

CHAPA Chapter 40B Conference 2021

Fostering Good Design

Site Plan and Design Review Toolkit for Public Hearings

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Town of Brookline



SNAPSHOT

Town of Brookline Recent Chapter 40B Projects

2014 – 2019

12 projects approved with conditions

Over 800,000 sf (25,000 sf commercial)

729 units (199 affordable)

Project range: 8 units to 250 units

- Some located on corridors **abutting single- and two-family zones**
- Affordable units **permanently deed restricted**
- After designs revised to meet ZBA Charge, **mitigation and public benefits** were agreed upon. Include pedestrian, accessibility, bike share, roadway, traffic signal improvements; street trees—**over \$750,000 secured**
- **So far, no developer has appealed a Brookline ZBA decision to the HAC.**

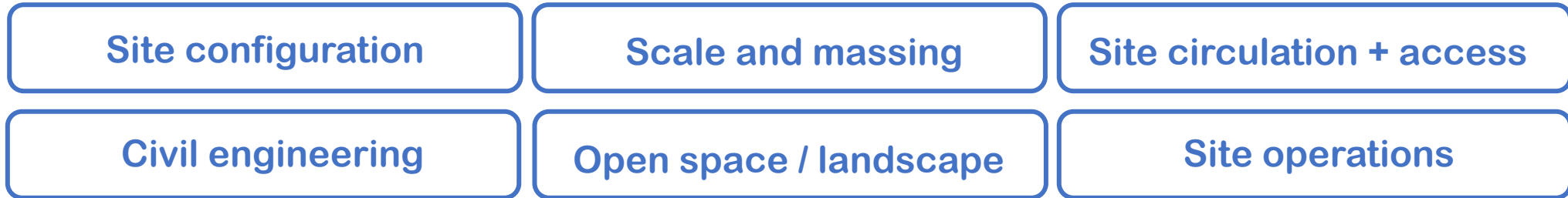
2020 – 2021

6 projects proposed

481 units (96 - 120 affordable)

Toolkit Contents

6 Design Principles Applied on Projects in Different Neighborhood Contexts



Slide 3.....Catalyst for Toolkit Method: Town of Brookline c.40B Volume (1 minute)

Slides 4 – 11....Site Plan and Design Review Tools (2 minutes)

Link to Toolkit available at [CHAPA.org](https://www.chapa.org)

What is design?

Why does good design matter?

Design is experienced.

“Architecture means shapes formed around [people], forms to be lived in [and among], not merely to be seen [or blocked] from the outside.”

With apologies to Steen Eiler Rasmussen, *Experiencing Architecture*

“Design is a process for making things right, for shaping what people need.”

Ralph Caplan, *By Design*

Good design is practiced.

- It is judged by how well it is **integrated** into its context—and in turn how **inclusive** its context is.
- It gets **utilized**. It functions well within the site and within its context.
- It is an opportunity to add **value**—to the project and to the community.

Criteria: How can you shape a 40B?

Parameters set forth in M.G.L.c.40B, Sec. 20

"**Consistent with local needs**", requirements and regulations shall be considered consistent with local needs if they are reasonable in view of the regional need for low and moderate income housing considered with the number of low income persons in the city or town affected and the need to protect the **health or safety** of the occupants of the proposed housing or of the residents of the city or town, to promote **better site and building design in relation to the surroundings**, or to **preserve open spaces**, and if **such requirements and regulations are applied as equally** as possible to both subsidized and unsubsidized housing

ZBA's role is not to thwart the project. Communities do have the power to shape 40B projects by using the right tools.

Tools: How can you shape a 40B?

How do you integrate higher-density projects into lower-density communities?

What tools can you use within the 40B process?

Hint:

Floor Area Ratio and Dwelling Units per Acre are not adequate metrics to assess **feasibility** and what degree of **intensity of use** can be supported on the site. Focus on **design not density**.

Site Plan and Design Review Framework

Objective standards, design principles, best practices, analysis tools



The Comprehensive Permit process needs a comprehensive framework for objectivity and due diligence.

Intensity of use pertains to more than just a project's scale.

Ground Plane*

Site circulation
Open space, landscape,
tree conservation
Choreography of all
program functions
Access and egress
Curb control
Circulation around site

*Pertains to the horizontal
surface area of the lot(s)
and elements adjacent to it

Built Form

Scale, massing, datum
Streetscape
Viewsheds, Sky plane
Shadow impacts
Transitions
Style, Materials
Development and
landscape patterns
Grading contours and
topography
Shaping private, semi-
private, public spaces
Glare, noise, odors

Below Grade

Remediation
Stormwater
Water Table
Runoff load on municipal
Systems
Infiltration, plumbing
Blasting
Foundation method
Impact to below-grade
abutting structures,
tree roots

Technical resources provide basis for charge, findings, conditions The public better equipped for impact statements

Peer Review

Site + building design,
Traffic, Parking,
Stormwater, Conservation
Geotechnical, Blasting

Independent

Staff prepares the Scope
of Work

Paid for by applicant: M.G.L.
c.44, Sec.53G

With staff can facilitate
working groups to meet ZBA
Charge

MassHousing Partnership
40B Tech Assistance Grant

Municipal Departments

Public Works:
Engineering, Water + Sewer,
Transportation, Conservation
Parks + Recreation

Public and Environmental
Health

Fire, Police

Building

Preservation

Planning

Housing

Except fiscal impact

Boards and Commissions

Transportation Board

Conservation Commission

Preservation Commission

Planning Board

Housing Board

Housing Trust

Council on Aging

Commission on Disability

Policy Documents
e.g. Housing Production Plan

Visualization tools, data collection, impact studies provide basis for accurate representation and objective analysis

What to request from applicants for technical review (may vary)

Ground Plane

- Traffic Impact Study
- Stopping Site Distance
- Visibility of Pedestrians within X feet of driveway
- Parking layout and management plan, stacker systems, EV charging
- Parking Demand Study
- Composite site plan with operations
- AutoTurn analyses (trucks and emergency)
- Location of street trees
- Landscape plan

Built Form

- Study of context
- 3D Model (preferably electronic like SketchUp)
- Site sections and elevations with abutting structures
- Site plan imposed on atlas map
- Shadow studies
- Viewshed analyses
- Grading contour plans
- Prel building code analysis
- Tree survey
- Trash storage and management plan

Below Grade

- Site sections with abutting structures
- Stormwater Management Plan
- Civil drawings with info to determine feasibility
- Abutting structures
- Foundation method
- Geotech plan, if applies
- Blasting plan (unless prohibited by Geotech)
- Wetlands, vernal pools
- Remediation plan, if applies
- Soil tests

Risk management plans

For technical review during hearing and/or conditions subject to review and approval

Ground Plane

- **Trash storage and management plan**
- **follow up review at 90% occupancy**
- **Photograph municipal streets before and after construction**
- **“Do Not Disturb” plan (protection of trees and other natural resources)**

Built Form

- **Construction Management Plan**
- **Testing of installed mechanicals and mechanized equipment for decibel thresholds**
- **Screening of headlights, garage lights, site lights**

Below Grade

- **Foundation method**
- **Survey of abutting structures before and after excavation**
- **Tree protection plan**
- **Limit for allowed impact on municipal systems unless approved by DPW**
- **Stormwater, Geotech, Remediation, Conservation plans**
- **Blasting plan**

Chapter 40B Site Plan and Design Review Toolkit Templates

and

**Toolkit in Practice:
Actual Applications in Different Contexts**

SNAPSHOT 136 Babcock Street Brookline

**INITIAL
Nov 2017**



**APPROVED
Dec 2018**

Sometimes you need permission for an extension beyond 180 days.

Architecture: CUBE3

RESULTS

- Less 20,000 GFA
- Less 15 units
- 15-20 foot setbacks front and rear
- Height at rear: 3 stories
- Improved stormwater mgt over existing conditions
- Safer vehicle access/egress
- Tree planting to restore tree loss
- Plan to protect abutting trees
- Contribution to street tree fund

TOOLKIT

01. Site configuration

Factors to evaluate*

Consider how front façade engages the street wall or creates separation.

Study modal patterns to discern what pattern could be echoed to create harmony or order

Consider setback to height ratio to discern impact on street edge, pedestrian experience

Discern opportunities for focal points

* Throughout: These are key examples. See Peer Review Scopes of Work for different projects.

Technical resources

- Design peer review

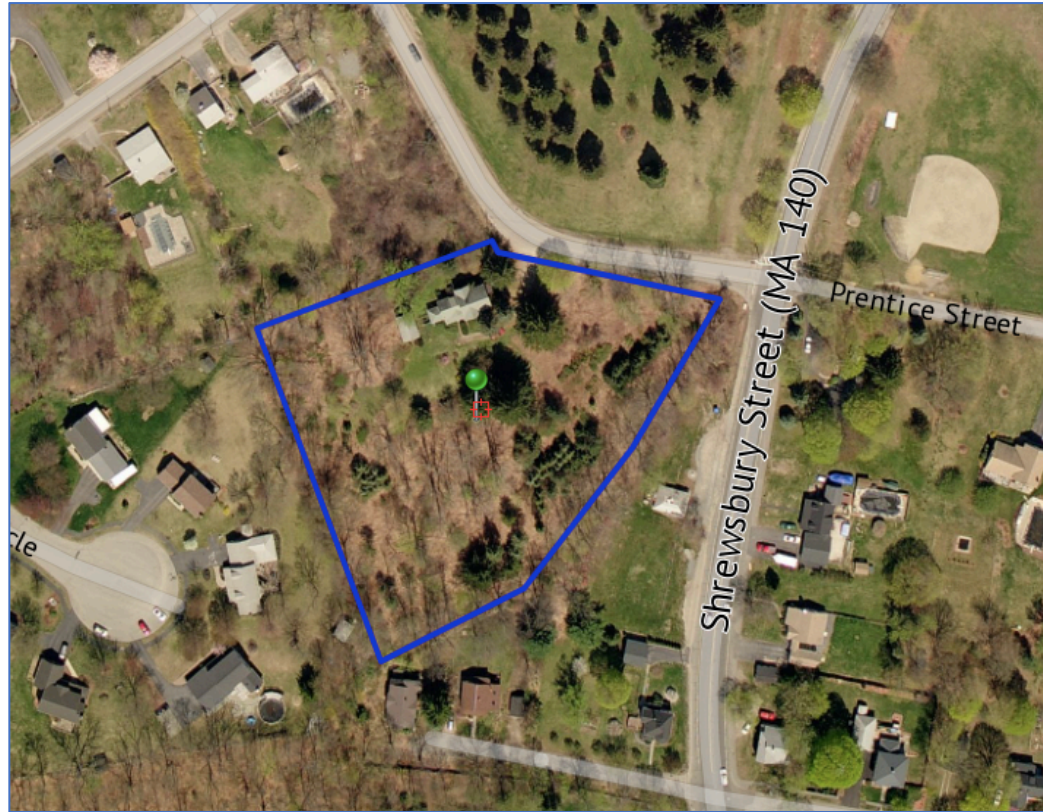
Analysis tools

- Study of surrounding context
- 3D model (SketchUp) with abutting structures
- Site plan imposed on atlas map with abutting structures and dimension labels

“ZBA Charge” to reduce impact
Conditions to mitigate impact
Risk management plans
Mitigation and public benefits

01. IN PRACTICE 23 Prentice Street, North Grafton

BEFORE



Existing Conditions



01. IN PRACTICE 23 Prentice Street, North Grafton

AFTER



Existing Conditions





“Service operations” pattern abutting site

01. IN PRACTICE Coolidge Corner, Brookline

BEFORE



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Residential pattern opposite site and strong curve approaching site made convincing arguments to open up viewsheds, reduce massing at ground level and southwest edge of building, and increase step-backs at four story cornice.

01. IN PRACTICE Coolidge Corner, Brookline

AFTER



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cbt architects

01. IN PRACTICE 136 Babcock Street, Brookline

BEFORE

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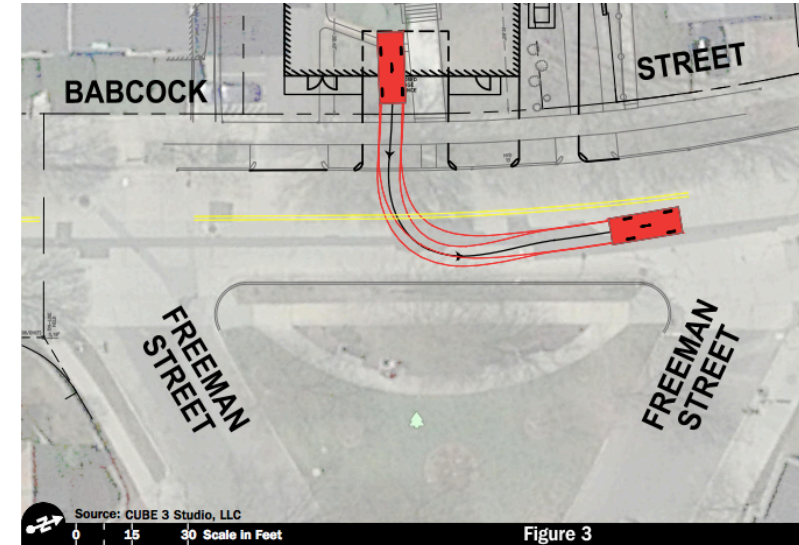


Cube3

☹️ Where is the residential entrance?

01. IN PRACTICE 136 Babcock Street, Brookline

ANALYSIS



Source: CUBE 3 Studio, LLC
Scale In Feet
Figure 3
Passenger Vehicle Exiting Site To the North
Vanasse & Associates, Inc.
Transportation Engineers & Planners

Analyses that made convincing arguments for (a) consistent front yard setback to maintain street wall, (b) to make residential entrance focal point instead of garage entrance, (c) to move loading area to relocated garage.



01. IN PRACTICE 136 Babcock Street, Brookline

AFTER



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😊 Where is the garage entrance?

02. Scale and massing

Factors to evaluate

Is there an organizing principle, or datum, that shows a relationship to the surrounding context or public realm

Are there areas where larger volumes can be concentrated

Areas where massing must be articulated for adjacency requirements and privacy considerations

Consider compensating for shallow setbacks at footprint with deeper step-backs on upper floors

Technical resources

Design peer review

Analysis tools

- Study of surrounding context
- 3D model (SketchUp) with abutting structures
- Site sections and building elevations with abutting structures, streets
- Viewshed study and shadow studies

“ZBA Charge” to reduce impact
Conditions to mitigate impact
Risk management plans
Mitigation and public benefits

02. IN PRACTICE Route 9, Wellesley

EXISTING

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02. IN PRACTICE Route 9, Wellesley

BEFORE



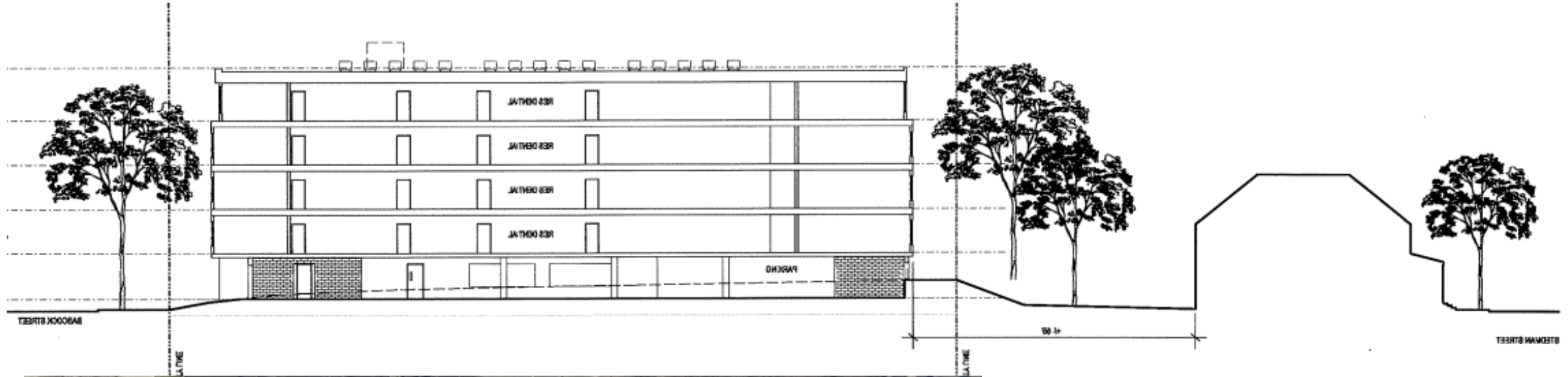
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02. IN PRACTICE 136 Babcock Street, Brookline

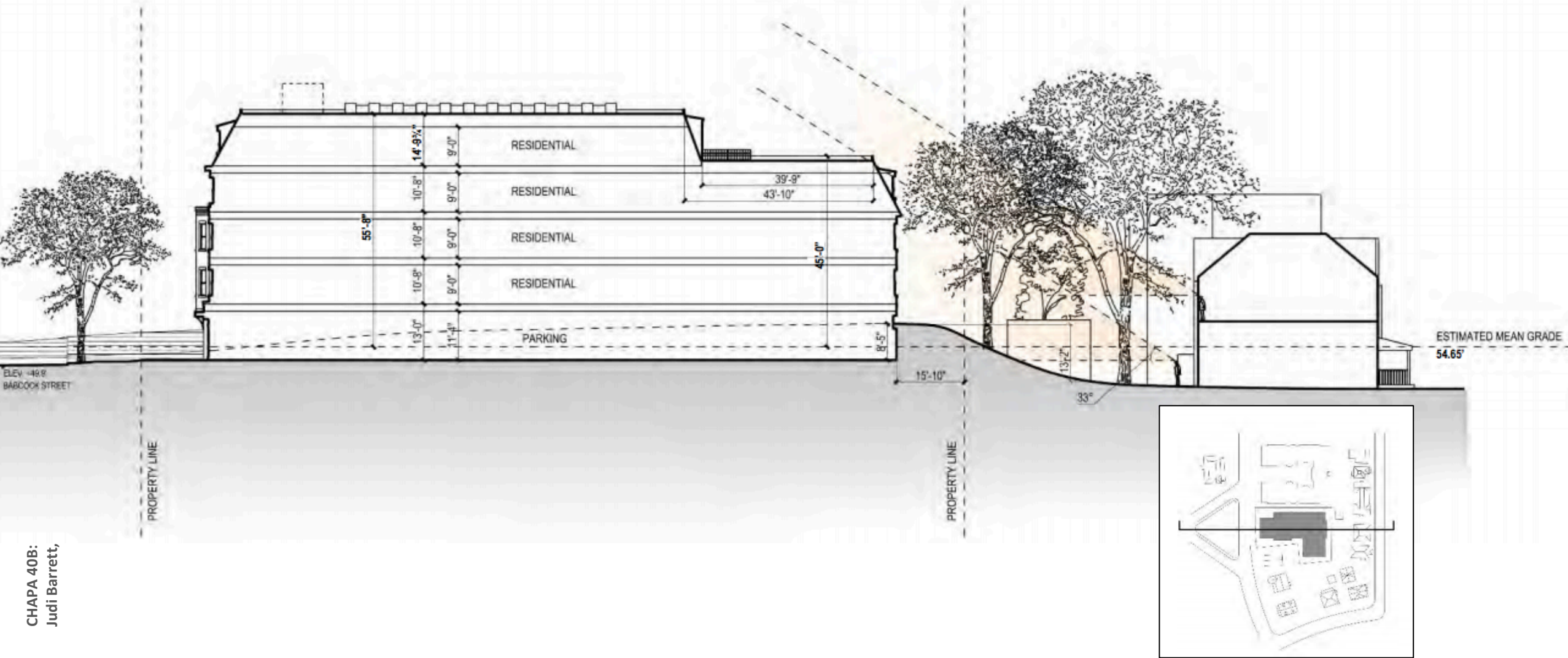
BEFORE

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02. IN PRACTICE 136 Babcock Street, Brookline

AFTER



03. Site circulation and access

Factors to evaluate

Impact on circulation pattern around site and queueing analysis

Safe pedestrian, ADA accommodations on site; avoiding conflicts at driveways

Ways to avoid conflicts at access/egress (backing out into traffic, adequate turning radius)

Opportunities to increase access to public transit, alternative modes of transportation

Parking feasibility, adequate target to support uses (avoid under-/over-supply)

Technical resources

Peer Review: Design, Traffic, Parking

Analysis tools

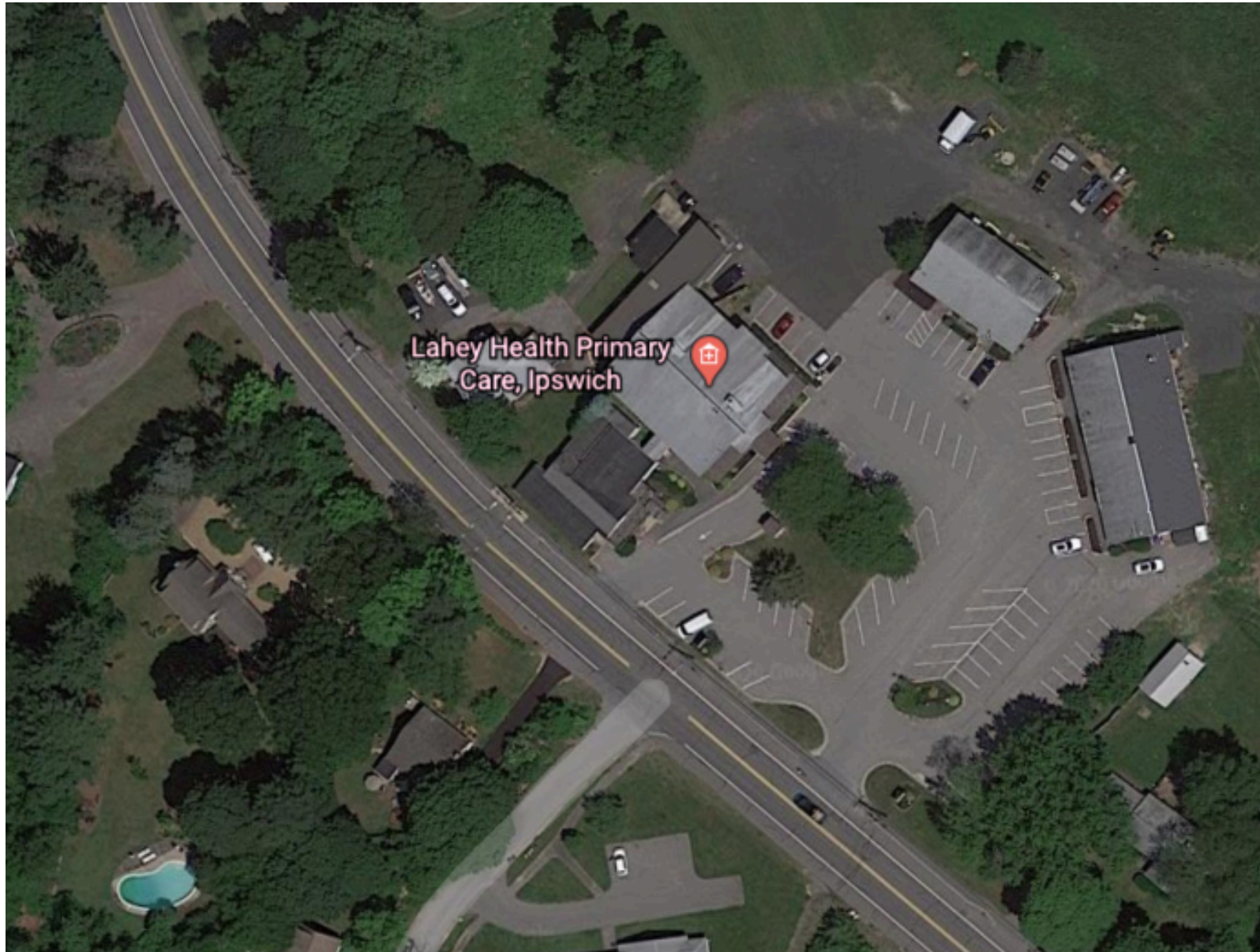
- One site plan choreographing all functions combined at peak time: trash pick up, ride share drop, pedestrian paths, truck deliveries
- AutoTurn analysis for emergency apparatus, trucks
- Visibility of pedestrians within 5 feet of driveway exit

“ZBA Charge” to reduce impact
Conditions to mitigate impact
Risk management plans
Mitigation and public benefits

03. IN PRACTICE 36 Essex Road, Ipswich

EXISTING

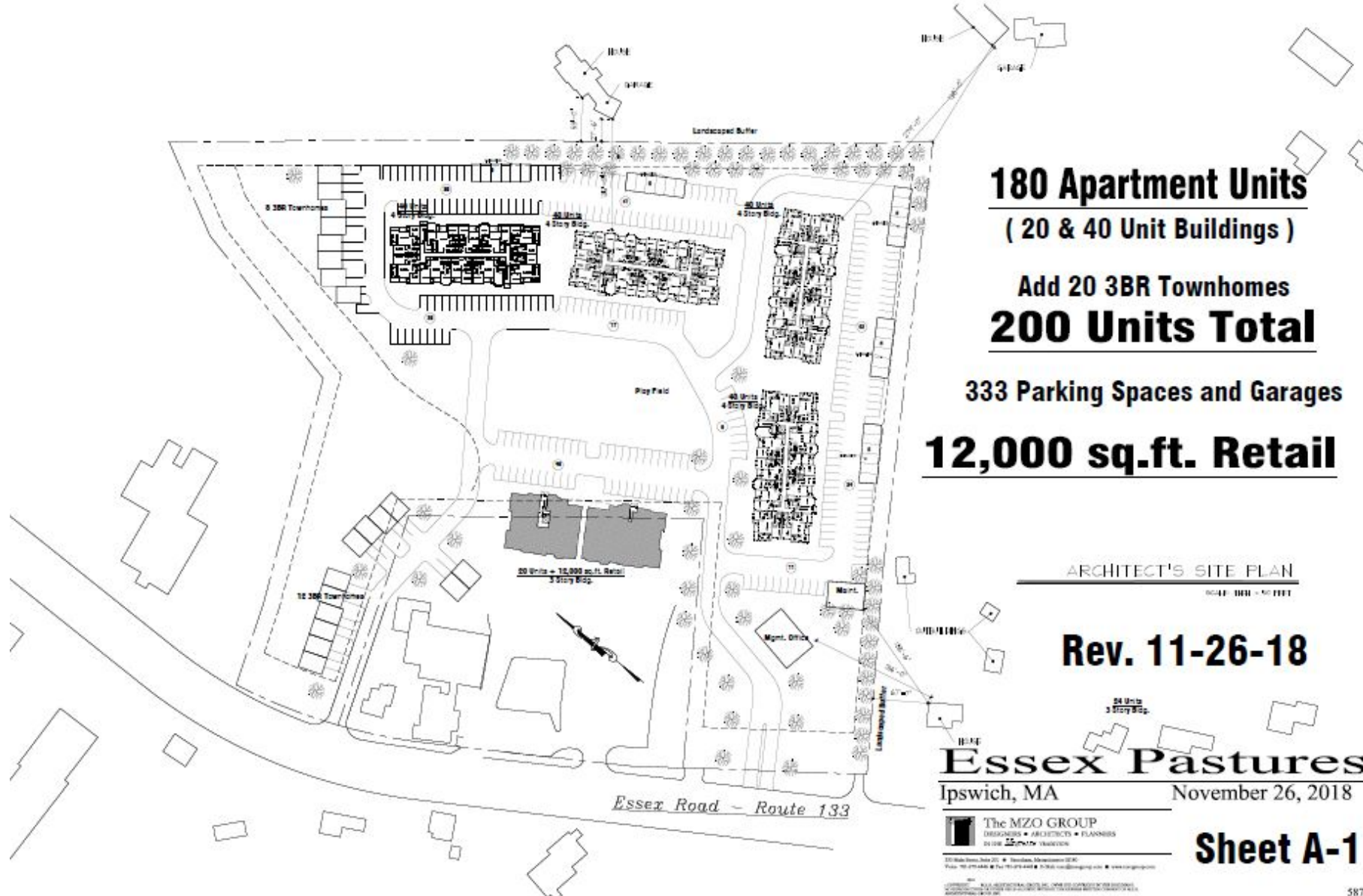
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03. IN PRACTICE 36 Essex Road, Ipswich

BEFORE

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180 Apartment Units
(20 & 40 Unit Buildings)

Add 20 3BR Townhomes
200 Units Total

333 Parking Spaces and Garages

12,000 sq.ft. Retail

ARCHITECT'S SITE PLAN

SCALE: 1/8" = 1'-0"

Rev. 11-26-18

Essex Pastures

Ipswich, MA November 26, 2018

The MZO GROUP
DESIGNERS • ARCHITECTS • PLANNERS
DIVISION OF MZOSYSTEMS

Sheet A-1

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03. IN PRACTICE 36 Essex Road, Ipswich

AFTER

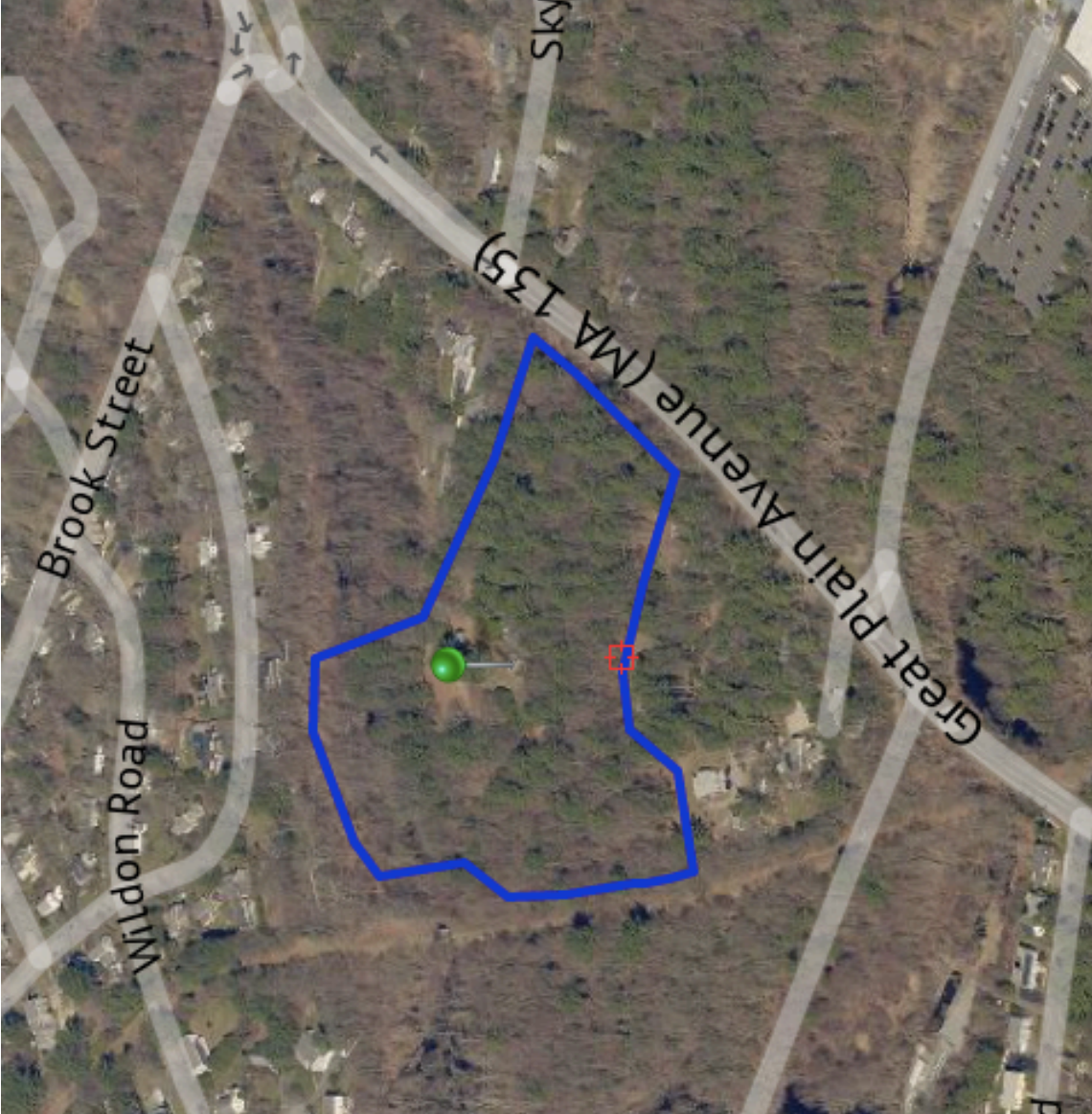


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03. IN PRACTICE 135 Great Plain Avenue, Wellesley

EXISTING

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03. IN PRACTICE 135 Great Plain Avenue, Wellesley

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03. IN PRACTICE 135 Great Plain Avenue, Wellesley

AFTER

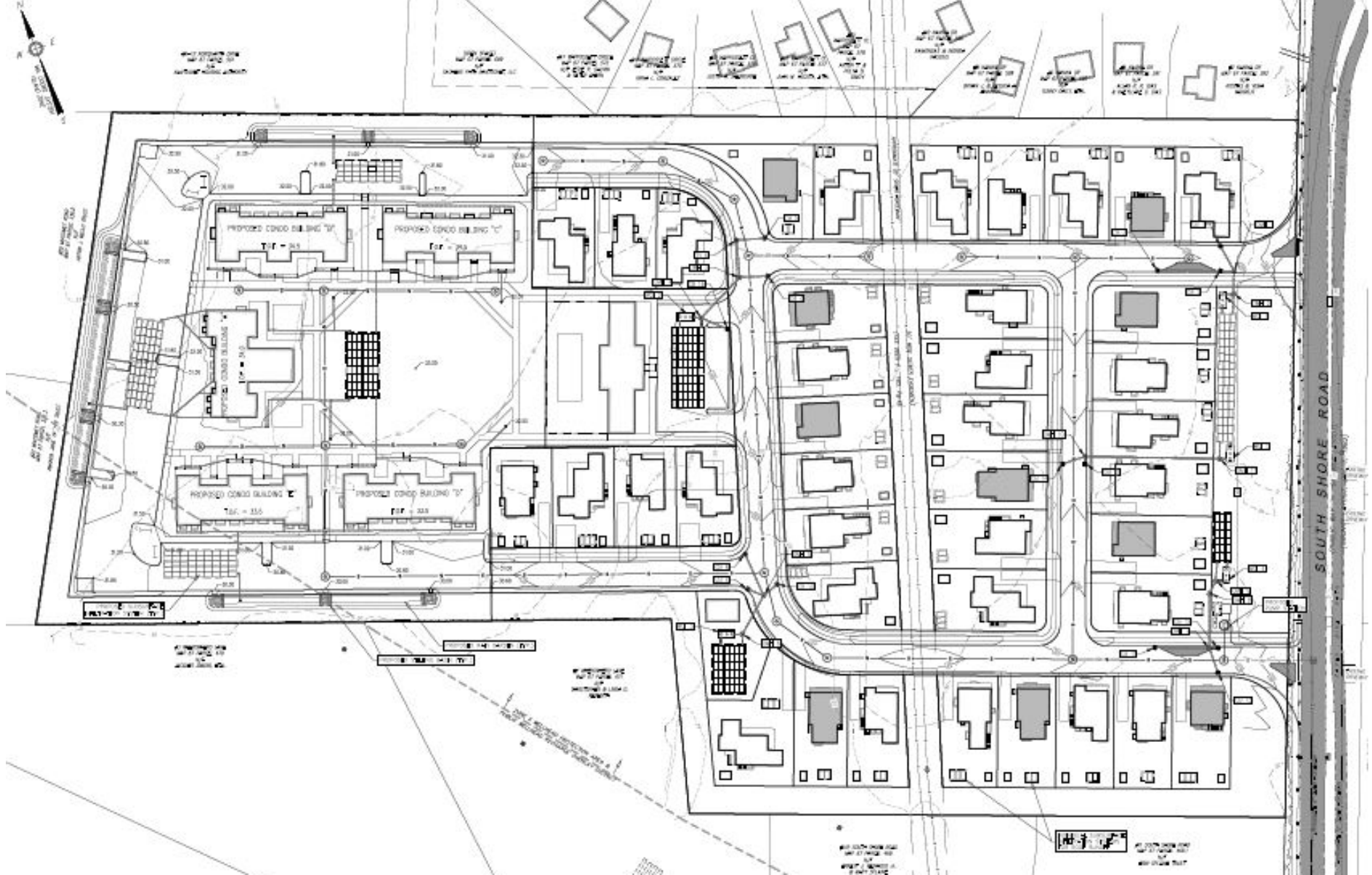


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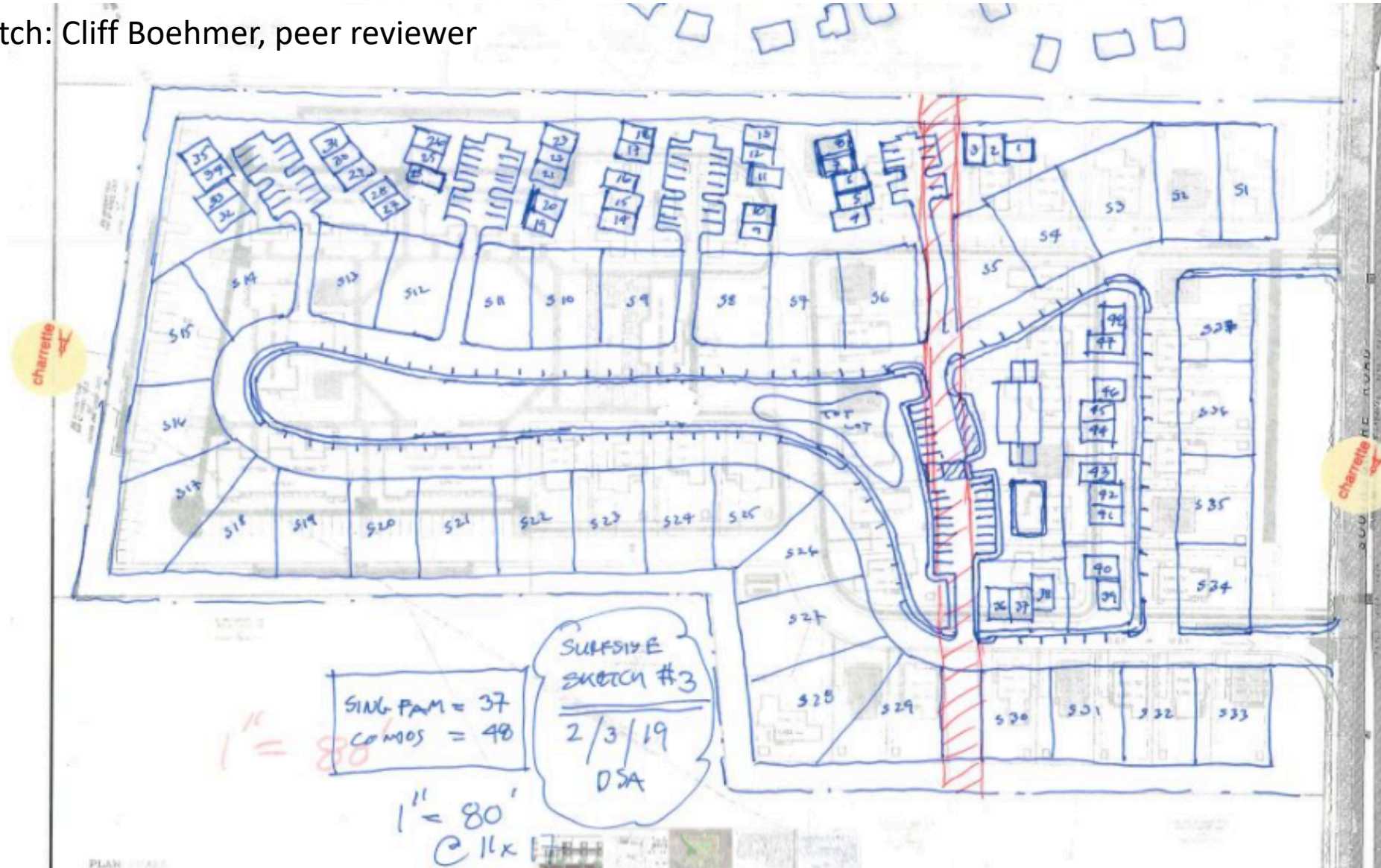
03. IN PRACTICE Nantucket

BEFORE

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Sketch: Cliff Boehmer, peer reviewer



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TOOLKIT

04. Civil engineering

Factors to evaluate

Stormwater review goes only 10 feet below grade.

Geotechnical review assesses full depth of proposed excavation. Hire a Licensed Site Professional if it's a remediation site or near gas station or remediation site.

Conservation / Wetlands

Blasting plan or prohibited altogether.

See sample Scopes of Work for factors to evaluate for each review type.

Technical resources

Peer Review: Stormwater,
Geotechnical, Conservation, Blasting
Public Works (Stormwater)
Fire Department (Blasting)

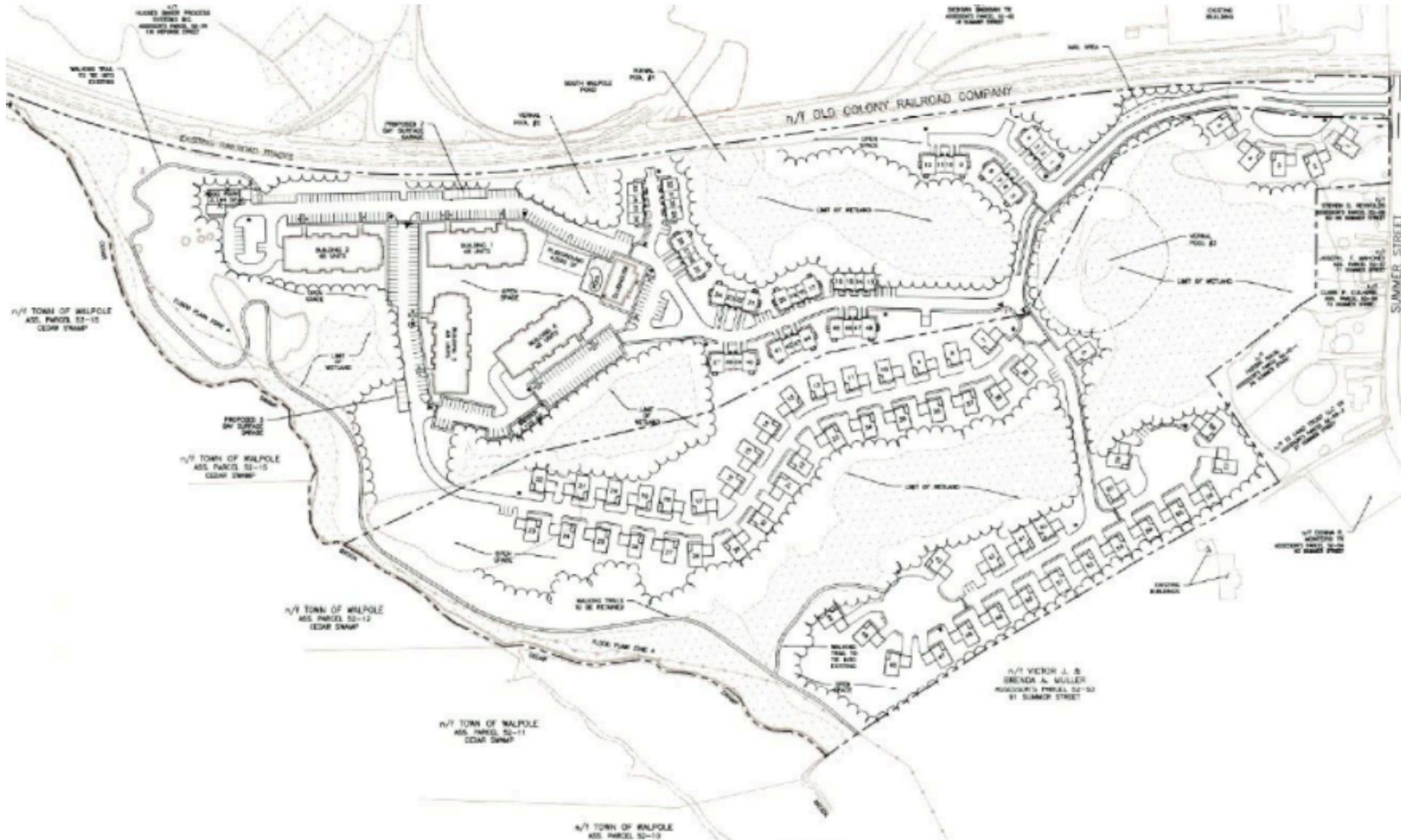
Analysis tools

Borings and Soil Lab Tests
Proposed risk management plan for review

"ZBA Charge" to reduce impact
Conditions to mitigate impact
Risk management plans
Mitigation and public benefits

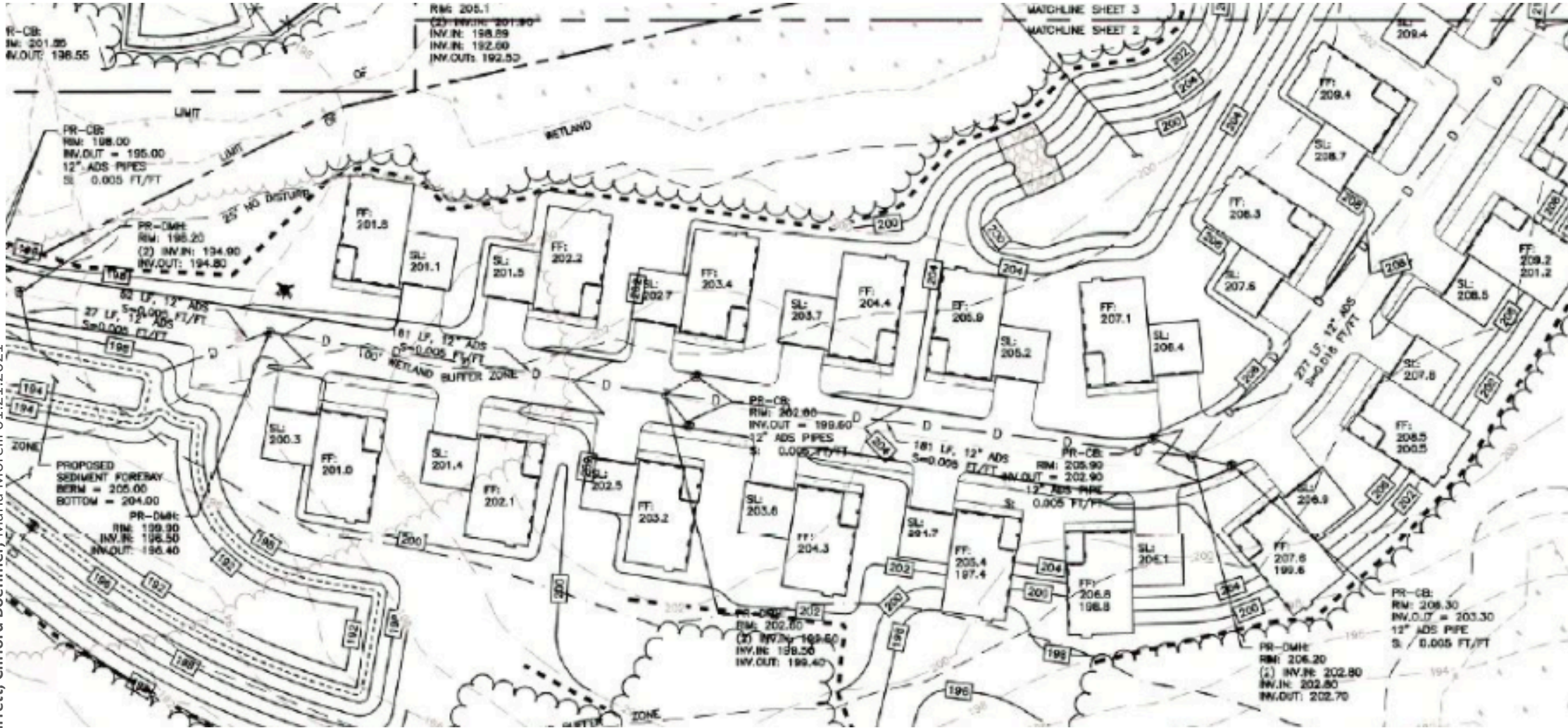
04. IN PRACTICE 55 Summer Street, Walpole

BEFORE



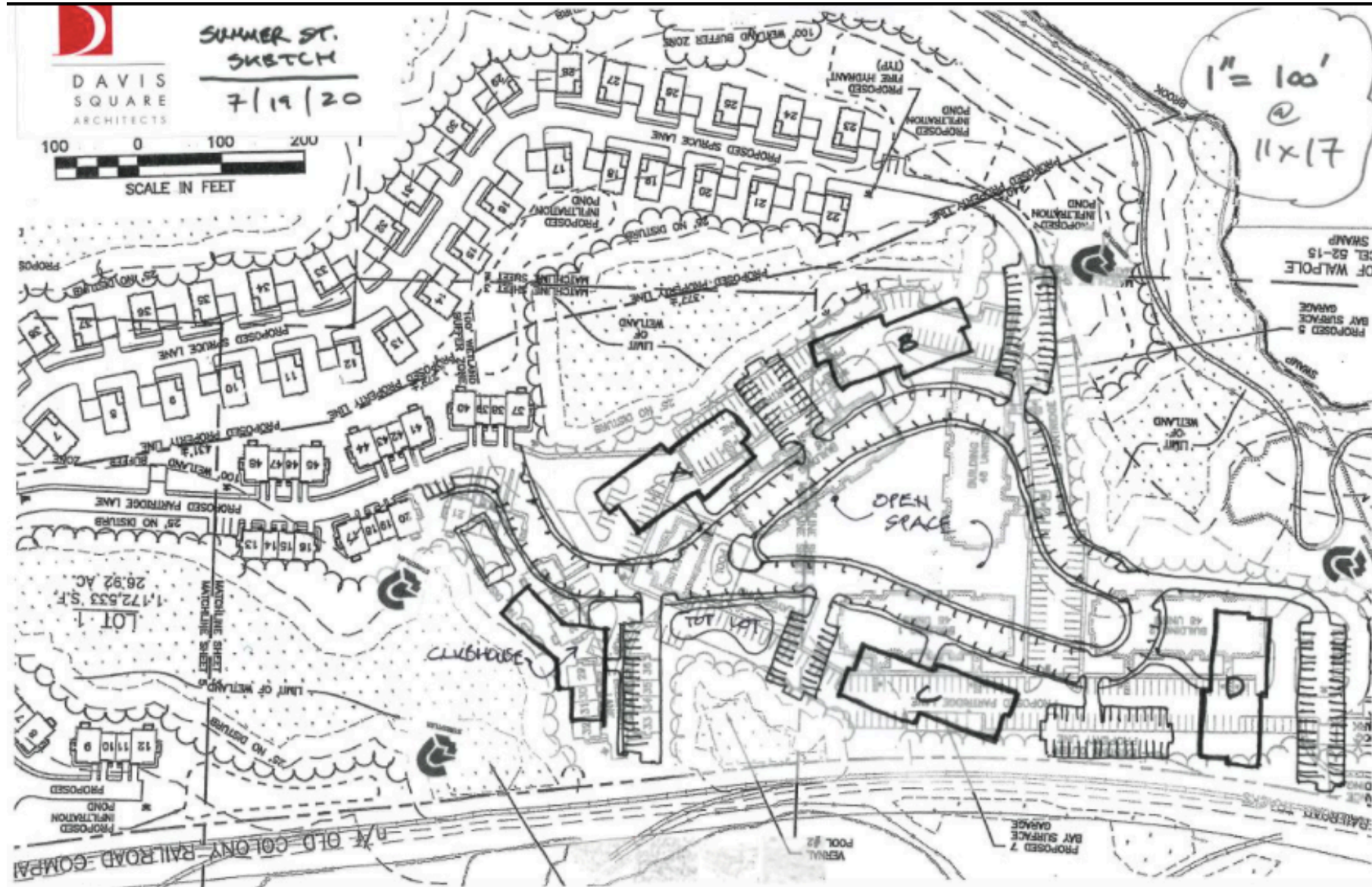
04. IN PRACTICE 55 Summer Street, Walpole

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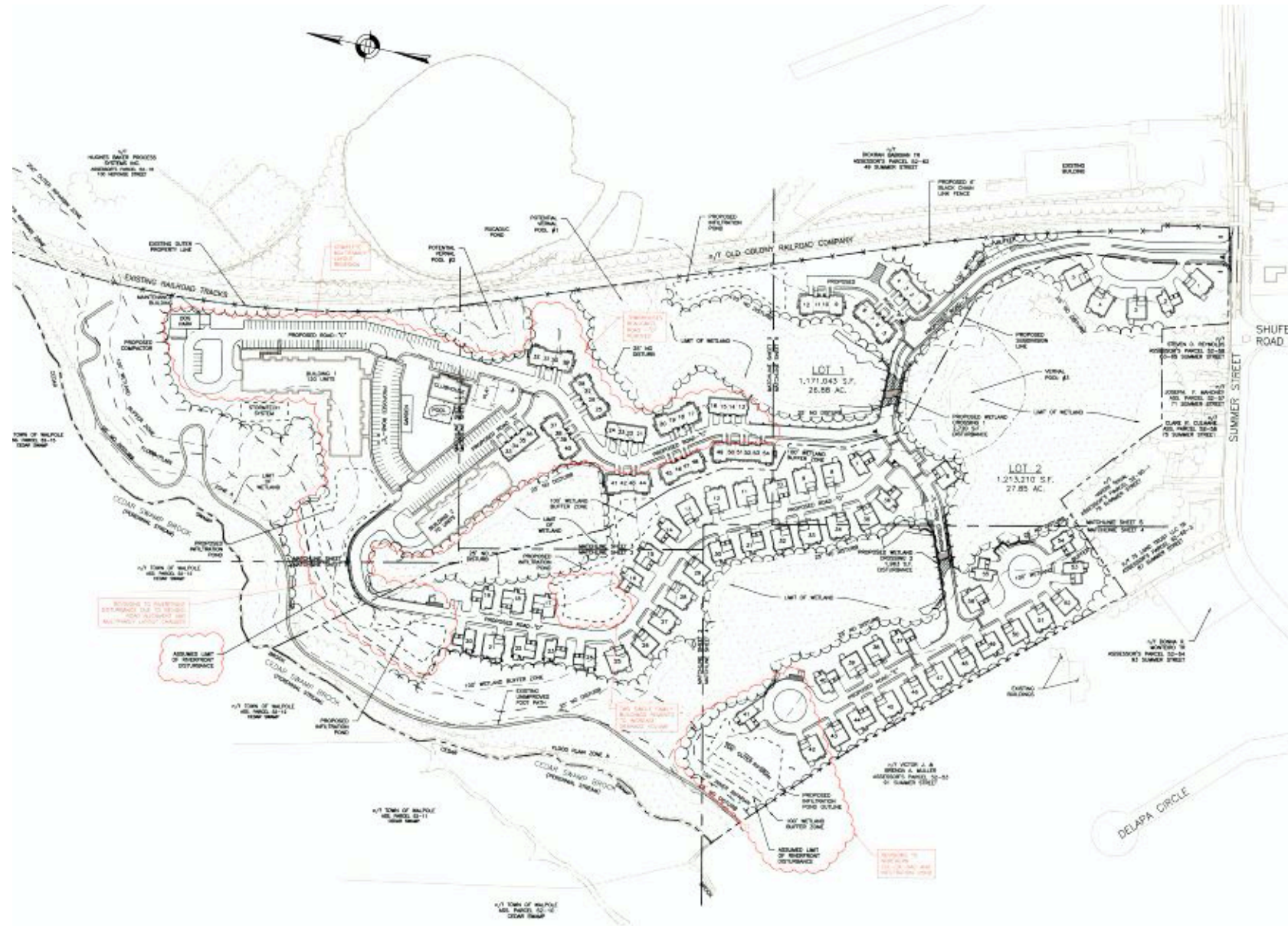


04. IN PRACTICE 55 Summer Street, Walpole

ANALYSIS



Annotations:
Cliff Boehmer,
peer reviewer



04. IN PRACTICE Risk Assessment, Mitigation, and Management

Coolidge Corner, Brookline

RISK TO WATER TABLE LEVELS

Geotechnical Review

Borings, soil lab tests, evaluation of proposed foundation method, feasibility during ZBA hearing

Licensed Site Professional peer review id'd potential risks to water table presented by 4-level sub-grade garage. Prompted developer to convert to 2-level sub-grade garage with less parking, fewer units, no restaurant use (eliminating impact on GW table).

1180 Boylston Street, Brookline

REMEDIATION SITE, SAFETY

Stormwater Condition:

Max capacity for flow to municipal systems.

Geotechnical Conditions:

- NO Blasting permitted
- Additional remediation responsibility assigned to developer
- Vapor-proofing and other design requirements
- Applicant pays for Licensed Site Professional hired by Town to review site

101 Independence Drive Brookline [Hancock Village]

EXCAVATION CHALLENGES

Blasting Condition:

Blasting permitted but Applicant required to pay for Town Blasting consultant to support Fire and Building Department review **during** construction.

Survey of abutters' foundation before and after blasting. Applicant responsible for damages.

05. Open space / landscape

Factors to evaluate

- Go beyond the design cliché of using landscaping to “hide” the project
- Are there natural resources that define the character of the site that can be retained
- Acknowledge landscape pattern or context to ease the transition to site or give site a sense of place
- Consider nature-based solutions to reduce heat/cooling loads, or reduce runoff
- Create usable open space to be enjoyed by project residents
- Public benefits like a play area, access to walking trails to create connection
- Perimeter buffers are okay but not an excuse to build an “un-designed” building

Technical resources

Landscape architect
Conservation specialist
Arborist
Parks and Open Space Dept.

Analysis tools

Tree survey
Grading contours
Survey of rock outcroppings, vernal pools, wetlands, protected resources

“ZBA Charge” to reduce impact
Conditions to mitigate impact
Risk management plans
Mitigation and public benefits

05. IN PRACTICE South Brookline PERMITTED AND UNSUCCESSFULLY APPEALED

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Two 40Bs (one appealed) on campus of a 55-acre Olmsted-design Garden Village post-war rental housing development with 6-acre greenbelt zoned for single-family running parallel to abutters

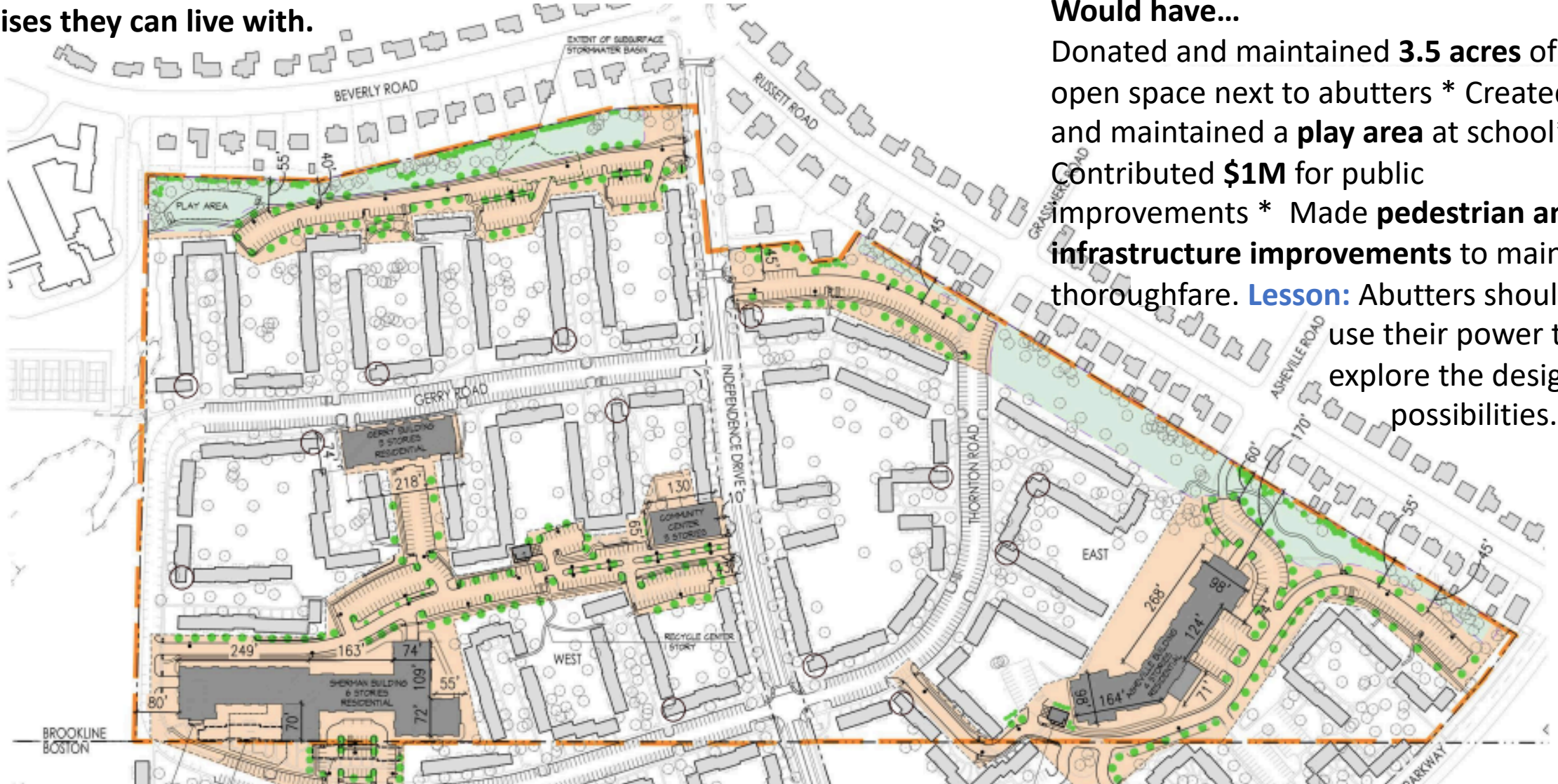
05. IN PRACTICE South Brookline

UNSUCCESSFUL ALTERNATIVE

Rather than oppose projects wholesale, abutters can channel concerns by isolating specific grievances—which may lead to compromises they can live with.

Overlay with inclusionary zoning
Would have...

Donated and maintained **3.5 acres** of open space next to abutters * Created and maintained a **play area** at school* Contributed **\$1M** for public improvements * Made **pedestrian and infrastructure improvements** to main thoroughfare. **Lesson:** Abutters should use their power to explore the design possibilities.



06. Site operations / curb control

Factors to evaluate

Is there a loading area for deliveries on site or is a loading zone needed at curb

Provisions for ride share on site, off site

Is trash storage room large enough to store trash receptacles within building footprint. Will trash pick up be private or public; times per week (mixed use)

How will different operations be coordinated at the same time.

Some operations might need time restrictions, some uses prohibited.

Technical resources

Health Dept

Transportation Board or Dept.

Traffic, Design, Parking peer review

Analysis tools

Site plan(s) featuring integrated operations in combination with management plans

“ZBA Charge” to reduce impact

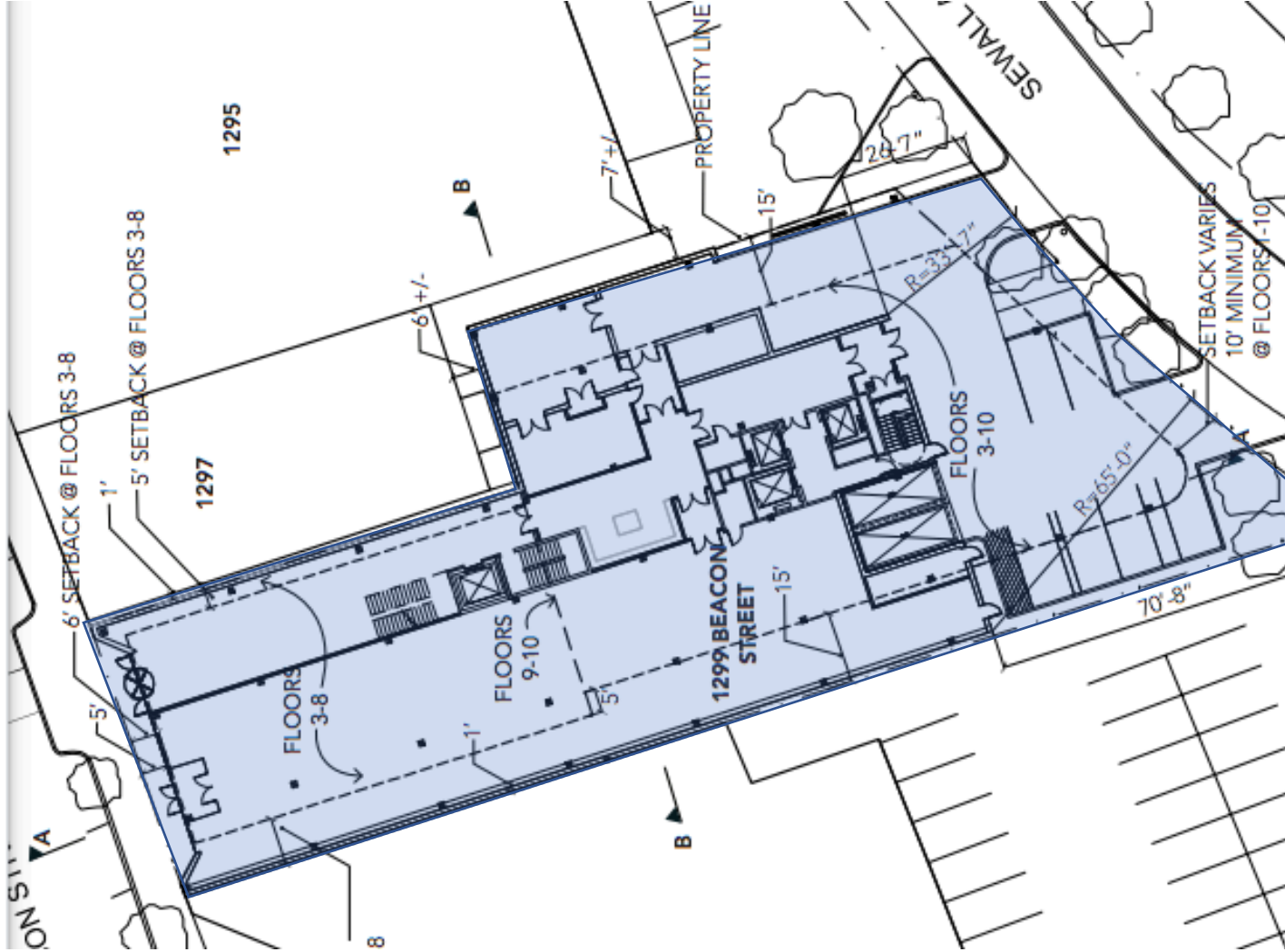
Conditions to mitigate impact

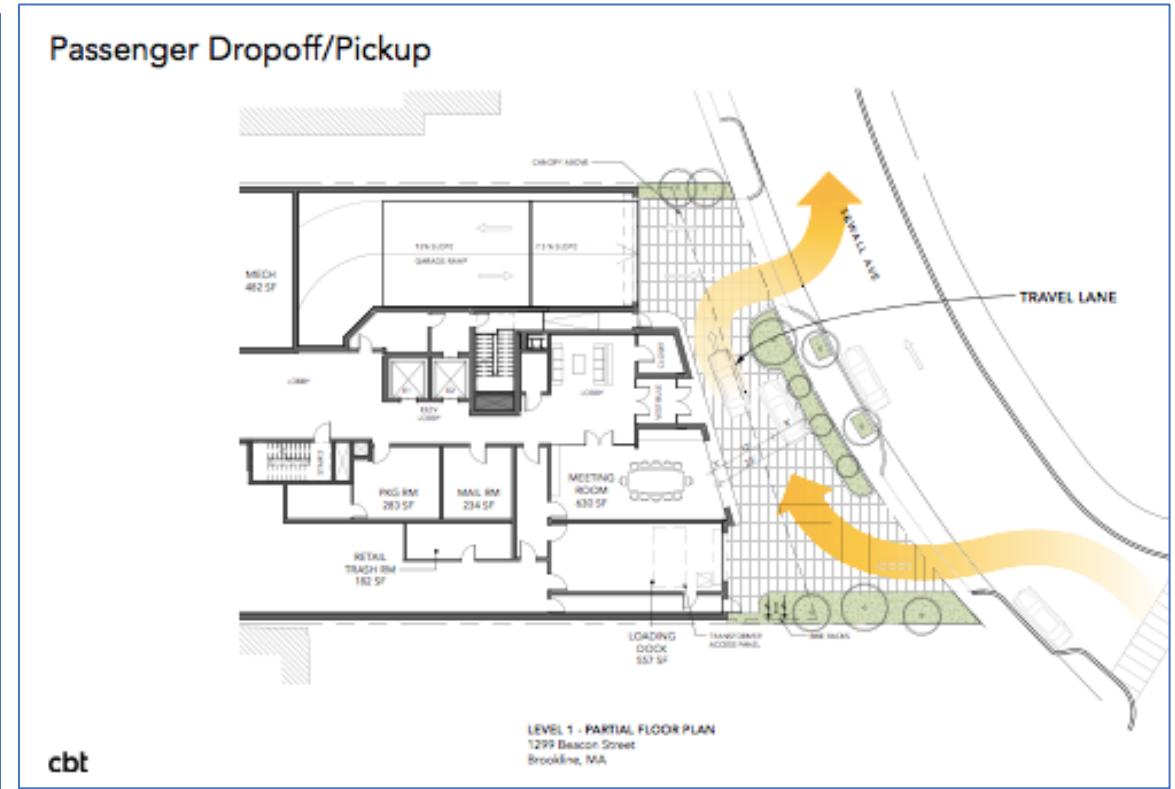
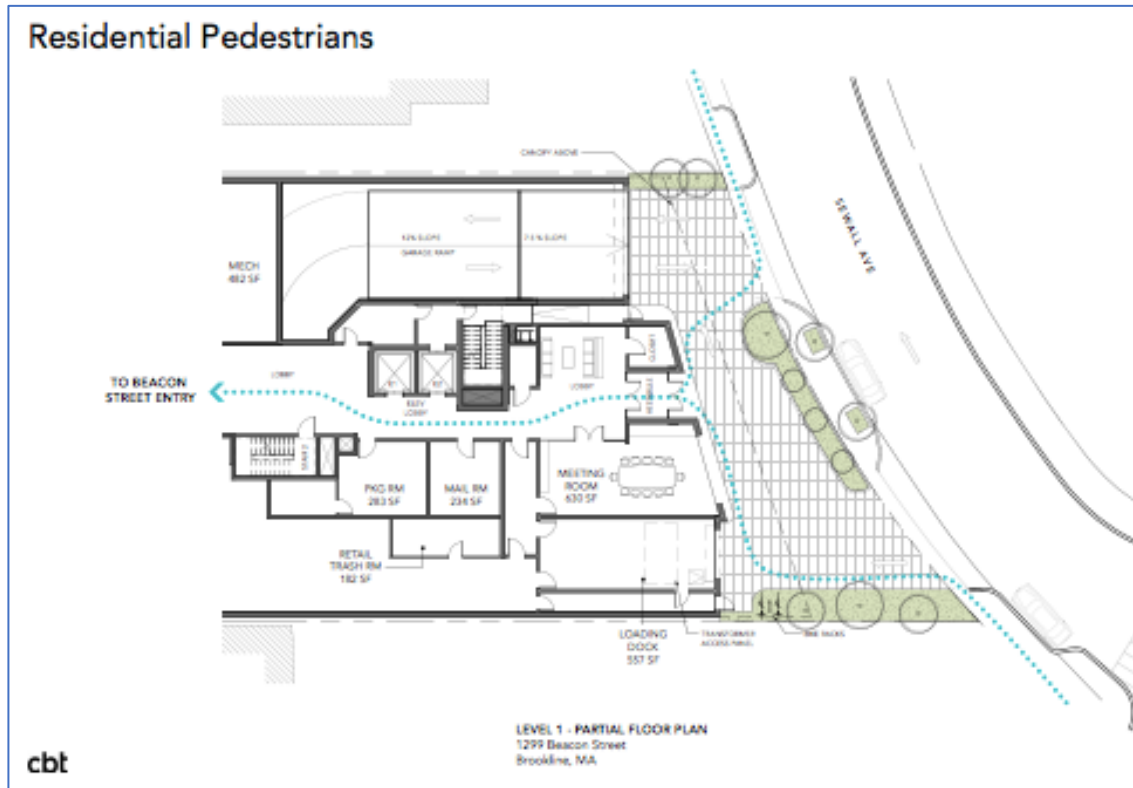
Risk management plans

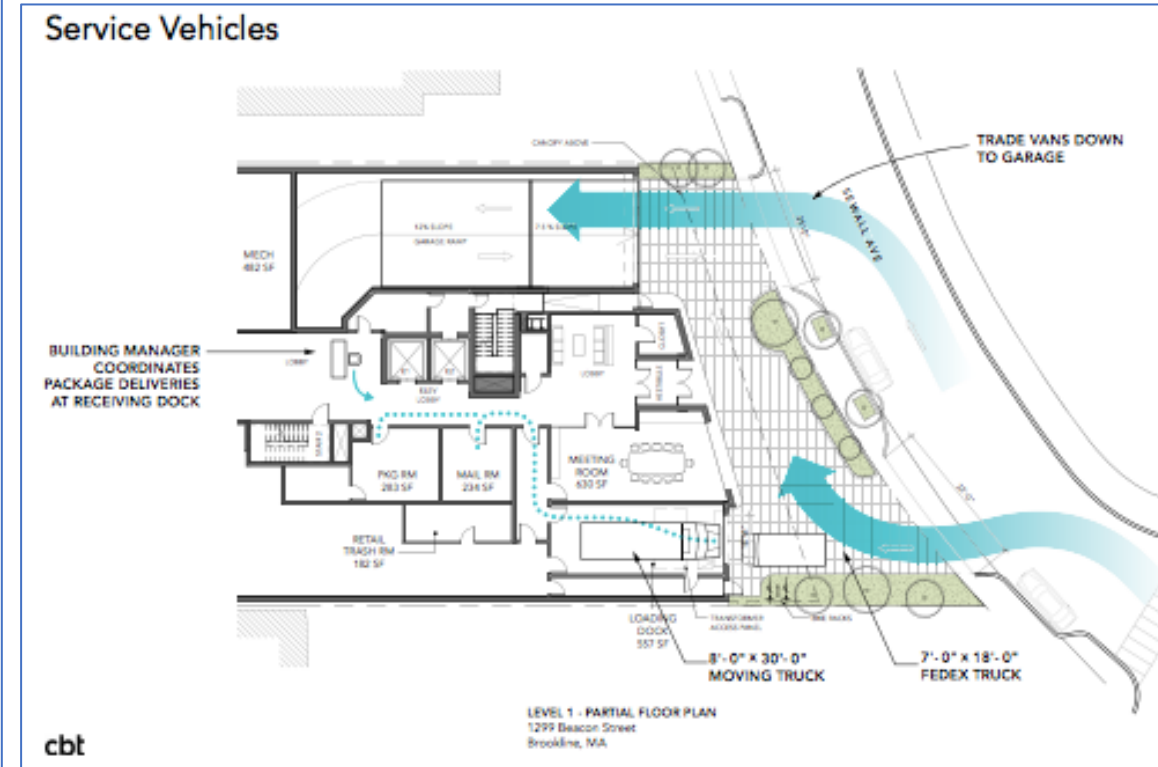
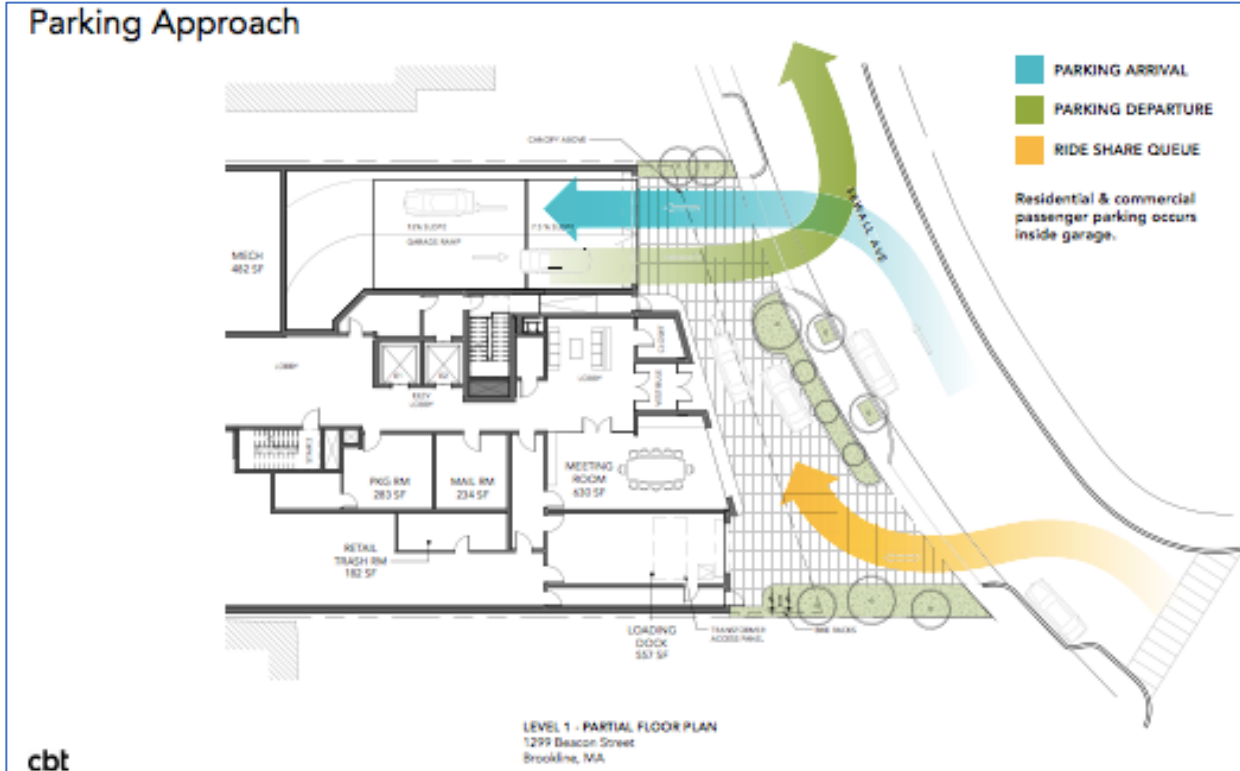
Mitigation and public benefits

06. IN PRACTICE Coolidge Corner, Brookline

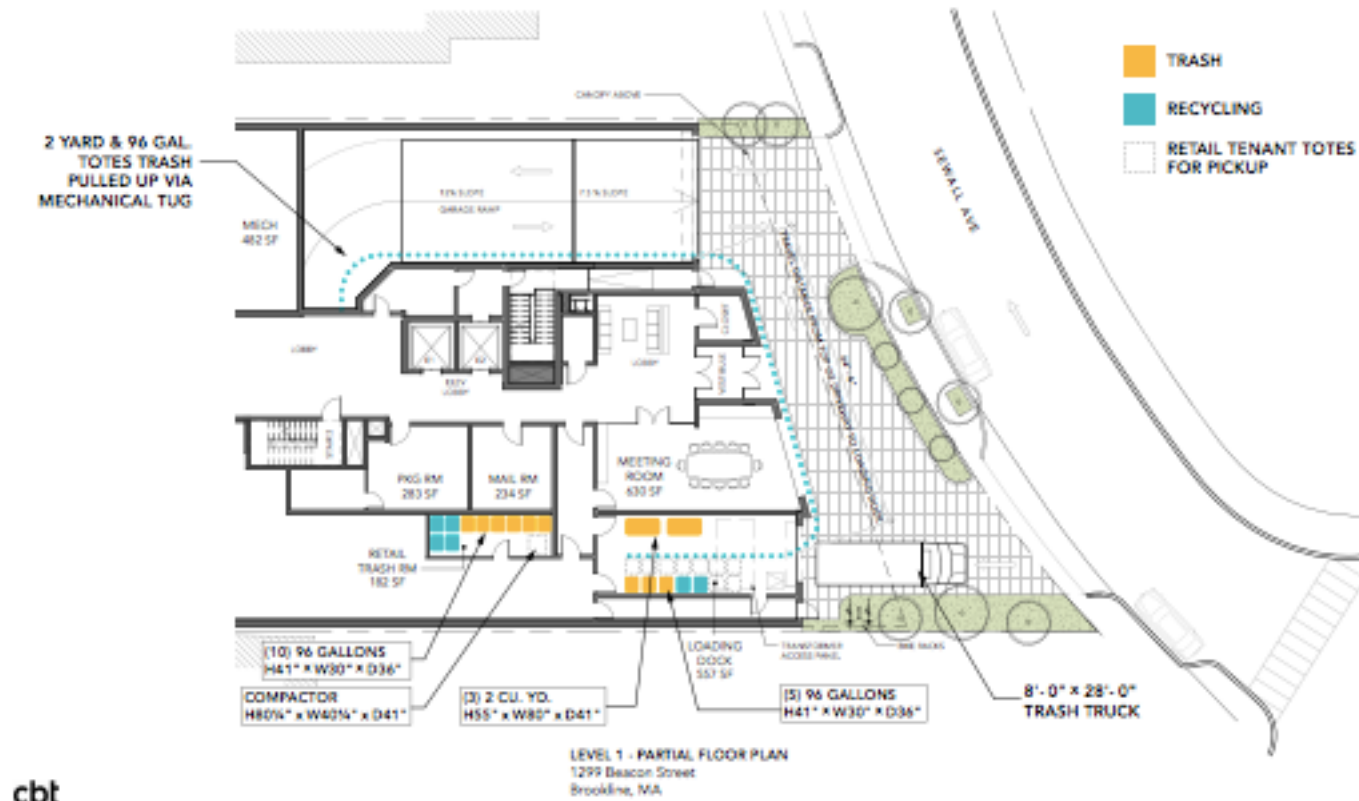
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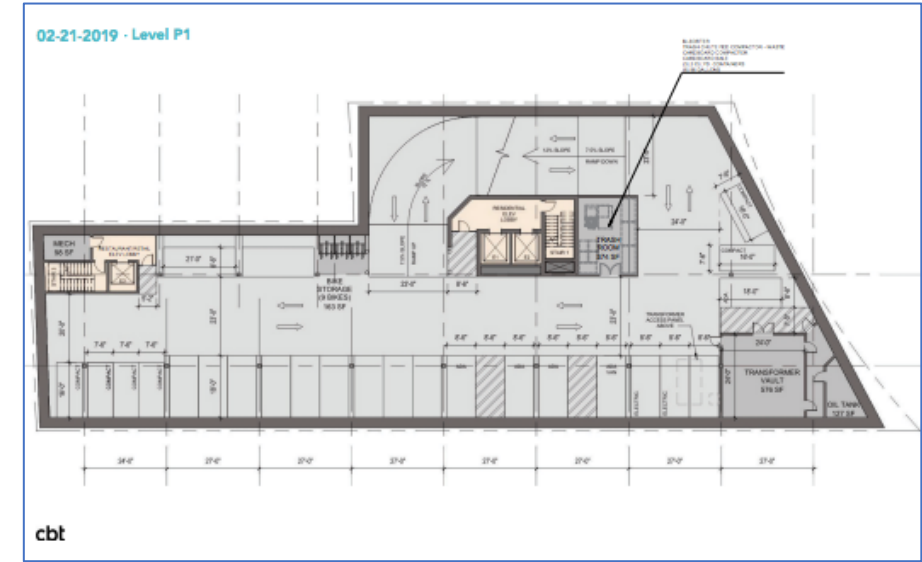


Trash Collection



cbt

Conditions: Certain operations restricted to times of week, day. Frequency of pick up evaluated for different uses, need for trash compactor. One parking space would need to be removed to improve stopping site distance. No Loading on public way.



P1 Trash Room Layout

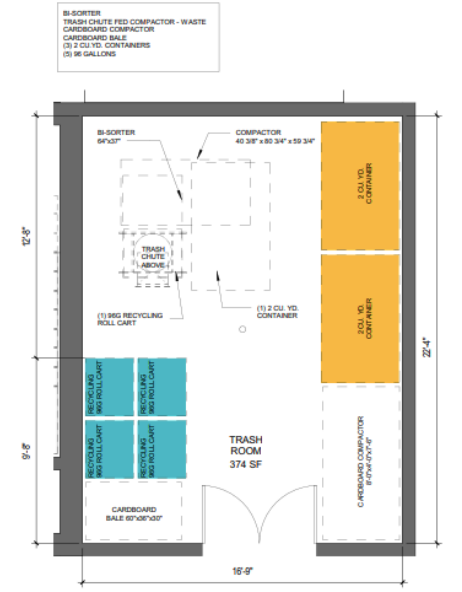
SELF-CONTAINED COMPACTORS

Mini-MAC® Apartment Compactor
Dimensions and Specifications

Capacity	Weight	Dimensions (H x W x D)
20 Gallons	150 lbs	40" x 34" x 55"
30 Gallons	200 lbs	40" x 34" x 55"
40 Gallons	250 lbs	40" x 34" x 55"
50 Gallons	300 lbs	40" x 34" x 55"
60 Gallons	350 lbs	40" x 34" x 55"
70 Gallons	400 lbs	40" x 34" x 55"
80 Gallons	450 lbs	40" x 34" x 55"
90 Gallons	500 lbs	40" x 34" x 55"

COMPACTOR RENTAL AND LEASING PROGRAMS AVAILABLE

RAMJET Authorized Dealer

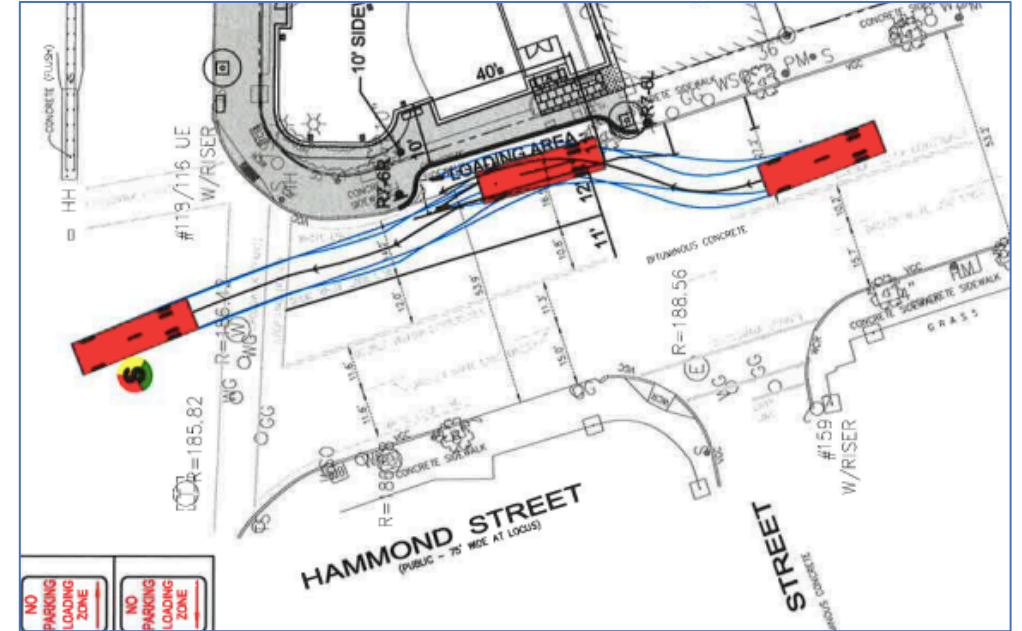


cbt

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Sometimes operations cannot be maintained on the site. Here a loading zone (non-exclusive use) in the public way was not only necessary for a feasible project but also provided a much-needed public benefit.



Town Counsel determined that ZBA not T-Board had purview over **loading zone** in public way. Loss of **parking space** resulted in Applicant paying two years lost revenue. Loss of **street tree** NOT under ZBA purview (c.87 State Law) but was approved through separate public hearing. Loading zone was deemed a public benefit to resolve existing double parking issues. Intensive analysis of safe loading zone **feasibility and iterative designs** were required, including an **easement** from Applicant for adequate pedestrian access on sidewalk.

Recommendations

- 1 - Apply for the **MassHousing Partnership Technical Assistance** grant to obtain specialized 40B expertise.
- 2 - Consider hiring a consultant to **coordinate the project review process** if staff has limited time or authority to assist the Board of Appeals.
- 3 - Contract an **independent site and building design peer reviewer**—not only engineering peer reviewers—for a holistic, integrated analysis of the project.
- 4 - **Share** successful design and process best practices:
 - Create repository of resources (like Scopes of Work for technical consultants) for Town planners; for e.g., through APA-MA Chapter website.
 - Establish a “lookbook” of before and after designs by neighborhood context with commentary.

Links to Projects

[Brookline](#)

[Ipswich](#)

[Nantucket](#)

[North Grafton](#)

[Wellesley](#)

[Walpole](#)