Regardless, the Dover Amendment is not a magic wand that allows the Applicant to: (i) propose a 10,000 sq. ft. new building; (ii) irrespective of existing By-laws that preclude the new structure and the barn on the same parcel; and (iii) then claim that the cost of removing the barn and redesigning the plan is an unreasonable impediment, when that cost derives from the Applicant's own initial planning choices.

Conclusion

Under G.L. c. 40A, § 3, the use proposed by the Applicant is protected. But, on this record, the Board is uninhibited from imposing the conditions it otherwise would require of a project of this size. The Applicant bears the

² We note that the Applicant has cited *Petrucci v. Board of Appeals of Westwood*, 45 Mass. App. Ct. 818 (1998) for the proposition that the barn must be allowed to remain on the parcel. Letter of Evans Huber (Dec. 16, 2021) at 2; Letter of Evans Huber (Sept. 30, 2021) at 4. That case involved an entirely different issue, specifically whether a family could use an accessory structure to their residence as a daycare. The answer was yes, because daycare is a protected use under Dover, and the change in use of an *existing structure* receives more deferential review under G.L. c. 40A, § 3, para. 3. The case does not answer the question of whether a Dover-applicant can build an entirely new 10,00 sq. ft. daycare and preserve an existing barn.

It does, however, demonstrate why the Applicant is so keen to preserve the barn. No matter the conditions imposed on this project by the Board, the Applicant could be right back before the Board when the new structure is complete, asserting the Dover-protected right to use the barn as a second daycare on the parcel. The Board's tools in that setting—where it would be evaluating the proposed use of an existing structure, rather than new construction—would be substantially more limited than they are today. That fact assuredly is not lost on the Applicant.

Needham Planning Board
December 20, 2021
Page 10

burden to demonstrate those conditions unreasonably impede its use. Because that use has not been formalized by agreement with any operator, any alleged impediment is no more than unsupported and undocumented speculation, just like the Developer's relationship with the Needham Children's Center.

Sincerely,



M. Patrick Moore, Jr.



Johanna W. Schneider

To: Select Board and Planning Board Members
From: Amy Haelsen, Economic Development Manager
Date: November 15, 2021
Re: Breweries

Background

In the Fall of 2020, I was contacted by a gentleman who was interested in opening a brewery at a vacant property located in the Mixed-Use 128 District where he could brew craft beer, have on-site consumption of the beer as well as conduct retail sales of the beer and branded merchandise. He was also seeking to have live programming (music, trivia nights, etc.) and allow for food trucks and/or an outside catering company to provide food for patrons. The current zoning in Needham does not allow for all of these uses at one location.

Breweries in Massachusetts

Following this inquiry, I began to research breweries throughout the state and the zoning regulations in the towns and cities in which they were located. There are currently 210 operating breweries across the Commonwealth including brewpubs, farm-breweries, and manufacturers. Of these, 174 are open to the public and 170 have tap rooms where visitors can order a pint or flight onsite. Another 20 new breweries are expected to open by the end of 2021 and there are an additional 10 plus more breweries in the planning stages.

Why a brewery in Needham?

- Breweries continue to rise in popularity and according to the Massachusetts Brewers Guild, there is no indication that the market will be oversaturated with them anytime soon.
- They are a destination business and help draw visitors from a wide geographic area which will benefit other local businesses
- A brewery would add to the diversity of our business inventory and sends a message that we are a town that is welcoming to new/unique business types
- A brewery would help infuse new energy into a commercial or industrial area in town
- A brewery would potentially generate thousands of dollars in meals tax for the Town
- There are currently no breweries located in the surrounding communities of Newton, Dedham, Wellesley, Dover/Sherborn

Where in town should a brewery be located?

Based on the research I have done, for a brewery to manufacture and sell beer on the same site, they will need a minimum of 3,000 square feet. High ceilings, proper venting, access to high-pressure water and proper drainage are also features that are highly sought after when choosing a site for a brewery. In Needham, these types of properties are most prevalent in the following Use Districts: Mixed-Use 128, Industrial, Industrial-1,

Highland Commercial-128, and New England Business Center. Generally speaking, these locations would also allow for more parking and flexibility for multiple uses.

How other towns handle zoning for breweries

Cambridge recently changed its retail zoning to allow “craft manufacturing” of both beverages and food, which includes breweries. It’s allowed by right in four zoning districts and by special permit in five zoning districts. Anything over 10,000 SF would be considered light manufacturing.

Natick added microbreweries/wineries/cideries/distilleries with accessory indoor/outdoor dining space to their allowed/permitted uses. They are allowed by right in more highway-oriented commercial areas and by special permit in downtown and industrial districts.

Medfield approved two breweries in its Industrial Extensive zoning district under a ‘manufacturing’ special permit as well as an ‘establishment selling food’ special permit. They also have a brewery in a business zone which includes a brewery, tap room and a retail store. They have food trucks come to the parking lot which are permitted separately by site plan approval from the planning board because they are in a plaza with shared parking.

Norwood allowed two breweries by special permit under the use ‘food processing, bottling or packaging’ which is allowed in four of their zoning districts which are light manufacturing and industrial.

Steps to obtain licensing to brew on site

To open a brewery in Massachusetts, the business entity must first seek federal approval from the Alcohol and Tobacco Tax and Trade Bureau (ATTTB) to manufacture alcohol. After this federal permit is obtained, the business must then apply to the state for a brewer’s license through the Massachusetts Alcoholic Beverages Control Commission (ABCC). On the ABCC’s license application, the business must indicate the physical address where the brewery will be located so a site needs to be selected before they can even apply for a license. After the business has obtained a license from the ATTTB and the ABCC they can then apply for a pouring license from the Town of Needham.

It would be prudent for the Town to amend its zoning bylaws now as a prospective brewery can’t seek federal and state licensing to operate a brewery until a site has been selected. These licensing authorities require proof that the zoning at the site allows for such use.

Issues to consider

- Is this a use which the Town wishes to pursue? If the answer is affirmative, in which zoning districts should it be permitted and under what zoning regulatory framework (i.e. by right or by special permit) should it be administered?
- In response to an inquiry as to whether or not the Select Board can issue a pouring license to a brewery if it is outsourcing the food service to a third-party (i.e. food trucks) Town Counsel determined that the Select Board has the statutory authority to issue a Farmer Series Pouring Permit to allow a brewery to sell alcohol for on-premises consumption. However, he added that if the Board is inclined to support this new use, it should amend its regulations before issuing a license, for the purposes of consistency.



Town of Needham

Council of Economic Advisors

**500 Dedham Avenue
Public Services Administration Building
Needham, Massachusetts 02492
781-455-7550 ext. 255**

November 17, 2021

Needham Select Board
Needham Town Hall
1471 Highland Ave.
Needham MA 02492

Dear Members of the Select Board,

Re: Brewery Operations in Needham

The Council of Economic Advisors (the “Council”) discussed brewery operations in Needham at its November 10, 2021 meeting. This discussion focused on different brewery concepts including brewing, tasting, retailing and eating onsite.

One concept, in which a variety of beers are brewed, consumed and packaged for sale onsite might require a larger footprint and therefore better suited in industrial districts such as Needham Crossing, Mixed Use 128 or Highland Commercial 128. Such a concept may attract food trucks if there is no onsite or nearby restaurant or other food service. This type of location may also better active additional uses, perhaps entertainment uses, as part of the venue during reasonable hours and contribute towards community ‘place making.’

Another concept, better suited for the Center Business district, would enable a smaller brewing facility with onsite consumption and retailing. This concept could support local restaurants by allowing take-out food to be consumed onsite.

The product of these new uses is believed to be an area amenity, having a positive impact by adding a new layer of destination retail to the commercial mix in Town.

The Council voted unanimously in support of allowing brewery operations in Needham.

Sincerely,

Adam Block
Chair
Council of Economic Advisors

From: [Rochelle Goldin](#)
To: [Planning](#)
Subject: 888 Great Plain Avenue
Date: Wednesday, December 8, 2021 11:17:02 AM

> Dear Planning Board,

> I am writing to express my strong opposition to the proposed plans at 888 Great Plain Avenue. I am against changing the zoning as I feel it should remain residential. I am also opposed to the request for a variances to reduce the set backs to the sides, front and back of the lot. I have read the studies regarding planning for NeedhamTown Center. A recurrent theme is to keep the town pedestrian friendly. A driveway with extremely limited visibility to pedestrians and car traffic exiting onto a Great Plain Avenue sidewalk is not pedestrian friendly and is in fact dangerous. There are several child friendly businesses in the area, a park and a school that would make this driveway even more dangerous for our children. In addition, the existing driveway next to The Closet Exchange, currently has limited visibility in one direction. With the proposed design to 888 Great Plain Avenue, that driveway would have limited visibility to pedestrian and cars in both directions, making it even more dangerous.

>

> Many of my neighbors on Great Plain Avenue, Fair Oaks Park and Warren Street have discussed their concerns with me regarding the plans for 888 Great Plain Avenue and are also in opposition with the proposed plans.

>

> Please keep me informed as the discussions continue.

>

> Thank you for your attention to this matter.

>

> Sincerely,

> Rochelle Goldin

> 68 Warren Street